To my parents, my sisters, and my husband,
for their love and support always

To my nephew João, for changing our lives
O PULSO

O pulso ainda pulsa
O pulso ainda pulsa
Peste bubônica câncer pneumonia
Raiva rubéola tuberculose anemia
Rancor cisticercose caxumba difteria
Encefalite faringite gripe leucemia
O pulso ainda pulsa
O pulso ainda pulsa
Hepatite escarlatina estupidez paralisia
Toxoplasmose sarampo esquizofrenia
Úlcera trombose coqueluche hipocondria
Sífilis ciúme asma cleptomania
O corpo ainda é pouco
O corpo ainda é pouco
Reumatismo raquitismo cistite disritmia
Hérnia pediculose tétano hipocrisia
Brucelose febre tifoide arteriosclerose miopia
Catapora culpa cárie câmbra lepra afasia
O pulso ainda pulsa
O corpo ainda é pouco

Arnaldo Antunes, Marcelo Fromer e Tony Bellotto
Several models have been proposed to explain the causes of oral diseases. However, a full explanation has not yet emerged. The salutogenic model of health, operationalized as a Sense of Coherence (SOC), seeks to explain factors that promote health. It suggests that the stronger the SOC of individuals and groups, the better they will cope with life stressors, and hence maintain their health. Nevertheless, there is no evidence of its application to oral health. The aim of this study was to investigate the relationship between SOC and oral health on a sample of 664 15 year-olds and their mothers. It was hypothesized that adolescents with better oral health have higher levels of SOC and have mothers with higher levels of SOC. In addition, oral health and SOC are influenced by socioeconomic status. The study was conducted in Goiânia-GO, Brazil, and data were collected through questionnaires and clinical dental examinations. Multiple logistic and polytomous ordered regression were used in the data analysis. Adolescents’ SOC was associated with their caries experience in anterior teeth, but the relationship did not remain significant after controlling for other factors. Adolescents with higher SOC were more likely to visit the dentist mainly for checkups, and to have a better self-assessment of oral health, compared with those with lower SOC. Other measures of oral health status and behaviours were not significantly associated with SOC. Mothers’ SOC was strongly associated with children’s oral health. Adolescents whose mothers had higher levels of SOC had better dental caries and periodontal status and a better self-assessment of oral health, than those whose mothers had lower SOC. Mother-child similarities in dental caries status were also found. Socioeconomic status influenced both SOC and oral health. It was concluded that SOC is an important determinant of adolescents’ oral health, particularly via mothers’ SOC.
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CHAPTER 1
INTRODUCTION AND LITERATURE REVIEW

1.1- Introduction

The dominant biomedical model, used to explain disease, including oral diseases, has a pathogenic orientation, focusing on diseased people. While it provides a reasonable basis for prevention and treatment, this model is primarily concerned with biological factors. Therefore, the biomedical model offers only a partial explanation of oral health, because it excludes consideration of complex initial, intermediary and interactive steps in the disease process. Oral disease aetiology is a complex process involving social and psychological, as well as biological factors.

The importance of psychosocial determinants of oral health is increasingly well recognized, but relatively few studies have considered either psychological or sociological characteristics as risk factors for oral diseases. Only a limited number of such psychosocial studies have used appropriate multivariate statistical methods to consider the simultaneous joint effects of multiple psychosocial variables (Eriksen and Bjertness, 1991).

In an attempt to develop an integrated theory of dental caries, combining biomedical and psychosocial factors, several models have been proposed in recent decades (Jenny et al, 1974; Abernathy et al, 1987; Beck et al, 1988; Bjertness and Eriksen, 1992; Reisine and Litt, 1993). Among the most elaborated models is the "socio-ecologic model" (Bjertness and Eriksen, 1992), including dimensions such as human biology, behaviour, health-care organization, and environment. This model has also been used to explain periodontal diseases (Hansen et al, 1993). Another model proposed is the "biopsychosocial model" (Reisine and Litt, 1993) as a prediction model of caries risk, showing that caries is the result of an interplay between biological, social and psychological factors.

Despite the alternative models proposed, a full explanation of oral health, accounting for the relative importance of its main determinants, has not yet emerged. A current limitation
of the psychosocial approach is that many of the models, or groups of factors suggested, are conceptual and only partially scientifically tested. As a result, the relative importance of psychosocial factors in relation to oral health remains unclear, and so their diagnostic value is limited.

Psychosocial factors may be relevant to all diseases, and in particular to chronic diseases. The psychosocial models used to account for oral health are generally derived from the literature on comparable theoretical models of general health, which are recognized to be increasingly relevant in recent decades. These models are of varying complexity and involve different dimensions, implying a multidisciplinary approach for research and health promotion.

One such model is the "health-field concept", combining biomedical and psychological dimensions of health (Lalonde, 1974). This was the basis for the development of the "socio-ecologic model", applied to caries and periodontal diseases (Bjertness and Eriksen, 1992). A more comprehensive model to explain general health was recently proposed by Evans and Stoddart (1990), which is an expanded framework of the "health-field concept", incorporating broader dimensions.

Examples of other psychosocial approaches are those which emphasize the importance of the social environment, especially social networks and social support (Hanson, 1988). Psychosocial models linking work environment and health status have also been presented, involving a number of aspects of individuals's work, such as the "job strain model" (Karasek, 1979), the "effort-effect model" (Frankenhaeuser, 1989), and the "effort-reward imbalance model" (Siegrist and Matschinger, 1989).

Such psychosocial models of general health and oral health have not yet provided a satisfactory explanation for the differences in health status between different groups of people. Studies using such approaches have shown inconsistent results. There is a need for further theoretical and also methodological development of the approaches. The mechanisms linking psychosocial factors and health need clarification.
A psychosocial approach that has gained ground in the last two decades is the salutogenic theory (Antonovsky, 1981, 1987). The special feature of this theory is that it challenges the pathogenic model. It attempts to explain health by assessing people’s location on a health ease/dis-ease continuum, rather than by means of a health-disease dichotomy. The model’s central construct, the Sense of Coherence (SOC), seeks to explain the relationship between life stresses and health. That hypothesis proposes that stressors are intrinsic to the human situation, and the stronger the SOC of individuals and groups, the more adequately they will cope with these stressors and thus maintain their health.

A full understanding of oral diseases, their prevention, and the promotion of oral health, requires an integrated approach, placing them in the context of other major chronic diseases, and accounting for their psychosocial as well as biological determinants. The salutogenesis theory, already used to understand the nature of general health, may be an effective approach to oral diseases, caries and periodontal diseases in particular. If so, this study may contribute to the development of realistic and practical means to maintain oral health.

The present study investigates the determinants of dental caries and periodontal diseases, using the salutogenesis model, for three main reasons. First, the salutogenesis theory has been increasingly used by researchers in the general health field, but there is no evidence of its application to oral health. Second, unlike most of the other models, it can be used in different groups in the population, since it is not restricted either to specific dimensions of life, such as work environment, or specific age groups. Third, the salutogenesis model is designed to explain why people remain healthy. It may therefore provide a better explanation than studies using biomedical and other psychosocial models of why some people are dentally healthy and others are not.

1.2- Literature review

1.2.1- Introduction
This literature review is divided into five sections and covers substantial evidence on topics related to the present study. Section 1.2.2 outlines the conceptual models of oral
health and general health, as well as the mechanisms linking psychosocial factors and
disease. Section 1.2.3 presents an overview on the relationship between psychosocial
factors and oral diseases, particularly dental caries and periodontal diseases. Section 1.2.4
presents a brief review on self-perceived health and oral health. Section 1.2.5 describes
the salutogenic model of health. Finally, Section 1.2.6 presents a general review of the
factors associated with dental caries and periodontal diseases in adolescents. In addition,
a general summary and conclusions of the review is presented.

1.2.2- Conceptual models of oral health and general health

1.2.2.1- Conceptual models of oral health

Concepts of health and disease have traditionally been based on biomedical models. The
classical trilogy of disease aetiology classifies the causes of diseases in three major groups:
(1) the host factors, which include all those characteristics present in the human individual
that increase or decrease his chances of contracting the disease; (2) the environmental
factors, which surround the individual and which deter or aid the development of the
disease state; and (3) the agent factors present in the disease-causing object or process
itself, which determine its ability to produce the disease state.

Suchman (1963) compared this classical trilogy of disease aetiology with the common
social science model to explain individual behaviour. The social science model presents
a threefold classification for the factors involved: "(1) the internal tendencies of the
individual that predispose him toward or away from the observed behaviour; (2) the external influences in the environment that favour or oppose the course of the action; and
(3) the inherent attributes of the action itself or the object or goal of the action that make
it attractive or unattractive to the individual" (Suchman, 1963, p.96). It is pointed out that
there is a parallel between internal tendencies and the host, external influences and the
environment, and inherent attributes and the agent, suggesting the importance of applying
social science principles to epidemiology.

Within oral health the biological mechanism for caries development is illustrated by the
Keyes’ triad (Fig.1.1), showing interaction of the three main biomedical determinants, the
host (tooth), microflora (S. mutans) and substrate (dietary sugars) (Keyes, 1962). This model has provided a scientifically sound basis for preventive and curative intervention.

![Biomedical model of dental caries (Keyes, 1962)](image)

Figure 1.1 - Biomedical model of dental caries (Keyes, 1962)

The decline in dental caries rates reported in industrialized countries in the last decades has resulted in an increased interest by dental researchers, educators, and clinicians in identifying which groups of children remain at greatest risk of the disease (Demers et al, 1990; Beck et al, 1992). This high risk strategy has focused primarily on biomedical determinants of caries, but this approach has failed to explain why some people get the disease and others are relatively or completely free of it. Several epidemiological studies in different countries have produced evidence indicating that social and psychological factors also are related to risk of caries.

Several conceptual models of varying complexity have been proposed in an attempt to explain dental caries, and these have been reviewed adequately by Eriksen and Bjertness (1991). Most of these models are based either on a biomedical or on a psychosocial philosophy. Only a few models have focused on both biomedical and psychosocial factors.

Among the models combining biological and psychosocial factors, the "socio-ecologic model" (Bjertness and Eriksen, 1992) (Fig.1.2), was suggested as a fuller risk assessment model, including dimensions such as human biology, behaviour, health-care organization, and environment. Its formulation was based on the "health-field model" of general health (Lalonde, 1974), and it has been tested in elderly populations.
The "biopsychosocial model" was proposed by Reisine and Litt (1993) as a prediction model of caries risk, showing that caries is the result of an interplay between biological, social and psychological factors (Fig. 1.3). The model has been tested among young children and their mothers (Reisine and Litt, 1993; Litt et al, 1995).
Two psychosocial models have been suggested to explain periodontal diseases and recently tested in elderly populations. These are the "socio-ecologic model" (Hansen et al, 1993) (Fig.1.4), already applied to dental caries, and the model integrating personal factors and social environment, proposed by Clarke and Hirsch (1995) (Fig.1.5).

![Socio-ecologic model of periodontal disease (Hansen et al, 1993)](image1)

![Model of periodontal disease integrating personal factors and social environment (Clarke and Hirsch, 1995)](image2)
It has been pointed out that a limitation of such a multifactorial approach is that many of
the concepts proposed are only partially scientifically tested, and so have limited
diagnostic value. In addition, psychosocial variables affecting oral health may well be
more evident in adults, because oral health status in children will be affected by parental
influence on, for example, attendance for dental care (Eriksen and Bjertness, 1991).

Despite the alternative models proposed, a full explanation of oral health, accounting for
the relative importance of its main determinants, has not yet been proposed. A review of
psychosocial models of general health may give some insights relevant to oral health.

1.2.2.2- Psychosocial models of general health

One of the first psychosocial health models proposed was the "health field concept", which
was presented in the Canadian government’s white paper, *A new perspective on the health
of Canadians* (Lalonde, 1974). This broader view was an attempt to shift the focus of
health from an exclusive concern with health care. It proposed that the determinants of
health status could be categorized under the headings of four fields: life-styles,
environment, human biology, and health care organization. The model suggested that the
control of the first three categories might contribute more to the improvement of human
health than further expansions in the health care system (Fig.1.6).

![Figure 1.6 - The health-field concept (Lalonde, 1974)](image)

However, the focus on life-styles led to emphasis on individual risk factors as contributors
to disease, and the potential significance of the processes operating on health at the level
of groups and populations was obscured. Also, it led to emphasis on specific diseases, in
the traditional sense. The focus on individual risk factors and particular diseases has thus served to maintain existing institutions and ways of thinking about health.

Since the publication of the "health field concept", a great deal of evidence has been accumulated, directing attention to the importance of social relationships on disease. A very broad set of relationships such as stress, factors protective against stress, feelings of self-esteem and self-worth, or hierarchical position and control, or conversely powerlessness have been suggested as having health implications quite independent of the conventional risk factors.

These factors have provided possible explanations for the relationship between diseases and socioeconomic status, or why lower income and/or lower social status are associated with poorer health. The evidence is that in developed countries the relationship is not an indication of deprivation at the lower end of the scale, but holds across the whole socioeconomic spectrum. People in top social positions are healthier than those in lower positions, even after adjustment for the effects of specific individual or environmental hazards (Marmot, 1984). This implies that there are underlying factors that influence susceptibility to a whole range of diseases, which are general rather than specific risk factors.

Several theoretical models of health derived from research into stress and social relationships have been presented. Hanson (1988) proposed a model emphasizing the importance of the social environment to health, attempting to explain the dynamic relationships between the various aspects of social network, social support and social influence (Fig.1.7).

Models linking work environment and health status have also been suggested, and tested mainly in studies about cardiovascular diseases. The "job strain model", proposed by Karasek (1979) aims to explain how the work environment may result in a stressful situation. It assumes that stress results from the interaction of two types of job characteristics - job demand and job decision. Job demand is defined as the psychological stressor affecting work, while job decision is defined as the individual’s potential control
Social class
Educational level
Financial resources
etc
Social anchorage
Social participation
Contact frequency
Social influence
Social support

Non social network-related resources
Social network-resources

Figure 1.7 - Social environment model of health (Hanson, 1988)

Individual Response
--- Behaviour
--- Biology

Social Environment
Physical Environment
Genetic Endowment

Health & Function
Disease
Health Care

Well-Being
Prosperity

Figure 1.8 - Expanded health-field concept of health (Evans and Stoddart, 1990)
over his tasks and his conduct during the working day. Stress, and subsequent physiological illness occurs when the psychologic demands of work are high and the person’s ability to deal with those demands is simultaneous low.

Two other approaches to work and health have been developed. The "effort-effect model", also based on personal control and workload, emphasizes the importance of personal control as a buffer against harmful stress effects (Frankenhaeuser, 1989). The difference between the "job strain model" and the "effort-effect model" is that the latter added a physiological dimension to the model, contributing to elucidate how work stress affects health. Siegrist's "effort-reward imbalance model" includes work effort, and status control and work reward; assuming that the imbalance between work effort and long-term reward increases the risk of cardiovascular events (Siegrist and Matschinger, 1989).

A comprehensive and broader model to explain general health was recently proposed by Evans and Stoddart (1990), which is an expanded framework of the "health-field concept", incorporating broader dimensions, such as social and physical environment, genetic endowment, health care, the production of wealth, well-being and individual response (biological and behavioural factors) (Fig.1.8).

Hancock (1993) developed three ecological models of health, human development and the community through the 1980s. The "mandala of health" was suggested as a three-dimensional health model of the human ecosystem, encompassing the individual, the family, the community and its built environment and the wider society and natural environment (culture and biosphere). The "human development model" suggests the interrelationship between health (and more generally, social factors), environment and economy. The third and most comprehensive of these, the "model of health and the community ecosystem", attempts to integrate the concepts of health and sustainable development in the context of the community.

The "model within a model" (Collins, 1995) is another attempt to provide a dynamic representation of the major determinants of individual and community health. It highlights the multiple levels of health determinants and their implications for health-promotion
practice and policy development. The model asserts the importance of structural factors such as economic and political environment without suggesting, however, a deterministic hierarchical structure.

In the last two decades a new approach has emerged as an alternative to the pathogenic paradigm, as well as to the stress research which has concentrated only on the potential harmful conditions of life. The salutogenic model of health assesses factors that promote or enhance health rather than cause disease. The model, proposed by Antonovsky (1981), has gained widespread attention and has been used in a large number of studies. Due to its relevance to the present study, the Salutogenic model will be described separately in Section 1.2.5.

Despite the wide range of different psychosocial models that have been proposed, a complete explanation for the differences in health status between different groups of people has not yet been provided. Studies using such approaches have shown inconsistent results, and a need for further theoretical and also methodological development has been indicated. In addition, the mechanisms linking psychosocial factors and health are poorly understood (see Sub-section 1.2.2.3). Therefore, a better conceptualization of health through research on psychosocial factors is still needed.

Regarding the implications of such models to health care, it has been pointed out that, although the psychosocial determinants are not denied, no account is taken of such relationships in the formulation of health care policies. This may be partly due to the persistence of incomplete and obsolete models, or intellectual frames of reference, for conceptualizing the determinants of health (Evans and Stoddart, 1990).

1.2.2.3- Mechanisms linking psychosocial factors and disease
Although there has been an increasing interest on the link between psychosocial factors and disease, relatively little work on a theoretical or experimental level has been done on proposed mechanisms which may mediate this relationship.

Based on accumulated scientific evidence from both human and animal research, Cassel
(1976) believed that psychosocial factors play a significant role in the manifestation of health and disease by impacting the resistance of the human host, for better or for worse, depending upon circumstances. In summary, psychosocial factors may act pathogenically by increasing susceptibility to disease and thus weakening the host, while other psychosocial factors (or the same factors in different contexts or different populations) may act salutogenically by decreasing susceptibility to disease and enhancing overall constitution and thus strengthening the host. More recently, these beliefs have been supported by studies on the impact of social environment on human psychology, as well as on links between human psychology and elements of the nervous, endocrine and immune systems, the field of psychoneuroimmunology (Maier et al, 1994).

A comprehensive review of the studies on the role of psychological factors in physical disease from the perspective of human psychoneuroimmunology was recently carried out by Cohen and Herbert (1996). The main conclusions are highlighted below:

(i) There is evidence that psychological factors might alter immunity and disease susceptibility through two main pathways: direct innervation of the central nervous system and immune systems, and hormonal pathways (Fig.1.9). In addition, immunity may be influenced by psychologically induced changes in health behaviours, e.g. smoking and poor dietary practices, which may have immunosuppressive effects, or degree of adherence to medical regimens;

![Diagram](image)

**Figure 1.9 - Pathways through which psychological factors might influence onset and progression of immune system-mediated disease (Cohen and Herbert, 1996)**
(ii) There is substantial evidence that psychological factors such as stressful life events, clinical depression, negative affect, social support, and repression/denial can influence both cellular and humoral indicators of immune status and function; and
(iii) When prospective or intervention studies on the role of psychological factors in the onset and progression of infectious diseases, autoimmune diseases, and cancer were reviewed, consistent and convincing evidence was found of links between stress and negative affect and colds, influenza and herpes. Evidence on the other diseases is less consistent and inconclusive. Furthermore, it is not clear whether the associations between psychological factors and disease that do exist are attributable to immune changes or to psychologically induced changes in health behaviours.

These conclusions are supported by previous reviews (Dorian and Garfinkel, 1987; Kaplan, 1991). Besides, there is a consensus that further research on the hypothesized pathways linking psychosocial variables and disease is still needed to clarify the complex interactions and mediating mechanisms.

1.2.3- Psychosocial factors, dental caries and periodontal diseases

In spite of the vast amount of studies found in the literature on psychosocial factors and oral health, the research effort invested in the psychosocial causes of oral disease is small when compared with that invested in the physical and biological causes.

Psychosocial factors of importance for oral diseases include sociodemographic and psychological, as well as cognitive factors. Sociodemographic factors such as age, sex, race, and socioeconomic status have received considerable attention. The socioeconomic characteristic most frequently identified with caries risk in children is the education level of the parents; while others include parents’s occupation, maternal age of marriage, family size, income, socioeconomic status (SES) score or social class. Psychological factors have been much less investigated, and have focused mainly on stress, although psychiatric disturbances and personality factors have also been included. Cognitive factors have included concepts such as locus of control and self-efficacy.

The psychosocial factors discussed in this study are socioeconomic status, psychological,
and cognitive factors, due to their relevance to the hypotheses to be tested.

1.2.3.1- Socioeconomic status

There is strong evidence that social factors affect oral health (Beal, 1996). Most studies in industrialized countries tend to show that caries rates are higher among children of lower social class both for primary teeth and permanent teeth. Similar trends have also been observed among young children in Brazil (Freire et al, 1996), while in other developing countries, especially from Africa and Asia, dental caries prevalence increases with the degree of urbanization (Miura et al, 1997). Although the mechanisms are not clear, it has been suggested that the most likely effect of SES on caries is an indirect one, through effects on behaviour such as sugar consumption and oral hygiene, that will influence biological factors (Litt et al, 1995).

The relationship between dental caries and SES measures found among children in industrialized countries also exists among young and middle-aged adults, and the differences are mainly in relation to missing and filled teeth scores (Hunt, 1990; Eriksen and Bjertness, 1991).

The link between SES and its concomitant and periodontal diseases has also been extensively researched, and there is evidence that severity of periodontal diseases increases with low SES (Richards and Barmes, 1971; Beal, 1996).

The socioeconomic influence on adolescents’ oral health is discussed in section 1.2.6.

1.2.3.2- Psychological factors

Stress
The term "stress" has been defined as a general body reaction in response to a variety of physical or psychological stimuli, and there has been no clear criteria for body stress for use in population studies. Alternatively, stress is said to be present if the environmental stimuli lead to increased disease risk (Selye, 1957). The link between stress and oral health has been demonstrated in many investigations regarding dental caries and
periodontal diseases, summarized here.

**Stress and dental caries**

Early research on psychological factors and dental health focused on issues such as psychiatric disturbances and personality factors, such as I.Q. scores, attitudes to authoritarianism and personal autonomy, mental retardation and neurotic tendencies. More recent work has used a broader and more systematic approach, and attempts to access the effect of stress and life events on oral health.

In the early 1960s a highly significant association was found between the occurrence of acute dental caries and mental stress in adults (Sutton, 1962; 1965). In a later report, Sutton (1993) suggested that the onset of acute dental caries, following severe mental stress, occurs not only in Europeans, but also in other societies.

Animal experiments have supported Sutton’s findings. Borysenko et al (1980) showed that the stress of crowding and exposure to inescapable electric shock increased both the incidence and the severity of dental caries in rats. Tumshevits et al (1989) demonstrated that the adverse effect of stress induced in pregnant rats was reflected in reduction of preventive efficacy of fluoride given antenatally and postnatally to the offspring.

Similar results have been shown in other studies among adult humans. Beck et al (1986) showed a positive association between negative life events and root caries. Honkala et al (1992) found a consistent association between caries experience and stress among South African political refugees, defined by perceived stress and sleeping problems, and stressful experiences. Marcenes et al (1993) reported a significant association between oral symptoms and a range of life events - marital or family problems other than divorce, death of a relative, personal serious illness, serious illness of a close relative, major financial difficulty, and mugging and robbery. Results of a three-year follow-up showed that biological and economic factors, together with psychosocial factors such as limited help from others, some symptoms of depression, lower occupational prestige, and increased numbers of negative life events, are related to increased risk of tooth loss among older adults (Drake et al, 1995).
Studies including the family environment have also been carried out. Marcenes (1991) in a study among Brazilian families, showed that marital quality had an impact on the oral health status of fathers, mothers and their 13-year-old children. Tumshevits et al (1990) showed that mothers’ emotional stress in the period when the hard tissues of deciduous teeth are being formed in the fetus, reduced resistance to caries in the teeth of their infants and lowered the prophylactic effect of fluorine. Adamowicz-Kleplaska and Burkiewicz (1990) reported poorer dental and periodontal status among children and adolescents exposed to sociopathies (from families of alcoholics and lowest groups of the society) than in their peers from normal families. Wendt et al (1995) investigated children’s mental health, family interaction, and stressful life events in 7 families of children who had developed caries before the age of two years. The results showed that in all families, life events had occurred, which had caused a great deal of stress. On the other hand, Reisine and Litt (1993) indicated that mothers with higher stress levels had children with lower caries rates.

Investigations carried out on children, have also shown the importance of psychosocial factors. Shimura et al (1983) found a statistically significant relationship between dental caries and anxiety, and some types of personality, among children. Personality characteristics such as dependency, regression, nervousness and emotional instability were also related to an increase in dental caries (Ozaki et al, 1991). Vanderas et al (1995) examined the association between dental caries and urinary catecholamine levels, used to measure emotionally stressful states. The results showed statistically significant differences in epinephrine values between children with and without caries, suggesting that children with emotionally stressful states are more likely to develop dental caries.

Researchers have suggested that a probable physiological mechanism mediating the effects of emotional stress on caries is salivary activity, such as flow rates of saliva and chemical composition (Haldi et al, 1962). It has been pointed out that emotional stress may affect the endocrine system and cause changes in salivary glands, resulting in reduced flow rate. This would reduce salivary efficiency to interfere with bacterial adherence to tooth surfaces, as well as reduce remineralization. As a consequence, caries susceptibility may increase. Also, stress would influence the level of antibody production, reducing the
secretory IgA component of saliva (Gisler, 1974).

Sutton (1990) suggested that acute caries after stress is due to the disturbance of the passage of lymphokynes which normally happens during the movement of ions through the tooth from the pulp. This would rapidly reduce the reparative processes in enamel and the efficacy of the immune system at the tooth surface, decreasing its defence against bacterial attack.

According to Locker (1989) it is also possible that behavioural as well as physiological factors are involved in the link between stress and caries. For example, it is possible that changes in diet and oral hygiene occur during periods of social and emotional disruption; that will increase susceptibility to oral disease.

**Stress and periodontal diseases**
The relationship between periodontal diseases and psychological status is well documented. As for dental caries, earlier studies focused on issues such as psychiatric disturbances and personality factors. More recent studies have investigated stress as a causal factor in populations exposed to naturally occurring stressful events. Periodontal disease was more severe and widespread as stressors increased (Green et al, 1986), and it was significantly associated with work-related mental demand and marital quality (Marcenes and Sheiham, 1992). Linden et al (1996) found that occupational stress may have a relationship with the progression of periodontitis in employed adults. Monteiro da Silva et al (1996) reported that a group of adult patients with rapidly progressive periodontitis were more depressed and lonely compared with a group with routine chronic adult periodontitis and a control group. Croucher et al (1997) showed an association between periodontitis and a number of negative life-events.

Several pathways have been proposed to explain the relationship between emotional states and various periodontal disorders. Ballieux (1991) indicated that stress may affect periodontal health through changes in the immunologic system. Davis and Jenkins (1962) suggested that emotional disturbance alters concentrations of adrenal corticoids and hormones, possibly affecting the periodontium. Gupta (1966) proposed general
mechanisms of action involving changes of saliva secretion and composition to account for the link between stress and periodontal diseases. Others have suggested the direct effect of changing levels of corticosteroids on the periodontium; the reduction of the local tissue nutrition through changes in vascularization; and the alteration in dietary and oral hygiene habits.

**Measures of morale: self-esteem and self-concept**

Self-esteem is a belief that one is a person of value, accepting personal strengths and weaknesses (Wells and Marwell, 1976). Researchers in the oral health field have shown that adolescents with high self-esteem were more likely to brush their teeth regularly, or to make them feel clean (Macgregor and Balding, 1991; Regis et al, 1994; Macgregor et al, 1997a), and to report more frequent dental visits (Macgregor et al, 1997a). Berkey et al (1985) found a strong negative correlation between self-esteem and perceived dental problems in a group of dentulous elderly subjects, but no correlation between these two variables among edentulous subjects.

Self-concept is the cognitive component of the self and consists of individuals’ perceptions of themselves, i.e. what I am really like? (Fitts, 1965). Studies among the elderly have shown a positive correlation between self-concept and self-perceived current dental appearance. No correlation was found between self-concept and importance of dental appearance as well as dental status (Gordon et al, 1988).

**1.2.3.3- Cognitive factors**

Self-efficacy and locus of control are concepts developed from social-learning theory (Bandura, 1977a), which asserts that the likelihood of a specific behaviour is determined by the results expected to follow that behaviour.

**Self-efficacy**

Self-efficacy refers to expectancy of competence to behave in a way that will influence outcomes (Bandura, 1977b). Some studies using the self-efficacy concept in relation to oral health have been carried out. McCaul et al (1985) showed that subjects who had more general self-efficacy had a higher toothbrushing and flossing frequency and lower plaque
scores. Tedesco et al (1991, 1993) reported that confidence in ability to prevent periodontal disease significantly predicts adherence to oral hygiene regimens, and that self-efficacy for a preventive regimen can be enhanced with intervention. Reisine and Litt (1993) indicated that children whose mothers had lower self-efficacy had more caries.

**Health locus of control**

Health locus of control measures to what extent people believe that their health is influenced either by their own behaviour or else by external causes (Rotter et al, 1972). People whose locus of control is internal tend to believe that they can control events, whereas those with an external locus of control tend to believe that events are controlled by forces external to them, such as powerful others or chance.

Only a few studies have used the locus of control concept to explain oral health behaviour and outcomes. Results have been inconsistent. Some investigations have found no consistent relationship between locus of control and oral hygiene performance (Ayer et al, 1973; Weiss and Diserens, 1980; Odman et al, 1984; Bagley and Low, 1992); others have found an association between poorer oral hygiene and external locus of control (Ludenia and Donham, 1983; Galgut et al, 1987; Wolfe et al, 1991). Significant associations were found between toothbrushing behaviour and health locus of control, although the correlation was lower than that between toothbrushing and self-esteem (Regis et al, 1994; Macgregor et al, 1997a).

Williams (1972) showed an association between internal locus of control and seeking regular preventive dental visits among female schoolchildren and their fathers. Duke and Cohen (1975) found that non-cooperative adult patients had more external locus of control than cooperative patients. Mangelsdorff and Brush (1978) suggested that military personnel exhibiting higher external locus of control scores needed more dental care than those with higher internal locus of control scores. Reisine and Litt (1993) found that mothers with more external locus of control beliefs had children with higher caries levels.

**1.2.4- Self-rated health and self-rated oral health**

Self-ratings of health, defined by responses to a single question such as "How do you rate
your health?" using a four- or five-point scale ranging from "excellent" to "poor", have been frequently used in epidemiological research in the last 15 years. There is evidence of correlations between physician and patient ratings of health, suggesting that self-ratings of health are useful indicators of actual health status. Idler and Benyamini (1997) reviewed 27 community studies on self-rated health and mortality and found impressively consistent findings. An increased risk of death is found among those who report their health as poor, and nearly all the studies have indicated this association is independent of objective health status.

There have been several cross-sectional studies about the influence of psychological states on perceived health. The general finding is that distress is associated with poorer perceived health, even after controlling for other measures of health status (Maddox, 1962; Tessler and Mechanic, 1978; Krause, 1987; Levkoff et al, 1987; Farmer and Ferraro, 1997).

Within dentistry, self-assessed oral health has been discussed in the literature about dental needs. It has been suggested that people's self-assessment of their oral health, as well as satisfaction with the appearance of their teeth, should be considered as indicators of their dental needs. Measures of self-perceived oral health such as ability to chew, pain and discomfort, appearance and relationships with others have been used in studies of older populations (Locker and Slade, 1993; Leão and Sheiham, 1995).

A limited number of studies have investigated the relationships between clinically defined and self-perceived indicators of oral health using the single-item rating scale. Among these, only one was carried out among adolescents (Brunswick and Nikias, 1975). Although not conclusive, the results have indicated an association between clinical and subjective oral status (Brunswick and Nikias, 1975; Reisine and Bailit, 1980; Atchison et al, 1993; Matthias et al, 1995).

People's perceptions can be affected by sociodemographic factors. Older male patients in the upper socioeconomic class tended to have a more positive view of their oral health (Reisine and Bailit, 1980). Gilbert (1994) reported a higher level of identification that "something is wrong with teeth" among lower educational levels, lower income categories,
less privileged linguistic/cultural groups and black people in South Africa. In another study, race and education were among the major predictors of self-rated oral health (Matthias et al, 1995).

Studies among the elderly have shown an association between self-rated oral health and self-rated physical and mental health (Berkey et al, 1985; Matthias et al, 1995). As mentioned earlier, dentate subjects with greater self-esteem perceived fewer dental problems, although no correlation was found among edentulous subjects (Berkey et al, 1985). Matthias et al (1995) found that subjects who rated their teeth better had more positive scores for mental health, were less depressed, and were happier. Also, there was a relationship between self-rated oral health and self-rated general health.

Although dental appearance is important in social interaction, relatively little research has been conducted on its psychologic and behavioural significance. A significant association was found between self-concept and self-perceived current dental appearance among elderly patients (Gordon et al, 1988). There is evidence that dental status influences the perception and significance of the dental appearance. Oosterhaven et al (1989) demonstrated that a missing front tooth resulted in higher psychological and social impact in adults compared with missing pre-molars and a control group. The degree of parent and child satisfaction with the child’s dental appearance has been linked with malocclusion and fluorosis (Woodward et al, 1996).

1.2.5- The salutogenic model of health

The dominant paradigm of modern Western medicine, including medical research and practice, is pathogenic, focusing on diagnosable diseases. The conventional dichotomous classification of all people as healthy or diseased is used both by clinicians and epidemiologists.

In the last decade, a new hypothesis - the salutogenesis - has been proposed by Antonovsky (1981), a medical sociologist from Israel. Dissatisfied with stress research which has concentrated only on the potential harmful condition of life, he turned his attention to resistance resources within the individual. Salutogenesis, from saluto (health)
and genesis (origins), seeks to explain factors that promote health as distinct from those that modify the risk of specific diseases. The focus of concern is maintenance or improvement of people’s location on a health ease/dis-ease continuum, rather than the health-disease dichotomy. The model’s central construct - the Sense of Coherence (henceforth, SOC) - seeks to explain the relationship between life stresses and health. The theory suggests that stressors are intrinsic to human situations and that the stronger the SOC of individuals and groups, the more adequately they will cope with these stressors, and hence maintain their health.

This review of the salutogenic theory is based mainly on Antonovsky’s postulates (Antonovsky, 1981, 1987). In addition, the empirical evidence on the relationship between SOC and health is reviewed.

1.2.5.1- The origins of the concept
Influenced by René Dubos, Antonovsky began to explore psychological, social, and cultural adaptability as keys to successful stress management. His findings about the association between migration to Israel and coronary heart disease among North Americans, and about the relationship between menopause-adaptation and cultural structure among Israeli women, influenced him in his development of the salutogenesis theory.

The menopause-adaptation study was of survivors of Nazi death-camps in the 1939-45 world war, compared with a control group with no such background of severe stress. He found that significantly fewer of the camp survivors than of the control group adapted well to menopause. But he also found that among the camp survivors, some women were reasonably healthy and happy, had raised families, worked, had friends, and were involved in community activities, in spite of their traumatic experience.

Antonovsky (1981) proposed that an understanding of the mystery of survival and healthy adaptation, should help to promote health and reduce disease among the general population. He also found differing degrees of health, not readily explained by biomedical factors, among other population groups, including the elderly, the poor, blacks, and other minorities (Antonovsky, 1981). He did not propose that the salutogenic model is a
complete explanation of the determinants of health and disease, but that it gives an
important insight into how to cope with stress to prevent disease and promote health
(Antonovsky, 1987).

1.2.5.2- Pathogenesis versus salutogenesis

According to Antonovsky, although pathogenesis and salutogenesis can have a
complementary relationship, there are three reasons why the pathogenic model can be a
handicap in understanding health and disease:

"1. The pathogenic approach pressures us to focus on the disease, on the
illness, on the alteration of body fluids or structures, and to disregard the sickness (...) it blinds us to the subjective interpretation of the state of affairs of the person who
is ill. (...) Salutogenesis, by contrast, opens up, or even compels us to examine,
everything of importance about people who are ill, including their subjective
interpretations of their state of health.

2. Thinking in pathogenic terms is most comfortable with the 'magic-bullet'
approach - one disease, one cure - which explains the resistance of many to the
concept of multiple causation ... we can only become pessimists. But using a
salutogenic model, asking questions about what maintains health, allows us to go
beyond "not smoking" or "vaccinating against polio" or "eliminating smog".

3. Pathogenesis by definition is a model that postulates a state of disease that
is qualitatively and dichotomously different from a state of nondisease. The individual
is sick or well. The organ is diseased or nondiseased. The condition is pathological
or non-pathological. (...) salutogenic model, a multidimensional health-illness
continuum between two poles that are useful only as heuristic devices and are never
found in reality: absolute health and absolute illness". (Antonovsky, 1981, p.36)

Thus, while pathogenesis asks what causes a person to become ill with a particular
disease, salutogenesis asks what are the factors pushing a person toward one or the other
end or toward that end of a continuum. No assumption is made that one is well and
becomes sick, but "...the commitment is to seeing people at some point on the health
continuum at any given time and continually confronted with stressors and hence with the
problem of preventing tension from becoming stress. In this way, the SOC is always
hypothesised to be a relevant factor." (Antonovsky, 1981 p.196).

1.2.5.3- The Sense of Coherence concept
Sense of Coherence was first proposed in 1979 by Antonovsky in his book "Health, Stress and Coping". It was further developed in a later book "Unravelling the Mystery of Health" (1987), where SOC is defined as:

"... a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that
1. The stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable;
2. The resources are available to one to meet the demands posed by these stimuli; and
3. These demands are challenges, worthy of investment and engagement"


Thus, the three core components of the SOC are, respectively, comprehensibility (the cognitive component), manageability (the instrumental component), and meaningfulness (the motivational component), the last being the most crucial. A person with a strong SOC is high in these three components, while a person with a weak SOC is low. In other words, a person with a strong SOC feels that the world makes sense; that the challenges posed by living can be handled reasonably well; and that one cares about engaging these challenges. The SOC, according to the model, is a determinant variable affecting health outcomes and other aspects of well-being.

Figure 1.10 presents a diagram of the salutogenic model as defined by Antonovsky (1981), showing the complex interrelationships between the variables.
Figure 1.10 - The salutogenic model of health (Antonovsky, 1981)

Arrow A: Life experiences shape the sense of coherence.
Arrow B: Stressors affect the generalized resistance resources at one's disposal.
Line C: By definition, a GRR provides one with sets of meaningful, coherent life experiences.
Arrow D: A strong sense of coherence mobilizes the GRRs and SRRs at one's disposal.
Arrow E: Childrearing patterns, social roles complexes, idiosyncratic factors, and chance build up GRRs.
Arrow F: The sources of GRRs also create stressors.
Arrow G: Traumatic physical and biochemical stressors affect health status directly; health status afflicts extent of exposure to psychosocial stressors.

Arrow H: Physical and biochemical stressors interact with endogenic pathogens and "weak links" and with stress to affect health status.
Arrow I: Public and private health measures avoid or neutralize stressors.
Line J: A strong sense of coherence, mobilizing GRRs and SRRs, avoids stressors.
Line K: A strong sense of coherence, mobilizing GRRs and SRRs, defines stimuli as nonstressors.
Arrow L: Ubiquitous stressors create a state of tension.
Arrow M: The mobilized GRRs (and SRRs) interact with the state of tension and manage a holding action and the overcoming of stressors.

Arrow N: Successful tension management strengthens the sense of coherence.
Arrow O: Successful tension management maintains one's place on the health ease/dis-ease continuum.
Arrow P: Interaction between the state of stress and pathogens and "weak links" negatively affects health status.
Arrow Q: Stress is a general precursor that interacts with the existing potential endogenic and exogenic pathogens and "weak links".
Arrow R: Good health status facilitates the acquisition of other GRRs.

NOTE: The statements in bold type represent the core of the salutogenic model.
Sense of Coherence is developed throughout life and is shaped by life experiences. The more a person's life experiences are characterized by consistency, participation in socially valued decision-making, and an underload-overload balance stimuli, the more the world is seen as coherent and predictable. In childhood SOC is tentative. In adolescence, the crucial stage for ego identity, it becomes more definite. Approximately a decade later, a considerable degree of permanence is obtained.

As shown in the diagram, life experiences can be shaped by stressors (psychosocial, physical and biochemical), but mainly by generalized resistance resources - GRRs (especially psychosocial, but also genetic and constitutional). The two major sources of GRRs are childrearing patterns and social-role complexes, although idiosyncratic characteristics and tendencies are also relevant, as well as chance.

Differences in the SOC are also affected by location in the social structure, since different social classes, ethnic and racial groups, and men and women, may have different life experiences.

The SOC is a deeply rooted, and stable dispositional orientation, but is not rigidly fixed. It is unlikely that one's SOC, once formed and set, will change in any radical way. Fluctuations will be minor. Thus, for example, anybody whose child is killed in a traffic accident will be emotionally disorientated, and their world will become incoherent; but a person with strong SOC will recover better from this temporary state (Antonovsky, 1987).

The role of the SOC in management of tension is by mobilizing those GRRs appropriate to overcome stressors. A person with a strong SOC is more likely to define a stimulus as a nonstressor or, when it is appraised as a stressor, to define it as irrelevant or benign.

Although the mechanisms and channels linking the SOC to health are not well established, the most likely explanation seems to be immunological. It may be that a person with a strong SOC, when confronted with stressors, can activate a variety of immunological factors and prevent tension from being transformed into stress.

Sense of Coherence is described as not situation- or role-specific and can be measured in
an ordinal scale, revealing people’s location at some point on the SOC continuum. Most people would score from extremely low to moderately high; an extremely high position on the continuum would require an unrealistically stable world. The instruments developed to measure SOC are described in the following Sub-section.

1.2.5.4- The Sense of Coherence scale
A 29-item closed questionnaire, the Sense of Coherence Scale, was developed to operationalize the construct. It was first published in 1983, and consciously formulated to be applicable crossculturally (Antonovsky, 1987). The SOC scale was field-tested in Hebrew, with an Israeli national sample, and has since been used by Antonovsky and others in both Hebrew and English, and also other languages. In its operational format the SOC scale is called "The Orientation to Life Questionnaire", usable both for interview and self-completion. Respondents are asked to select a response, on a seven-point semantic differential scale with two anchoring phrases. A high score always expresses a strong SOC. Each scale item corresponds to one of the three components of the construct. Therefore, there are 11 comprehensibility, 10 manageability and 8 meaningfulness items.

In addition to the long version, a shortened scale including 13 of the 29 items is available (Antonovsky, 1987). This has been tested by other researchers and was selected to be used in the present study (see Appendix B.3). Of the 13 items, 5 refer to the comprehensibility component (Questions 2, 6, 8, 9, and 11), 4 to manageability (Questions 3, 5, 10 and 13), and 4 to meaningfulness (Questions 1, 4, 7 and 12). The possible range of scores is from 13 to 91.

A review of 61 studies using the SOC concept was carried out by Antonovsky (1993), and evidence for the feasibility, reliability and validity of the scale from 20 countries was analysed. The SOC scale has been used in 14 languages, among all social classes, and among adults of all ages and adolescents. Cronbach alpha measure of internal consistency has ranged from 0.82 to 0.95 in 26 studies using SOC-29, and 0.74 to 0.91 in 16 studies using SOC-13. The relatively few test-retest correlations showed considerable stability.

Two adaptations of the original SOC scale have also been suggested and tested in Israeli
populations. The Family SOC Scale (Antonovsky and Sourani, 1988; Sagy and Antonovsky, 1992) was developed as an attempt to translate the SOC construct from the individual to the family level. The Children's SOC Scale (Margalit, 1998) was used to investigate loneliness and coherence among preschool children with learning disabilities. A three-item scale was used in a Swedish study (Lundberg and Nyström Peck, 1994), although its adequacy to measure the SOC construct is debatable.

1.2.5.5- Empirical evidence of the link between Sense of Coherence and health

The salutogenic approach has been increasingly used and cited in the literature in recent years. According to Antonovsky's review on published studies (Antonovsky, 1993), the vast majority have demonstrated statistically significant correlations of the expected direction between SOC and various health outcomes:

(i) generalized perceptions of self and environment, such as internal locus of control, self-esteem, hardiness, anxiety trait, personality and family environment;
(ii) perceived stressors, such as life events, work load and work control;
(iii) health, illness and wellbeing, such as health status, perceived health, physical and psychological wellbeing; and
(iv) attitudes and behaviours, such as social support, attitudes to retirement and high risk behaviours.

An up to date review for the purpose of the present study, including both published and unpublished studies, revealed a vast amount of research on the relationship between SOC and psychological outcomes. There is strong evidence that SOC is positively related to several measures of adjustment to chronic diseases such as insulin-dependent diabetes (Lundman and Norberg, 1993), cancer (Langius et al, 1994), AIDS (Linn et al, 1993), and rheumatoid arthritis (Hawley et al, 1992; Callahan and Pincus, 1995; Büchi et al, 1998). However, only a few studies have investigated the relationship between SOC and physical health outcomes. Studies linking SOC and physical health status, health-related behaviours, and self-rated health status are summarized in Tables 1.1 and 1.2.

Two studies have been carried on oral cancer. Sinclair-Cohen (1993) showed no association between the disease and SOC. Langius et al (1994) found a correlation...
between SOC and functional status in a group of patients treated by surgery for oral or pharyngeal cancer. The stronger the SOC, the less the functional impairment. No study using the salutogenic model in relation to dental and periodontal health, as well as other oral health outcomes, has been identified in the scientific literature.

Several methodological limitations apply to the studies reviewed. First, there is no sound evidence of causality, since very few studies are longitudinal. Second, the large majority of the measures were self-report inventories. Third, inadequate sample sizes and sampling procedures have been used in many studies, and only a few were based on samples of the general population (Lundberg and Nyström Peck, 1994; Lundberg, 1997). Finally, different instruments have been used to measure SOC.

Only a few studies have been carried out on SOC among adolescents. The shortened version of the SOC questionnaire, consisting of 13 items, has been used. Antonovsky and Sagy (1986) investigated the development of the SOC and its impact on the emotional responses to stress situation in a sample of 14 to 18 years old pupils in Israel, who were about to be evacuated from their homes in the Sinai settlements. Results showed that age, sex, and stability of community were related to the development of the SOC. The SOC was negatively related to state anxiety responses but showed no relationship to emotional responses to the acute communal stress situation studied. Margalit and Eysenck (1990), in a study of Israeli pupils aged 12 to 16 years, reported that adolescents’ SOC was predicted by sex, social skills, some personality factors, and a family climate variable.

1.2.5.6- Sense of Coherence and other concepts

Several salutogenically-oriented theories attempt to identify personal characteristics which act as buffers to illness, such as locus of control (Rotter et al, 1972), hardiness (Kobasa, 1982), self-efficacy (Bandura, 1977b), or coping style (Lazarus and Folkman, 1984). However, rather than attempting to determine what factors act as buffers to illness, the focus of Antonovsky’s (1987) theory are those factors that contribute directly towards health.
Table 1.1- Previous studies on the association between Sense of Coherence, physical health status and health-related behaviours

<table>
<thead>
<tr>
<th>Author (year)</th>
<th>Sample (age)</th>
<th>Variables</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larsson and Setterlind¹</td>
<td>217 male Swedish workers (26-64 yr)</td>
<td>.Systolic blood pressure .Diastolic blood pressure .Cholesterol, triglycerides and glucose .BMI .Waist-hip ratio .Diet .Exercise, smoking and alcohol</td>
<td>*0.31</td>
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<td></td>
<td></td>
<td></td>
<td>*0.17</td>
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<td></td>
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<td>*0.16</td>
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<td>*0.25</td>
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<td></td>
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<td>*NS</td>
</tr>
<tr>
<td>Nyamathi² (1991)</td>
<td>581 homeless or drug-abusing North-American women (18-69 yr)</td>
<td>.High risk behaviours for HIV</td>
<td>*-0.24</td>
</tr>
<tr>
<td>Viikari-Juntura et al³</td>
<td>154 Finnish (32-44 yr)</td>
<td>.Neck-shoulder .Low-back pain</td>
<td>**0.97⁵</td>
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<td></td>
<td></td>
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<td>**0.95⁶</td>
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<td>**0.95⁵</td>
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<td>**NS⁸</td>
</tr>
<tr>
<td>Midanik et al⁴ (1992)</td>
<td>952 retired North-Americans (60-66 yr)</td>
<td>.Alcohol problems</td>
<td>*-0.22</td>
</tr>
<tr>
<td>Sinclair-Cohen⁵ (1993)</td>
<td>128 British patients (18 yr and over)</td>
<td>.Oral cancer</td>
<td>*NS</td>
</tr>
<tr>
<td>Breschel⁶ (1994)</td>
<td>104 North-Americans (65 yr and over)</td>
<td>.Health and mortality</td>
<td>**NS⁸</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>**0.69⁶</td>
</tr>
<tr>
<td>Kivimäki et al⁷ (1997)</td>
<td>763 Swedish workers (mean= 40.6⁸ / 41.6⁸ yr)</td>
<td>.BMI .Alcohol consumption .Smoking .Physical activity</td>
<td>*-0.14⁸</td>
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<td></td>
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<td>*NS⁸</td>
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<td></td>
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<td>*0.35⁸</td>
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</tbody>
</table>

SOC scales used: *9-item; ¹13-item; ²19-item; ³28-item; ⁴29-item
Gender: ⁵Male; ⁶Female
Statistical method: * Correlation (r); ** Regression (Risk Ratio)
A review of the empirical evidence on SOC showed strikingly high correlations between SOC and trait anxiety and hardiness, particularly the latter (Antonovsky, 1993). However, as stated by Antonovsky (1996), the SOC components seem to be close to concepts like optimism, will to live, self-efficacy, learned resourcefulness, and hardiness. But the SOC concept has a particular combination of the cognitive, behavioural and motivational dimensions. Moreover, unlike concepts such as internal locus of control, mastery, empowerment, and problem-solving coping, the SOC is not a culture-bound concept, but it is universally meaningful (Antonovsky, 1996).
More recently, Geyer (1997) reviewed studies using the SOC scale and detected very high correlations between SOC measures and depression/anxiety. He indicated that the positive aspects of such similarities is that the salutogenic approach of research is strengthened by other theories in the same domain of explanation.

1.2.5.7- Implications of the salutogenic model for health care

According to Antonovsky (1981), health care workers, as a potential Generalized Resistance Resource, can structure life experiences for people during encounters with the health care system that affect their SOC. Life experience of the patient-doctor encounter can be characterized by a high or low degree of consistency, participation in shaping outcome and underload-overload balance. If the experience is high in these three aspects, the SOC is maintained or reinforced.

Physicians and other health care workers' possibilities are liable to promote SOC, since they work within a constrained health care system and a social structure. Antonovsky (1981) suggests four initiatives to the medical profession, beyond the patient-doctor encounter, which should positively affect the SOC: making health care available to all; promoting preventive health; increasing trust in the physician; and targeting people at high risk of damage to the SOC.

1.2.5.8- Implications of the salutogenic model for health promotion

Antonovsky (1996) has claimed that one of the weaknesses of the health promotion concept is that it has concentrated on risk factors. Once the person is identified with the disease or at risk for it, the disease becomes the sole focus of attention. Using the salutogenic orientation as a basis for health promotion all persons would be encompassed, wherever they are on the continuum. The focus would be on salutary factors, which are those that actively promote health, rather than on risk factors, and people would be helped to move toward greater health. In the view of the limitations of risk factor approaches for conceptualizing and conducting research on health, the salutogenic orientation is therefore presented as a more viable paradigm for health promotion, providing the basis for the development of a more comprehensive theory in this field.
1.2.6- Factors affecting oral health in adolescence
Numerous studies assessing factors related to oral health in children and adolescents have been reviewed (Hunt, 1990). The studies reviewed here are of dental caries and periodontal diseases among 12-18 year old subjects. In a few studies younger and older groups are also included. The determinants of oral health in adolescents included here are sex, socioeconomic status, and other psychosocial factors; microbiological and salivary factors; oral health related behaviours; family patterns of oral health status and health-related behaviours; and general health and habits.

1.2.6.1- Sex, socioeconomic status and other psychosocial factors
Several investigations have been undertaken on the influence of sex and socioeconomic status in the oral health of adolescents. Girls have a higher caries prevalence than boys (Lachapelle-Harvey and Sévigny, 1985; Megas and Athanassouli, 1989; Tubert-Jeannin et al, 1994; Petridou et al, 1996). On the other hand, girls have lower plaque and gingival scores (Samuelson et al, 1971; Lachapelle-Harvey and Sévigny, 1985; Addy et al, 1990, 1994; Freeman et al, 1993; Taani, 1996), as well as lower calculus scores (Freeman et al, 1993).

Most of the studies on the influence of socioeconomic status on adolescent caries have shown that subjects with lower SES have more caries than those with higher SES (Koch and Martinsson, 1970; Sgan-Cohen et al, 1984; Megas and Athanassouli, 1989; Attwood et al, 1990; Dummer et al, 1990; Nitzschmann et al, 1990; Kallestål, 1991; Tubert-Jeannin et al, 1994; Petridou et al, 1996). Higher social class groups had also lower mean plaque index, and lower scores for calculus and shallow pocketing (Weissenbach et al, 1995; Taani, 1996).

Adolescents with less well-educated parents have more caries (Koch and Martinsson, 1970; Lachapelle-Harvey and Sévigny, 1985; de Vries et al, 1990; Larsson et al, 1997). Number and order of children in the family have also been correlated with caries (Koch and Martinsson, 1970; Nitzschmann et al, 1990). Better dental health status, as well as lower plaque and gingival scores among adolescents with a better school performance have also been reported (Nitzschmann et al, 1990; Weissenbach et al, 1995; Petridou et al, 1996).
Schreiber (1969) compared the personality characteristics of emotionally normal and emotionally handicapped adolescents who had high DMF with those who had low DMF. Results showed that the emotionally normal group who had low DMF scored significantly higher on dominance and self-acceptance than the emotionally normal group who had high DMF. However, there were no significant differences among the other dental groups on anxiety, responsibility, socialization, and self-control.

The influence of sex, socioeconomic status, and other psychosocial factors on oral health-related behaviours are discussed throughout Section 1.2.6.3.

1.2.6.2- Microbiological and salivary factors
Many studies have investigated microbiological and salivary factors in relation to caries in adolescence. Most of them have showed a positive correlation between caries prevalence and levels of \textit{S. mutans} (Zickert et al, 1982; Kristoffersson et al, 1986; Kingman et al, 1988; Beighton et al, 1989; Russel et al, 1990; Sundin, 1992; Buttner, 1994; Weissenbach et al, 1995). Correlations between dental caries and levels of lactobacilli have also been reported (Kingman et al, 1988; Russell et al, 1990; Raitio et al, 1996); and candida (Russell et al, 1990; Raitio et al, 1996).

When salivary factors were investigated, buffering capacity was consistently inversely related to decayed, missing and filled surfaces (DMFS); however, results on salivary flow rate are conflicting (Russell et al, 1990; Weissenbach et al, 1995).

1.2.6.3- Oral health-related behaviours

Sugar consumption
Two topics are covered in this section: first, a review of the evidence on the relationship between sugar consumption and dental caries in adolescence; second, a brief overview of factors affecting sugar consumption in adolescence.

Sugar consumption and dental caries in adolescence
Many epidemiological studies have examined the association between dietary habits and
caries among adolescents. Their results have been somewhat inconsistent. Some have shown a significant effect of sugar intake on caries prevalence; others have reported little or no correlation. These studies have been mainly cross-sectional and longitudinal.

**Cross-sectional studies**

Cross-sectional studies have generally found positive correlations between caries prevalence and consumption of some but not all sugared food consumed.

Koch and Martinsson (1971) studied dietary habits of high and low caries groups of 14 year-olds. They found no difference between the two groups in the number of regular meals and frequency of snacks between meals, but consumption of soft drinks and the use of sugared chewing-gum were higher or more common among children with high caries levels. Only 30% of the parents of children with frequent consumption of sugared snacks thought a reduction of their consumption was necessary, and no difference was found between the groups in relation to this attitude. Significantly more of the parents of children in the low caries than in the high caries group were aware of the risks involved by the frequent use of chewing-gum, but no difference was found on knowledge of the caries-promoting effect of frequent consumption of biscuits, soft drinks and lozenges.

A dietary study based on information given by the 14 year-olds showed no significant differences between the high and the low caries groups in mean daily intake of energy and nutrients. On the other hand, frequent consumption between meals was more common in the high than in the low caries group for several types of products containing sucrose, such as cola drinks, chewing-gum, and sweetmeats. The mean daily intake of energy and nutrients, as well as the mean daily sucrose intake and the between-meal consumption of sucrose, did not vary significantly with the socioeconomic background of the children. However, the sucrose consumption for the low caries children varied significantly with mother’s level of education. This was also true for the between-meal consumption of sucrose (Martinsson, 1972).

Lachapelle-Harvey and Sévigny (1983) found several significant associations between diet variables and caries in adolescents aged 12-17. The most significant were consumption of
More recently, caries experience has been associated with frequency of sweet consumption (Tubert-Jeannin et al, 1994) and consumption of sweet drinks during meals (Weissenbach et al, 1995). Approximal caries was related to frequency of between-meal sugar consumption, especially candy consumption (Árnadóttir et al, 1998). Intake of vegetables and milk products was associated with lower caries scores, whereas there was a non-significant tendency for sugar intake to be associated with higher caries scores (Petridou et al, 1996). Other researchers have found no significant relationship between the consumption of sucrose-containing between-meal snacks and DMFT (Bagramian and Russell, 1973; Sgan-Cohen et al, 1984).

The association between taste thresholds, taste preferences, and dental caries in 15 year-olds with low and high number of filled surfaces were investigated by Nilsson and Holm (1983). Recognition thresholds were determined for sweet, salty, sour, and bitter tastes and preferences for sweet taste. The results showed no statistically significant difference in thresholds and no correlation between threshold values and preferences for sucrose between the groups.

Larsson et al (1992) compared dietary habits between adolescents aged 15 with high or low dental caries prevalence. No difference was found in daily sucrose intake or average number of meals per day between the two groups, but the high caries group had higher intake of fat, lower intake of complex carbohydrates, and iron than the group with no dental caries.

Hölund et al (1985) demonstrated that caries-active (CA) 14 year-olds had a higher frequency of food intake and a more frequent and long-lasting use of sugar than a caries-inactive group (CI). No difference was found in the consumption of sticky sugars between the two groups. In a further study, Hölund (1987) found no difference between the two groups in the frequency of breakfast and lunch, but having breakfast together with the rest of the family and bringing a packed lunch from home were most common in the CI group. CI children spent less money on candy, cake and soft drinks. Among the most significant
factors was milk: decreasing milk consumption increased probability of being CA. Also, not bringing a packed lunch from home increased the probability of being CA, as did increasing consumption of candy.

*Longitudinal studies*

Longitudinal studies have been rather more consistent in correlating intake of sugar and sugary foods with caries.

Clancy et al (1977) studied the snack food intake and caries increment of adolescents initially aged 12.5 years for a one year period. The results showed negative correlations between DMFT increments and the frequency of apples, fruit juice, and sugarless gum intake, and a positive association of DMFT increments with chocolate candy intake and amount of spending money per week.

Sundin (1990) investigated the relationship between caries experience in the approximal surface of posterior teeth and consumption of sweets in adolescents initially aged 15, during a 3 year period. Although no statistically significant association was found at baseline, there was a positive correlation between caries incidence and number of intakes of sweets after 3 years.

Burt et al (1988) undertook a three-year longitudinal study on the effects of sugars consumption in caries increment among North American subjects initially aged 11-15. Children who consumed a higher proportion of their total energy intake as sugars had a higher increment of approximal caries, though there was little relation to pit and fissure caries. The average number of daily eating occasions was not related to caries increment, nor was the average number of sugary snacks consumed between meals, but the average consumption of between meal sugars was related to the approximal caries increment. Children with high caries increment had more frequent snacks than those with no caries increment.

The relationship between dietary habits and caries increment was assessed over two years in English subjects initially aged 11.5 years (Rugg-Gunn et al, 1984). The highest
correlation was found between caries increment and weight of daily intake of sugars. This relationship could not be explained by differences in sex, social class, tooth-brushing habits or level of plaque as measured by gingival inflammation. Weight of sugar intake was more strongly correlated to caries than frequency of intake; concentration of sugars in foods was positively related, and sugars in snacks were more strongly related to caries than total dietary sugars. The children eating the highest amount of sugars had higher caries increment than those eating the lowest amount of sugars.

A 3-yr longitudinal study on sugar consumption and caries risk was carried out in American schoolchildren initially aged 11-15 with low caries experience. A higher proportion of total energy intake from sugars increased the probability of caries on all surfaces, and a higher total intake of sugars was also associated with total caries increment. No relationship, however, was found between DMFS increment and the frequency of eating high sugar foods (Szpunar et al, 1995).

Another longitudinal study showed a significant influence of amount of money spent on sweets per week on the caries experience (Dummer et al, 1990).

Factors influencing sugar consumption in adolescence
A number of studies about demographic and socioeconomic factors influencing adolescents’ sugar consumption have been conducted. Subjects with low SES consume sweets more frequently than those with high SES (Samuelson et al, 1971; Tan et al, 1981; Currie et al, 1989; Kinirons et al, 1992). Another study showed an increased risk of unhealthy food habits in children of less educated parents (de Vries et al, 1990). Boys ate sweets more often than girls (Thomson, 1977; Currie et al, 1989; Freeman et al, 1993). Honkala et al (1982) reported that the use of sugar-containing products was very frequent among boys from low social background and children with poor school records.

A significant influence of amount of money spent on sweets per week on caries experience has also been reported (Clancy et al, 1977; Honkala et al, 1982, 1986; Dummer et al, 1990).

In a study carried out in four European countries, Honkala et al (1986) found that
children's self-assessed intelligence, as well as their general health, also were significant variables. Moreover, use of sweets and soft drinks was positively correlated with smoking and alcohol consumption.

Freeman and Sheiham (1997) examined adolescent's decision-making processes for sugar consumption and found that the immediate pleasurable taste of sugar outweighed and deferred the recognition of dangers associated with its consumption. Important influences were past dental health experiences, dental health behaviours and education together with the role of parents.

**Oral hygiene**

There is evidence that frequent toothbrushing results in lowered plaque and gingivitis scores, whereas the value of uncontrolled toothbrushing (with a non-fluoride dentifrice) in the prevention of dental caries has been questioned (Sutcliffe, 1996).


Adolescents from higher social class had a higher toothbrushing frequency than those from lower social class (Tan et al, 1981; Macgregor and Balding, 1987a; Schou et al, 1990; Addy et al, 1990; Macgregor et al, 1997a). Toothbrushing frequency decreases significantly as the number of siblings increases (Hodge et al, 1982; Macgregor and Balding, 1987a). Adolescents' own image of school performance was highly positively correlated with toothbrushing frequency (Honkala et al, 1986).

Honkala and Freeman (1988) reviewed many studies from different European countries concerned with oral hygiene behaviour, concluding that toothbrushing as a health behaviour is influenced by both environmental and social factors, and both of these factors affect the incidence of gingivitis and periodontal disease.
Rajala et al (1980) investigated toothbrushing in relation to other health habits in 13 to 19 years old Finnish adolescents. They observed a clear positive relationship between toothbrushing and the use of sugar-containing snacks. Alcohol consumption seemed to have a slight adverse effect on toothbrushing; and smoking was also weakly related with sporadic toothbrushing. Furthermore, sports-oriented girls were regular toothbrushers.

Schou et al (1990) examined toothbrushing frequency and its relation to lifestyle factors among 11, 13, and 15 year olds. Toothbrushing frequency was significantly related to the subjects’ health perception, smoking and drinking habits, eating habits, bedtimes, and video-watching. Also, all these lifestyle factors were inter-related, suggesting that toothbrushing is an integral part of a child’s lifestyle.

There is evidence that the most important reason for dental hygiene in adolescence is to ensure good personal appearance rather than preventive dental health reasons, especially among those who brush less frequently (Hodge et al, 1982; MacGregor et al, 1997b) and those more socially disadvantaged (MacGregor et al, 1997b). Hodge et al (1982) demonstrated that toothbrushing is an integral part of both personal hygiene and grooming behaviour in adolescence, subject to influence by the family and peer groups. Girls were more inclined to brush their teeth regularly and paid more attention to personal hygiene and grooming (Linn, 1976; Hodge et al, 1982; Blinkhorn et al, 1983a; Macgregor et al, 1997b; Macgregor and Balding, 1991).

A series of studies on psychosocial factors and toothbrushing behaviour have been carried out among English 14 year-olds. Toothbrushing habits were strongly influenced by an individual’s lifestyle and social behaviour, such as getting up time, breakfast, and time of going to bed (Macgregor et al, 1996). There was a trend towards low brushing frequency as bedtimes became later (Macgregor and Balding, 1987a). Toothbrushing frequency was found to increase significantly with increasing frequency of bathing, use of deodorant, hairwashing, and washing the hands after visiting the lavatory (Hodge et al, 1982; Macgregor et al, 1987b). Significant associations were found also between toothbrushing behaviour and two measures of self-concept (self-esteem and health locus of control), as described in section 1.2.3.2 and 1.2.3.3 (Macgregor and Balding, 1991; Regis et al, 1994;

Regarding flossing behaviour, there is some evidence that adolescents from higher social class have a more frequent use of dental floss (Macgregor et al, 1997a). No association was found between flossing and self-esteem and health locus of control (Macgregor et al, 1997a). Flossing frequency was correlated positively with frequencies of washing hands after visiting the lavatory and bathing, and having a current friend of the opposite sex (Macgregor et al, 1998). Boys equated use of floss with health-related behaviours while girls associated flossing more with cleanliness behaviours (Macgregor et al, 1998).

**Use of fluorides**
The effect of fluoride on adolescent’s dental health have been reported in a few studies carried out in Europe.

Regarding use of fluoride in the water, Murray (1969) found that caries experience of British 15 year-olds from a fluoridated community was 45% lower than that observed in 15-year-olds from a low fluoride area. Another study showed higher DMFT and a lower percentage of caries-free adolescents from natural fluoride and adjusted fluoride towns, compared with those from a low fluoride town, and a slight trend in both adjusted fluoride and low fluoride towns for DMFT values to increase from higher social class to lower social class (Murray et al, 1991). Parviainen et al (1977) reported that the DFS scores of adolescents in 3 Finnish towns decreased significantly with increasing fluoride content of the water supplies.

Tan et al (1981) observed that use of fluoride tablets was more frequent among Dutch adolescents with higher socioeconomic background. Honkala et al (1984) showed that, despite dental health education, fluoride tablets and rinses were used very rarely at home by Finnish adolescents.

Blinkhorn et al (1983b) found that adolescents who had participated in a fluoride rinsing
programme in primary school had a 22% statistically significant lower DMFT than those who had not experienced the programme.

A meta-analysis did not support the hypothesis that the more frequent use of fluoride toothpastes by girls than boys reduced relative age-specific D(M)FT gender difference, and that this difference should decrease with increasing age and fluoride toothpaste exposure among adolescents (Haugejorden, 1996).

Dental attendance
Several studies have reported on factors influencing adolescents’ patterns of dental attendance.

An association between attitudes to dental care and socioeconomic status have been reported. Linn (1976) found a positive association between occupational level of the father and the child’s number of dental visits within the past five years. Lissau et al (1989) indicated that the social environment, the individual, and the delivery system had a significant effect on use of dental services among Danish youths. Significant predictors were sex, social conditions, pain tolerance, dental anxiety, and self-perceived economic barriers.

Blinkhorn et al (1983a) showed that adolescents who attend the dentist only when in pain saw little advantage in seeking regular care and gave dental health a low priority. Fear of treatment was not an important influence on the decision to attend or not attend for treatment.

Factors associated with the dental visiting habits of adolescents aged 15 were investigated by Attwood et al (1993). Females were more likely than males to describe themselves as regular attenders. Non-smokers were more likely than smokers to have visited the dentist within the last six months and more likely to be regular attenders. The most important factor was the parents’ own dental visiting habits, which, combined with smoking, accounted for the social class difference found. Attwood et al’s (1993) findings about gender difference agreed with those reported by other researchers (Linn, 1976; Lissau et
Hawley and Holloway (1992) reported a low perception of need and a high level of confidence in self-care among adolescents, which tended to reduce the likelihood of their dental attendance. The desire to maintain or produce a good dental appearance was frequently given as the main reason for attending the dentist. Also, many of them felt they were responsible for taking decisions about going to the dentist. This latter finding was supported in a study by Adekoya-Sofowora et al (1996).

Significant associations have been reported between frequency of dental visits and self-esteem among boys (Regis et al, 1994; Macgregor et al, 1997a). Increased frequency of dental attendance was also associated with health locus of control (Macgregor et al, 1997a).

1.2.6.4- Family patterns of oral health status and oral health-related behaviours
Several studies have reported the relationship between children’s and their parents’ and siblings’ oral health status.

In the 1940s, a series of studies on the epidemiology of caries within members of the same family was carried out by Klein and co-workers. The results strongly suggested the existence of familial resemblance in caries experience for both dentitions among siblings (Klein and Palmer, 1940). The overall dental status of parents and offspring was also compared and there was a marked and consistent tendency for children’s DMFT to reflect their parents’ DMFT (Klein, 1946).

Klein’s classic studies have been supported by other investigators. Martinsson and Petersson (1972) investigated the dental condition of the parents of 14 years old Swedish school children with high and low caries frequency. The high caries group’s parents had a smaller mean number of teeth, a higher percentage of endodontically treated teeth and periapical osteitis, and a higher gingival index; and, though less marked, a higher mean number of restored and carious tooth surfaces, and a higher alveolar bone loss. Beck and Drake (1975) showed that family members had similar DMF scores. Mother-child
similarities in the DMFT scores were systematically higher than father-child similarities (Garn et al, 1976; Ringelberg et al, 1974; Alaluusua et al, 1989; Pordeus, 1991).

Tijmstra (1981) carried out a survey on the relationship between caries and sociocultural variables among 14-15-year-old school children in the Netherlands. The results showed that dental status of the mothers was the most important independent variable: children of mothers with full dentures have significantly more caries than those of mothers who still had their own teeth. Similarly, Friis-Hasché (1981) reported that caries experience among 9-10 year old Danish school children whose mothers had no teeth in the upper jaw was 58% higher than among those whose mothers had all their teeth in the upper jaw. Alaluusua et al (1989) investigated caries prevalence and microbiological findings in a group of teenagers and their parents. A significant correlation of DMFS indices in the mother-child pairs was observed, but the correlation was not significant in the father-child pairs. The salivary level of S. mutans was higher in the children of mothers with high DMFS values.

Family patterns of oral health-related behaviours have also been investigated. Shaw and Murray (1980) carried out a study on caries status and dietary habits of the families of caries-resistant and caries-susceptible English schoolchildren aged 13 to 15 years. Lower percentage of edentulous and a lower DMFS was found among parents of the caries-resistant children. A lower DMFS was also found in siblings of the caries-resistant group. Intake of refined sugars did not vary widely between the groups, but the parents and siblings of the caries-susceptible group consumed significantly more snacks, sweets, soft drinks and sugar in tea/coffee. There were no differences between the groups in toothbrushing habits or regularity of attendance at the dentist.

Honkala et al (1983) showed that toothbrushing habits and sugar consumption of Finnish 14-year-olds were positively and consistently correlated with those of their parents. Toothbrushing of the mother was the most important explanatory variable in the linear regression model for boys and girls. Sugar consumption of the mother was the most important variable for girls and sugar consumption of the father was the most important for boys.
Strong intra-family patterns of dental health status and related behaviours were found in a study among Brazilian families. Also, the mother-child and sibling correlations were more significant than the father-child resemblance (Pordeus, 1991).

1.2.6.5- General health and habits
A few investigations about the relationship between general and oral health among adolescents have been carried out in Sweden. In the early seventies, Samuelson et al (1971) showed that body weight and height affected the DMFT value of 13-year-olds. This finding was corroborated by Larsson et al (1995), who found a significant positive correlation between DFS score and relative body weight (BMI) in 15 year-olds. They concluded that dental caries prevalence together with high BMI may indicate adolescents with risk factors for cardiovascular diseases.

Kallestål (1991) reported that 16 and 18 year-olds with medication for atopic diseases tended to have higher mean DFS values than the rest of the group. The 18 year-old smokers had statistically significantly higher DFS values than non-smokers. The association between tobacco habits and dental caries was also investigated by Hirsch et al (1991) in 14 to 19 year-olds. Smoking, and an increased number of cigarettes smoked per day, were positively correlated with increases in DMFT and the number of initially decayed proximal surfaces.

1.2.7- Summary and conclusions
The review of the literature indicated some relevant points relating to this research study:

1) Several psychosocial models of oral health have been proposed in recent decades, which are based in models of general health. However, so far no model or theory has been developed that are able to explain fully dental caries and periodontal diseases, accounting for the relative importance of its main determinants.

2) The salutogenic model has been increasingly used by researchers in the general health field, and there is evidence of an association between the Sense of Coherence concept and health. Despite this, dental researchers have not attempted to assess the relationship
between Sense of Coherence and oral health.

3) Socioeconomic status and emotional stress have been the main psychosocial factors identified as having an influence on oral health, although the mechanisms are not fully understood.

4) Numerous investigations have been carried out on the factors affecting oral health in adolescence and substantial evidence exists demonstrating the influence of family members, particularly mothers, on adolescents' oral health status and behaviours.

A fuller understanding of oral diseases requires an integrated approach, placing them in the context of other major chronic diseases. Thus, the salutogenesis theory, already used to understand the nature of general health, may be an effective approach to oral health among adolescents, accounting for the psychosocial determinants as well as the maternal influence.

1.3- Aim, hypotheses and objectives of study

1.3.1- Aim
The central purpose of this study was to investigate particular psychosocial factors in relation to oral health in a group of Brazilian adolescents and their mothers, using the salutogenic model of health.

1.3.2- Objectives

(1) To investigate the relationship between oral health status and Sense of Coherence;
(2) To investigate the relationship between oral health-related behaviours and Sense of Coherence;
(3) To investigate the relationship between self-assessment of oral health and Sense of Coherence;
(4) To investigate the influence of mothers' Sense of Coherence on their children's oral health status, oral health-related behaviours and self-assessment of oral health; and
(5) To investigate the effect of socioeconomic status on Sense of Coherence and oral health.

1.3.3- Hypotheses

(1) Adolescents with higher levels of Sense of Coherence have lower levels of dental caries and periodontal disease, and better oral cleanliness, than those with lower levels of Sense of Coherence;

(2) Adolescents with higher levels Sense of Coherence have better oral health-related behaviours, than those with lower levels of Sense of Coherence;

(3) Adolescents with higher levels of Sense of Coherence have a better self-assessment of their oral health, than those with lower levels of Sense of Coherence;

(4) Adolescents whose mothers have higher levels of Sense of Coherence have better oral health status, oral health-related behaviours and self-assessment of own oral health, than those whose mothers have lower levels of Coherence; and

(5) Adolescents from higher socioeconomic groups have higher levels of Sense of Coherence and better oral health than those from lower socioeconomic groups.

Figure 1.11 presents a tentative framework to explain the relationship between the variables.

The methods and approaches utilized to collect and analyse the data are presented in the following chapter.
Figure 1.11- Tentative framework to explain the relationship between the variables in the present study
(dotted arrows show the hypotheses and solid arrows show known relationships and potential confounders)

- **ORAL HEALTH BEHAVIOURS**
  - Sugar consumption
  - Toothbrushing
  - Dental attendance

- **ORAL HEALTH STATUS**
  - Dental caries
  - Periodontal disease
  - Oral cleanliness

- **SELF ASSESSMENT OF DENTAL HEALTH**
  - Use of orthodontic appliances
  - Dental trauma

- **OTHER INDIVIDUAL FACTORS**
  - Use of fluoride
  - Birth order
  - Smoking habits
  - School performance
  - Participation in society

- **OTHER MOTHER-RELATED VARIABLES**
  - Age
  - Smoking habits
  - Dental health status
  - Advice on dental care
  - Feeding practices
  - Cleaned child's teeth
  - Control child's sugar intake
  - Control child's dental visits

- **SEX**

- **SOCIAL CLASS**

- **MOTHERS' EDUCATION**

- **ADOLESCENTS' SENSE OF COHERENCE**

- **MOTHERS' SENSE OF COHERENCE**
CHAPTER 2

METHODOLOGY

This is a cross-sectional study on the association between oral health and Sense of Coherence in adolescents and their mothers.

2.1- Location of the study

The study was conducted in the city of Goiânia, the State capital of Goiás, in the Middle West Region of Brazil. Goiânia has a population of about one million (IBGE, 1996) from different socioeconomic backgrounds, and has had fluoridated water since 1985. The mean DMFT (decayed, missing and filled teeth) score of 12 year-old schoolchildren in Goiânia was 4.9 in 1994 (Freire et al, 1997), similar to the mean DMFT for the Middle West Region and for Brazil as a whole in 1993, which was 5.4 and 4.8 respectively, for 12 year olds (Pinto, 1996).
2.2- Development of research instruments

The research instruments consisted of two questionnaires - the adolescents’ questionnaire and the mothers’ questionnaire. It also included a clinical form. The development of the questionnaires initially involved a review of the literature and a selection of relevant material from other studies. Following this review, some questions used in previous studies were selected and semi-structured questionnaires in a self-complete form were developed. The research instruments were tested in two pre-pilot studies, and two pilot studies carried out throughout 1996. Questionnaires and clinical form tested in the pilot studies are shown in Appendices A.2 and A.3, and the final versions used in the main study are shown as Appendices B.3.1, B.3.2 and B.3.3. The development of the questionnaires will now be described in detail.

2.2.1- Questionnaire for adolescents

The questionnaire for adolescents is in Appendices B.3.2 (version in English) and B.3.3 (version in Portuguese). It was divided in two parts. Part 1 consisted of the behavioural and attitudinal questionnaire, and Part 2 consisted of the Sense of Coherence scale.

Part 1: Behavioural and attitudinal data

The aim of this semi-structured questionnaire was to gather information on behavioural and attitudinal aspects, such as participation in social activities, dietary habits, oral hygiene, use of fluoride, dental attendance, self-assessment and attitudes regarding oral health, general health and habits, school performance, as well as parents’ habits and dental health.

The questions included were based on items from several studies involving young people. Questions about participation in social activities were based on a study by Hamp and Nilsson (1982). Questions on oral health habits - dietary habits, oral hygiene, use of fluoride, and dental attendance - were based on studies by Marcenes (1991); Watt (1995); Hornett (1989); Tubert-Jeannin et al (1994); Honkala (1985); Abegg (1996); and O’Brien (1994). Finally, questions on self-assessment of oral health, as well as those on oral health attitudes, were selected from a study by Freeman et al (1993).
Part 2: The Sense of Coherence scale

The second part of the adolescents’ questionnaire consisted of the SOC scale. The scale used in this study was a self-complete standard questionnaire with 13 questions, which is a short version of the SOC scale (Antonovsky, 1987). This is a standard scale originally written in English, with no evidence of its previous use in Brazil, and so the only modification required was its translation into Brazilian Portuguese.

2.2.2- Questionnaire for mothers

The questionnaire for the mothers is in Appendices B.3.2 (version in English) and B.3.3 (version in Portuguese). It was divided in three parts. Part 1 consisted of the families’ socioeconomic status questionnaire, part 2 included the behavioural questionnaire, and part 3 was the SOC scale.

Part 1- Families’ socioeconomic status

An official classification for the socioeconomic status of the Brazilian population has not been developed yet. Thus, the questionnaire used to determine socioeconomic status of the families in the present study initially included the questions from two questionnaires using different criteria for social class in Brazil - the ABA-ABIPEME classification for socioeconomic status in Brazil (Almeida and Wickerhouser, 1991) and the Marxist concept of social class (Lombardi et al, 1988). This questionnaire was tested in the first pilot study (Appendix A) in order to compare the two classifications and check which one would better describe the socioeconomic status of the studied population.

After the first pilot study, the socioeconomic classification proposed by Lombardi et al (1988) was selected for the main study (Appendix B.3.2). This is based on broader definitions of socioeconomic status and on a more comprehensive theoretical model, compared with the other classification. Furthermore, the ABA-ABIPEME criteria has recently been criticized as a system to describe the Brazilian reality (Mattar, 1995).

The classification based on the Marxist concept of social class was adapted for Latin America by Bronfman and Tuirán (1984), then for Brazil by Lombardi et al (1988). Social class of the family is here defined by the participation of the head of the family in the
production or distribution processes. The indicators used to classify the families are: occupational position (employer, employee, self-employed); sector of activity (production, construction, trading of goods or services); education and training for the work; and ownership of the means of production. Within this classification system, six social classes were distinguished: bourgeoisie, traditional petit bourgeoisie, new petit bourgeoisie, typical proletariat, non-typical proletariat, and sub-proletariat. These classifications are defined as follows:

. Bourgeoisie: employers (with 5 or more employees).
. Traditional petit bourgeoisie: self-employed without university education but with specialised training; self-employed without university education or specialised training but with ownership of means of production (with less than 5 employees).
. New petit bourgeoisie: paid workers with managerial posts and/or university education required for the job; self-employed with university education (with or without ownership of means of production, but with less than 5 employees).
. Typical proletariat: self-employed in the construction sector; aid workers in the construction sector without managerial posts or university education but with specialised training; paid workers without university education or managerial posts in the production sector (manual workers).
. Non-typical proletariat: paid workers without university education or managerial posts in the trading or services sectors; paid workers without university education or managerial posts working with the production sector (non-manual workers).
. Sub-proletariat: self-employed in the production, trading or services sectors without university education, specialised training and ownership of means of production; paid workers in the construction sector without managerial posts, university education and specialised training; paid workers performing domestic services.

Part 2- Behavioural data
The objective of this part of the questionnaire was to collect information from the mothers on their children’s general and oral health from early childhood. Topics covered were children’s feeding practices; general health; sugar consumption; oral hygiene; use of systemic fluoride; and dental attendance. It also aimed to collect some data about mothers’
Chapter 2 - Methodology

dental health status and advice received on dental care. Questions were based on studies by Marcenes (1991) and O’Brien (1994).

Part 3- The Sense of Coherence scale
Part 3 of the mothers’ questionnaire consisted of the SOC scale, using the same standard self-completed questionnaire with 13 questions (short version) answered by the adolescents (Antonovsky, 1987) (see Section 2.2.1 and Appendix B.3.2).

2.3- Pilot studies
Two pre-pilot and two pilot studies of the questionnaires were carried out. The first objective was to check the applicability of the questions to different socioeconomic groups in Brazil. Most of the questions were selected from studies carried out in Europe, and so would not necessarily apply to Brazil, especially in low socioeconomic groups. The second objective was to assess question-wording and question-sequence. The clinical form was also tested (see Sub-Section 2.3.2.1). Research instruments used in the pilot studies are in Appendix A.2. The SOC scale is in Appendix B.3.2.

2.3.1- Pre-pilot studies
The first pre-pilot study was carried out in a small sample (7) of middle social class Brazilian students living in London in order to test the SOC scale.

The questionnaire took an average of 5 minutes. Subjects were asked to comment and suggest ways to improve the questionnaire. Some of the people interviewed had difficulty understanding the meaning of Questions 6 and 11. They also made suggestions to improve the instructions.

After interviewing the first five people, minor changes in the wording were made and checked in the next two interviews. Difficulties in understanding Question 11 were still reported and further modifications were made.

The second pre-pilot study was conducted in Goiânia-GO, Brazil, in August 1996, in order to assess the other research instruments, as well as to train the researcher and the auxiliary.
The socioeconomic status questionnaire and the dental health behaviours questionnaire were tested; no alteration was needed (Appendix A.2).

2.3.2- Pilot studies

2.3.2.1- The first pilot study
This pilot was conducted in Brazil over a period of one month, in August 1996. It had three specific purposes. The first purpose was to assess the techniques developed for the main study, namely: the sample selection methods; the structured questionnaires; and clinical examination. The second one was to undertake a study of caries prevalence among adolescents, since no dental information was available about this age group in Goiânia. The third purpose was to gain an initial sense of the validity of the variables. On the whole, the research design proved to be satisfactory. Some adjustments had to be made, and are discussed below.

The sample included 439 15 year-olds (250 female and 189 male) from 8 schools (5 public and 3 private), randomly selected from a list provided by local education authorities. In each school, a meeting was held with the head master or the principal coordinator, when the research was explained. All public schools contacted agreed to participate in the study. However, one private school refused to participate. In the private schools some limitations were also imposed by the deans regarding the duration of data collection in the school. In both public and private schools staff were sometimes less helpful than expected, and/or else there was lack of physical space to carry out the study. Furthermore, in all private schools and most public schools adolescents have classes only in the morning. These problems meant that the study took longer than expected, but did not affect its quality.

In the schools the adolescents were approached in the classroom and a brief explanation was given by the researcher about the study. Three main points were emphasised. The first one was the confidentiality of the research. Second, the fact that the interview was not a test, and therefore there were no wrong or right answers. The third point stressed was concerned the sterilization of the instruments used in clinical examination.
In the first two schools the adolescents were free to participate or not and many refused. Most of those who refused to participate were either caries-free or else had high caries experience. Informal discussion showed that the first group felt no reason to participate because of having no dental problems; the second group was ashamed about their bad teeth or had dental fear. Because the loss of these two groups could bias the study, in the next schools children were not offered the choice to participate or not; none refused or showed dissatisfaction during interviews and examinations.

A letter to the parents was handed out together with the socioeconomic questionnaire, explaining the purpose of the survey and seeking consent to interview the children.

The interviews of the adolescents were preceded by a clinical examination in order to identify the required number of subjects with no caries experience for the purpose of this pilot study. After the clinical examination 120 subjects (60 caries-free and 60 with high caries experience) were selected for the interviews. In each of these groups 30 (15 male and 15 female) were from lower socioeconomic groups (public schools) and 30 (15 male and 15 female) from upper socioeconomic groups (private schools). The reason for choosing this sample size in the pilot study was to provide adequate sub-sample sizes for suitable statistical analysis of the relationship between the variables to be included in the main study. The minimum accepted number of units in each cell for this purpose is 30 units (Altman, 1991). Results of the statistical analysis of pilot data are in Appendix A.1.

**Clinical dental examination**

The assessment of dental caries status was done using the DMFS (decayed, missing and filled surfaces) index, according to the WHO criteria (WHO, 1987). The examinations were all carried out by one examiner (the researcher), using plane dental mirrors and head lights. The adolescents were examined at the schools during class hours, in a timetable agreed with the dean. Data were recorded in a clinical form (Appendix A.2) and took an average of two minutes. No modifications were needed, since the clinical criteria, adapted from WHO (1987) and O’Brien (1994), proved to be applicable to the purpose of the study. The instruments were sterilized every evening.
Questionnaires

The Sense of Coherence scale
The SOC scale (Appendix B.3.2) was administered using two different techniques, according to the level of schooling and socioeconomic status of the study population. In Brazilian private schools the great majority of 15 years old students are in secondary school and have a higher level of understanding compared with those from public schools, most of whom are still in primary school. In the private schools the questionnaires were self-completed by the subjects, following directions given by the researcher, and took an average of 5 minutes. In the public schools the researcher read and explained each question, and the questionnaire took an average of 15 minutes. The interviews were undertaken in groups or individually, according to space available in the schools. Difficulties in understanding Question 11 were still reported by the interviewees.

Questionnaire for adolescents
The dental health behaviours questionnaire included 47 questions about dietary habits, use of fluoride, oral hygiene, fissure sealants, dental visits, and smoking habits (Appendix A.2). It was carried out by the researcher and one auxiliary by means of individual interviews and took an average of 20 minutes in the first five subjects and 15 minutes thereafter.

Throughout the interviews, understanding, phrasing and sequence of questions were checked. Most of the subjects had difficulties in answering questions regarding when they started and stopped fluoride mouthrinses and gel, and frequency of applications. In some closed questions it was necessary to add more alternative answers, suggested by the interviewees. Three questions were removed after about half of the interviews because it was observed that there was no variation in responses in the sample. These were about tooth cleaning frequency (if daily or not), use of fluoride toothpaste, and washing after brushing. The adolescents enjoyed participating in the study and had no difficulties in answering the questionnaire, apart from those already described.
Families' socioeconomic status questionnaire

The questionnaire about socioeconomic status consisted of 12 questions about size of the family, level of education of the parents, occupation of the head of the family, family income, and existence of household goods (Appendix A.2). It was handed to the adolescents to be answered with the help of the parents at home. In many cases the adolescents were able to answer all the questions by themselves, especially those from upper social classes, and this method was the preferred. On the following day the researcher returned to the school and collected the questionnaires.

Return of questionnaires was encouraged by offering a reward to be drawn by lot in each school; and the response rate was almost 100%. Only one parent sent a letter refusing the participation of the adolescent in the study. The reason given was lack of time to answer the questionnaire. Four parents refused to answer the questions about salary, and one refused to answer the question about household goods. Another parent, a dentist, contacted the researcher in order to obtain a fuller explanation of the objectives of the questions on salary, and finally completed the questionnaire.

No modification was needed in this questionnaire.

Questionnaire for mothers

A group of mothers were also interviewed, in order to assess the questionnaire about behaviours of the mothers in relation to their children's dental health. The questionnaire included 36 questions about feeding practices, sugar consumption, use of systemic fluoride, general health, oral hygiene practices, and attendance to dental care (Appendix A.2).

The sample included five women aged 40-48 years, members of the staff of two public schools, all having children aged 15. Three of them were graduates, one had completed secondary school and one had completed primary school (8 years of school). The sample was not drawn from the mothers of the adolescents participating in the study because there was no time or resources left to approach them. The interviews were carried out in the schools over a period of 2 days. The first took 13 minutes, and the others 9 minutes each.
Some changes in the sequence of the questions were made after the second interview. Other small changes were made in order to improve this research instrument.

2.3.2.2- Modifications in the study design after the first pilot study

Major changes to the research instruments and techniques of data collection in the study were made after the first pilot study. First, it was decided to include other outcome variables in the study, besides dental caries, in order to assess their association with the SOC. The new variables included were Plaque Index and bleeding, self-assessment of oral health, and also some independent variables on activities outside home, participation in society, school performance and oral health attitudes.

Other changes in the study design were required due to the reduction of the time allowed by the Brazilian sponsor (CAPES) for researchers to carry out their field work in Brazil from 12 to 6 months. The researcher was informed of this change of policy after the pilot study, when the protocol was ready to be developed, so some modifications had to be made. These included adapting the questionnaires to be all self-completed by the subjects, instead of using interviews to obtain the information. Also to save time, dental examination of the mothers, which had initially been proposed, was excluded from the study. Questions about the mothers’ dental health status were included in the mothers’ as well in the adolescents’ questionnaires.

2.3.2.3- The final pilot study

The research protocol was reviewed and the research instruments tested, in a final pilot study carried out in Brazil in February 1997, immediately before the main field work. The adolescents’ health behaviours questionnaire and the SOC scale were tested in a group of 5 adolescents in one public school. Initially, all questions were read by the researcher to the subjects all together. This method was time consuming (1 hour), since subjects had different speed rates for answering. In each case, the questions were found to be clear, and subjects preferred to read and answer by themselves. Therefore, it was decided to test the self-complete method and read only two questions of the SOC scale (Questions 1 as an introduction, and Question 11, which presented a higher level of complexity). A few minor changes were made in the question-wording and question-sequence as a result. After
modification the two questionnaires were answered in about 30 minutes.

This last pilot study ensured that the questionnaire could be readily understood, was applicable to the Brazilian population, and included all relevant factors to test the hypothesis, as well as other factors suitable for further studies. The final versions of the questionnaires and clinical form used in the main study are shown as Appendix B.3.2.

2.4- Main study

2.4.1 - Main study population
The study population consisted of 15 year olds of both sexes, and their mothers. This age group was chosen because all permanent teeth are erupted, except third molars. Another reason is that the SOC scale may be inappropriate for younger groups. Further, mothers would remember past histories of their children aged 15 more readily than those of children in older age groups. Finally, most people at this age are still at school, where it is easier to approach them.

2.4.2 - Sample size calculation and sampling method

2.4.2.1- Sample size calculation
The minimum required sample size was estimated to be 610 adolescents. Sample size calculation was based on the outcome dental caries. Calculation was carried out using the EPI INFO computer package, and the method for comparing two proportions described by Fleiss (1981) was applied. This sample size was calculated to have a 85% power of demonstrating a statistically significant difference in caries risk between two groups of adolescents at the 5% level, if an odds ratio of 0.53 or more was observed. The 95% confidence interval level and a prevalence of dental caries in the population of 85%, as obtained in the pilot study, and 75% in the exposed group were used for the calculation.

The sample size was increased to allow for possible non-response. A total of 761 adolescents were invited to take part in the main study, in order to assure that the required sample size would be obtained.
2.4.2.2- Sampling method
The sampling method used was a combination of two-stage sampling and stratified sampling. The two-stage sample consisted of first taking a random sample of first-stage units (schools) and then taking a random sample of second-stage units (students) from each selected school. To obtain approximate balance of important characteristics such as sex and socioeconomic status, stratified randomization was used at each stage.

In order to select the groups according to socioeconomic status the sample was randomly selected from private schools (50%) and from public schools (50%). In Goiânia, children and adolescents from upper socioeconomic groups usually attend private primary and secondary schools, whilst those from lower socioeconomic groups attend public ones.

A list of all public and private schools was then obtained from the local education authorities, with the number of students by age and level in each school. Only the schools having 15 year olds enrolled in the last grade of the primary school system, and/or any grade of high school were included. A total of 164 schools (134 public and 30 private) were eligible, excluding the eight who participated in the first pilot study. Twenty one schools were selected (11 public and 10 private) to participate in the study. As the schools had different numbers of students, an equal probability scheme was used, so that, for example, a school with twice as many pupils as another was twice as likely to be selected (Kirkwood, 1988).

Sampling of the adolescents consisted of taking random samples from the selected schools, stratified by sex. A list of all 15 year old students attending the schools was compiled from the 21 schools selected, separated by sex. From this list, every 4th subject of each sex was drawn, totalling 761 students (50% male and 50% female). The final list of the schools selected and number of students in each is in Appendix B.1.

2.4.3- Consent
Initially, contact was made with the local and state education authorities in Goiânia-GO to inform them of the research plans and to ask consent to carry out the study in the schools. The researcher was introduced to the authorities by a letter signed by the Dean.
of the Dental School of the Federal University of Goiás, where she works as a lecturer (Appendix B.2.1). In order to facilitate acceptance of participation from the private schools, which showed reluctance in the pilot study, the researcher contacted the private schools trade union and a brief article was published in their newsletter about the study, asking for co-operation (Appendix B.2.2).

Consent to contact the students in the private schools selected was obtained through a letter signed by the Dean of the Dental School of the Federal University of Goiás, which was handed to the head masters of each school (Appendix B.2.3). The heads of the public schools were informed by the local and state education authorities (Appendix B.2.4). After that, each school was visited by the researcher in order to explain in more detail the background and conduct of the study, and to get final consent to contact the students.

Prior to data collection the students selected were contacted in their classrooms and a letter to the parents/guardians was handed out, seeking consent to participate in the study (Appendix B.2.5).

2.4.4- Response rate
Of the 21 schools selected, one private school refused to participate, due to an excess of extra-curricular activities in that period. Another school was selected to replace it.

A total of 761 adolescents were invited to take part in the main study and the response rate was 100%. However, of the 761 subjects, 97 were excluded from the analysis. Of these, 58 did not return the mothers’ questionnaire at all, 33 returned the mothers’ questionnaire with the SOC scale incomplete, and 6 had lost their mothers recently. Adolescents who had step-mothers or other guardians since early childhood were included, since the possible effect of genetic factors was not investigated in this study. Thus, the main study included 664 adolescents, 344 female and 320 male; and 664 mothers. The final sample size has a 88% power of demonstrating a statistically significant difference in caries risk between two groups of adolescents at the 5% level, if an odds ratio of 0.53 or more was observed.
Of those who were excluded from the analysis, the majority were males (63.9%). Almost 64% were from high social class and 36.1% were from low social class.

2.4.5- Data collection
Data collection was carried out during a period of six months, from February to August 1997.

As described in Section 2.2, data collected were of four types: clinical, socioeconomic, behavioural and psychosocial. They were collected through clinical dental examination combined with self-complete questionnaires.

Data obtained from each adolescent were collected in the schools during at least two days. The questionnaire was carried out on the first day and the clinical examination on the second day. The location in the school where data collection was undertaken varied according to the facilities available at the school. Most of the times classrooms and libraries were used. The research instruments and techniques used will be described in the following three sub-sections.

2.4.5.1- Clinical dental examination
Levels of caries, dental plaque and number of sites with gums bleeding after probing were assessed in that order. Examinations took place at the schools during class hours, using a head-lamp to provide standard illumination, with the examiner positioned in front of the subject, who was sitting on a chair.

The oral health status form used was modified from the WHO oral health assessment form (WHO, 1987) and the children’s dental health survey in the United Kingdom (O’Brien, 1994). The clinical form and a detailed description of the clinical criteria used is given in Appendix B.3.1.

Cross-infection control was according to Ministry of Health guidelines (Brasil, 1989). The instruments were sterilised in a dry-heat oven at 160°C for 90 minutes.
Dental caries
Dental caries status was assessed using the DMFS index, according to the WHO criteria (WHO, 1987). The examinations were carried out by the researcher, using plane dental mirrors, probes, and head-lamps. Probes were used just for the purpose of detecting sealants. Each examination took an average of 2 minutes.

Intra-examiner calibration at the beginning of the field work and duplicate examinations throughout data collection were carried out and will be discussed in Section 2.4.6.3.

Dental plaque
The Plaque Index devised by Silness and Løe (1964) was used for the assessment of the amount of plaque. Examinations were carried out using No. 4 plain mouth mirrors and a lightweight probe with a rounded tip. Each examination took an average of 3 minutes.

Six index teeth were examined (16, 11, 24, 36, 31, 44). For the purpose of this study, the gingival area of two surfaces (buccal and lingual) of each tooth was given a score from 0-3, representing the Plaque Index for the area.

The Plaque Index scores consider only differences in the thickness of the soft deposit on gingival area of the tooth surfaces with no attention paid to the coronal extension of the plaque. The assessment of plaque was made irrespective of the presence of calculus deposits, fillings, and crowns, when present.

Bleeding
The assessment of gums bleeding after probing was done using the first indicator of periodontal status of the Community Periodontal Index of Treatment Needs (CPITN) (WHO, 1987). Both surfaces, buccal and lingual, of the six teeth examined were recorded after probing for plaque. When all teeth had been probed for plaque, they were re-examined in the same sequence to ascertain whether the probing had resulted in obvious bleeding.
2.4.5.2- Questionnaires

As described in Section 2.2, data on socioeconomic, behavioural and psychosocial indicators were collected through self-complete and standardized questionnaires (Appendix B.3.2).

**Questionnaire for adolescents**

The questionnaires were answered by the students at the schools, in groups of up to 20. An introduction to the study was given to each group together with instructions on how to complete the questionnaire. Questions that were more often misunderstood in the pilot study were read and explained by the interviewer. While students were requested to write their name on each questionnaire, the confidentiality of their results was stressed. Time taken to answer the questionnaires varied from 30 minutes to one hour. The questionnaires were always undertaken from Tuesdays to Fridays, in order to avoid having data from weekend diets in the 24-hour recall questions.

**Questionnaire for mothers**

The mothers’ questionnaire was handed out to the students to be answered by their mothers at home and to be returned to the school on the next day. Adolescents and mothers were informed that a prize would be drawn by lottery among those who returned the questionnaire. Despite this, in most of the schools the researcher had to return several times in order to collect the questionnaires. Reminders were also necessary in order to achieve a high response rate.

The questionnaire was accompanied by a letter to the mothers which explained the objectives of the study, gave instructions on how to answer the questionnaire and stressed the confidentiality of the results. A telephone number was provided should further details or explanations be required. This questionnaire was anonymous and identification was done only by a code number given to each student.
2.4.6- Reliability of the questionnaires and clinical examinations

2.4.6.1- Consistency of the Sense of Coherence scale
When items are used to form a scale they need to have internal consistency. This means that all items should measure the same underlying latent variable or trait, so they should be correlated with one another (Bland and Altman, 1997). The SOC scale was tested using the Cronbach alpha measure of internal consistency; \( \alpha \) ranges from 0 to 1. Overall \( \alpha \) was 0.81 for the adolescents’ SOC and 0.80 for the mothers’ SOC, which indicate a satisfactory degree of consistency.

2.4.6.2- Reliability of the questionnaires
In order to test reliability of the structured questionnaires, 75 adolescents (11.3% of the sample) answered the questionnaires twice on two consecutive days. Test-retest reliability was carried out on all questions of the SOC scale and on most questions of the adolescents’ questionnaire, excluding only the 24-hour recall question. The correlation between the two sets of observations was calculated using Spearman’s rank correlation coefficient. The correlation coefficients were high for both the SOC scale (\( r = 0.85 \)) and the questionnaire (\( r \) ranging from 0.70 to 1.00).

2.4.6.3- Reliability of the clinical data
Consistency of examination for dental caries was assessed at the beginning of the field work (during intra-examiner calibration) and throughout data collection.

Cohen’s Unweighed Kappa coefficient of agreement was used in this study (Cohen, 1960) and interpretation of Kappa values was according to a six-point scale (Landis and Koch, 1977):

1) Kappa < 0: poor agreement,
2) Kappa between 0.0 - 0.20: slight agreement,
3) Kappa between 0.21 - 0.40: fair agreement,
4) Kappa between 0.41 - 0.60: moderate agreement,
5) Kappa between 0.61 - 0.80: substantial agreement, and
6) Kappa of 0.81 and above: almost perfect agreement.
Consistency of the measurement of dental plaque and bleeding after probing was not assessed during the survey. According to Macaulay et al (1988), periodontal examination for these indices involves removal of the plaque deposit and periodontal tissues can be actually altered by the probing procedures, thus negating the usual assumptions of the test-retest approach to measuring reliability. Furthermore, an improvement in the subjects' toothcleaning could have occurred after the clinical examination and questionnaires, since these procedures are likely to raise subjects' awareness. However, training examinations for plaque and bleeding were undertaken during the calibration for dental caries, to ensure correct use of the exam technique, as well as understanding and application of the diagnostic criteria.

**Calibration of dental caries examination**

Calibration was carried out in two schools, one public and one private. A group of 20 15-years-old subjects, 12 female and 8 male, were examined twice, on successive days. Both schools and students were randomly selected. The objective was to ensure that the examiner could consistently apply the diagnostic criteria. Kappa value for the two clinical examinations during calibration was 0.88, indicating an almost perfectly consistent examination.

**Consistency of dental caries examination during the study**

During the main survey, 55 adolescents, 25 female and 30 male, were re-examined either on the same day as the first examination or on the consecutive day, according to their availability. The objective was to reduce the possibility that the examiner might change the way she applied diagnostic criteria during the course of a long series of examinations, and to measure its extent. Kappa value was over 0.80, another almost perfect agreement.

**2.4.7- Data processing and construction of the variables**

Data were entered on to an IBM computer for analysis using the Statistical Package for Social Sciences (SPSS for Windows, version 6.0) and STATA software. Only the variables related to the hypotheses of the study were selected for entry into data analysis. Also, variables with a high number of missing cases were not included in the analysis. This procedure provided 2 explanatory variables (adolescents’ SOC and their mothers’)
SOC), 13 outcome variables (Table 2.1), and 31 potential confounding variables (Table 2.2). Some variables are in both Tables 2.1 and 2.2, since they were analysed as outcomes as well as potential confounders.

The nature of the observations is of major importance in determining appropriate statistical methods of analysis. In the present study data were both categorical (nominal and ordinal) and numerical (discrete and continuous).

For categorical data, as well as discrete numerical data, the allocation of the subjects to one of only two possible categories (dichotomous data) was carried out and logistic regression was the appropriate method of analysis. However, for the variable caries severity data were also treated as polytomous ordered data. The statistical methods used in the data analysis are discussed in more detail in Section 2.4.8.

The question of the shape of the distribution of continuous data is of fundamental importance when choosing a method of analysis. Statistical methods for analysing continuous data are generally based on the assumption that the data are a sample from a population with a Normal distribution (Altman, 1996).

Collapsing the data into categories may imply some decision making. While the process can be straightforward for nominal variables, for continuous variables the investigator must decide how many categories to make and where the category boundaries should be. There is no generally accepted method to decide where to draw the boundary between categories.

This section describes the types of outcome and explanatory variables measured, as well as data reduction and transformations carried out. A description of the potential confounding variables which required reduction is also presented.

2.4.7.1- Outcome variables
Three sets of outcome variables were selected to investigate the association between oral health and SOC: oral health status, oral health-related behaviours and self-assessment of
oral health. The variables and respective categories are given in Table 2.1 and a description of the construction of these measurements is given below.

**Oral health status**

**Dental caries status indicators**

In order to assess adolescents’ dental caries status in permanent teeth, five indicators were used: caries-free status, DMFS index, caries experience in second molars, caries severity, and caries experience in anterior teeth.

**Caries-free status**

This indicator represents individual’s past and/or present caries experience, which was dichotomized and coded:

0- Yes (caries-free)
1- No (with caries experience)

**DMFS index**

The DMFS index expresses the number of decayed, missing and filled surfaces, which are summed up, representing the individual’s index. Calculation were based on 128 surfaces, excluding the third molars. Surfaces recorded as missing for any other reason than caries, or as unerupted, were excluded from calculation.

Before carrying out the statistical analysis, the shape of the distribution of the DMFS scores was checked. The frequency histogram of the data was not compatible with a Normal distribution, showing a highly positive skewed distribution (Fig. 3.6). This pattern has emerged from many studies among children and young adults in industrialized as well as deprived countries in the last decades (Spencer, 1997). Therefore, it was decided to transform the DMFS to categorical data. For the purpose of statistical analysis using logistic regression, the DMFS scores were dichotomized using the median as the cut-off point, and coded:

0- Low (DMFS below the median: 0 to 7)
1- High (DMFS equal or above the median: ≥8)
Caries experience in second molars

Caries experience in second molars was used as an indicator of more recent caries experience in the adolescent population studied, since these teeth are usually the last ones to erupt. The variable was dichotomized and coded:

0- No (DMFS=0 in second molars)
1- Yes (DMFS≥1 in second molars)

Caries severity

In the light of recent patterns of dental caries and the highly skewed DMF index data, caries severity grading is one of the "new" outcome measures suggested for epidemiological studies (Spencer, 1997). The caries severity indicators used in this study were an adaptation of the revised hierarchical classification of individuals according to severity zone of dental caries, proposed by Poulsen and Horowitz (1974). The method is based on assigning individuals to one of four zones of increasing severity:

<table>
<thead>
<tr>
<th>Severity zone</th>
<th>Surfaces involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Proximal surfaces of mandibular anterior teeth (excluding distal surfaces of cuspids) or labial surfaces of maxillary or mandibular incisors and cuspids</td>
</tr>
<tr>
<td>2</td>
<td>Proximal surfaces of all maxillary teeth or proximal surfaces of mandibular teeth posterior to and including distal surfaces of cuspids</td>
</tr>
<tr>
<td>1</td>
<td>Pit and fissure surfaces of posterior teeth</td>
</tr>
<tr>
<td>0</td>
<td>None of the above</td>
</tr>
</tbody>
</table>

Once individuals are classified into a given zone, they are also classified in all zones of lesser severity except zero.

Caries severity was firstly analysed as an ordered variable, in order to obtain more detailed information on differences between categories. For the purpose of the polytomous ordered
regression the variable was coded:

0- Severity zone 0 (caries-free)
1 -Severity zone 1 (pit and fissure of posterior teeth)
2- Severity zone 2 (approximal of posterior teeth)
3- Severity zone 3 (approximal and labial of anterior teeth)

Caries experience in anterior teeth
In addition to the above classification, caries severity was analysed as a dichotomous variable, in order to compare subjects in the more severe groups with the others. For the purpose of logistic regression the variable was coded:
0- No (caries free in anterior teeth)
1- Yes (with caries experience in anterior teeth)

Periodontal health status indicator

Bleeding after probing
Presence or absence of gums bleeding after probing was adopted as an indicator in the assessment of the adolescents’ periodontal health status. The variable was categorized and coded:
0- No (no gums bleeding after probing)
1- Yes (any gums bleeding after probing)

Oral cleanliness

Dental Plaque Index
The Plaque Index (Silness and Löe, 1964) was used in the assessment of adolescents’ oral cleanliness. Six index teeth were examined (16, 11, 24, 36, 31, 44). In the present study, only buccal and lingual gingival areas of each tooth (instead of four areas) were examined. Each of the two surfaces was given a score from 0 to 3, representing the Plaque Index for the area. In order to have the Plaque Index for the tooth, the scores from the two areas of the tooth were added and divided by 2. By adding the indices for each teeth and
dividing by six the index for the individual was obtained.

The Plaque Index was analysed as a categorical variable. The cut-off points of the variable were made at mean levels of plaque 0, 1 and 2. There were no subjects with mean level of plaque 3. Since there were only 32 with level of plaque 0, it was decided to group these categories with the level of plaque \(\leq 1\), forming a single category. Thus, the variable was dichotomized and coded:

0- Low (level of plaque 0 and \(\leq 1\))
1- High (level of plaque >1)

**Oral health-related behaviours**

Questions regarding the variables described in this Sub-Section are from the adolescents’ questionnaire - Part 1 (Appendix B.3.2).

Two of the oral health-related behaviours studied, frequency of sugar consumption and daily toothbrushing frequency, were on a discrete numerical scale. They had a relatively small range of values and were positively skewed. Therefore, these variables were treated in the statistical analysis as categorical variables.

**Daily frequency of sugar consumption**

Daily frequency of sugar consumption was assessed using the 24 hour-dietary recall (Questions 10, 11 and 12). Two variables were obtained for the present study:

- Daily frequency of sugar intake
- Daily between meals frequency of sugar intake

Daily frequency was defined by counting the number of eating occasions in which sugary food and drinks were consumed during the day. Between meals intake was defined by intakes at any time, excluding breakfast, lunch and dinner. Sugary food and drinks were defined as those containing hidden as well as added non-milk extrinsic sugars (COMA, 1989).

Because frequency of consumption was high in the population studied (median= 4, range
0-17) the cut-off point was at frequency 1, so that a group with no or very low frequency could be compared with the others. The following categories were distinguished, for both total and between meals frequency:

0- None to once a day
1- Twice or more a day

**Daily toothbrushing frequency**

Daily toothbrushing frequency was obtained from Questions 33 and 34, and it was divided into three categories, based on the median score:

- Four times and more a day (above the median)
- Three times a day (median)
- Once to twice a day (below the median)

For the purpose of logistic regression with toothbrushing frequency as an outcome, the categories were grouped and coded:

0- Three times and more
1- Once to twice a day

When analysed as a potential confounder, the three categories were used.

**Pattern of dental attendance**

Pattern of dental attendance was obtained from Questions 46 and 52. The following categories were distinguished:

Check-ups mainly
In trouble mainly
Do not know
Never been to the dentist

For the purpose of logistic regression with dental attendance as an outcome, the variable was dichotomized and coded:

0- Check-ups mainly
1- In trouble mainly

Those who answered "do not know" or "never been to the dentist" were excluded from
the analysis. When used as a potential confounder, all four categories were analysed.

Self-assessment of oral health

In order to measure adolescents' self-assessment of oral health two indicators were used: self-rated dental health and satisfaction with teeth appearance.

Self-rated dental health

To measure self-rated dental health, a rating scale was used. The question was: "How would you rate the state of your teeth at the moment?" (Question 55). Each category was given a numerical code, representing the intensity of the response category:

- very good: coded 5,
- good: coded 4,
- not so good: coded 3,
- poor: coded 2, and
- do not know: coded 1.

For the purpose of logistic regression, with self-rated health as an outcome, the variable was dichotomized and coded:

0- Good dental health (codes 5 and 4)
1- Poor dental health (codes 3 and 2)

Those who answered "do not know" (code 1) were excluded from the analysis.

Satisfaction with dental appearance

A rating scale was also used to measure satisfaction with dental appearance. The question was: "How satisfied are you with the appearance of your teeth?" (Question 57). Each category was given a numerical code, representing the intensity of the response category:

- very satisfied: coded 6,
- fairly satisfied: coded 5,
- mixed feelings: coded 4,
- not very satisfied: coded 3,
- dissatisfied: coded 2,
- do not know: coded 1.
For the purpose of logistic regression with satisfaction with dental appearance as an outcome, the variable was dichotomized and coded:

0- Satisfied (codes 5 and 6)
1- Not satisfied (codes 4, 3 and 2)

Those who answered "do not know" (code 1) were excluded from the analysis.

2.4.7.2- Explanatory variables

Explanatory variables are the variables of central interest, whose effect on the outcomes will be examined and estimated. In the present study, adolescents’ and their mothers’ SOC were the explanatory variables investigated.

Sense of Coherence was measured using a short version of the SOC Scale with 13 questions (Adolescents’ questionnaire - Part 2, Appendix B.3.2). To obtain the scale’s score, the scores of each one of the 13 items were summed up. Thus the 13 items were scored from 13 to 91: the higher the score the stronger the SOC (Bowling, 1997). Sub-scores for the SOC’s three components - comprehensibility, manageability and meaningfulness - were not calculated in the present study. Antonovsky (1993) warned that the present version of the SOC Scale was developed to measure the construct as a global orientation, and not to study component inter-relations.

Review papers on previous studies using the SOC revealed that researchers have not agreed on the cut-off points for categorizing individual’s SOC (Antonovsky, 1993; Geyes, 1997). Furthermore, statisticians have pointed out that it is always best to present results in the original scale of measurement, since cut-off points are arbitrary and information is lost by using categories (Altman, 1996). In the present study, the frequency histograms of SOC scores showed that the shape of the distribution of the adolescents’ SOC scores was compatible with a Normal distribution (Fig. 3.4). The distribution of mothers’ SOC scores presented a moderate departure from normality (Fig. 3.5); however the mean and median values were very close, and the difference between them was only 0.1. To use all information available, it was decided to use both as continuous variables in the statistical analysis, unless there was evidence of a non-linear relation between SOC and the outcome variable.
2.4.7.3- Confounding variables
One of the explanations for an observed relationship of an exposure with a disease (or outcome) is that the observed association (or lack of one) is in fact due to a mixing of effects between the exposure, the disease, and a third factor that is associated with the exposure and independently affects the risk of developing the outcome of interest. This is referred to as confounding, and the extraneous factor is called a confounding variable or confounder. A confounder must be associated with both the exposure and, independent of that exposure, be a risk factor for the disease. Furthermore, it cannot merely be an intermediate link in the causal chain between the exposure and outcome under study. Confounding can lead to an overestimate or underestimate of the true association between the exposure and disease and can even change the direction of the observed effect (Hennekens and Buring, 1987).

A set of 31 variables were selected as potential confounders for the relationship between SOC and oral health in the present study (Table 2.2). The variables were selected taking into consideration the background scientific literature on the relations under study. Demographic and socioeconomic factors, as well as generally accepted oral health-related behaviours and other risk factors were selected as the main potential confounding variables. Other psychosocial variables, such as birth order, habits, school performance, participation in society, and mother-related factors, were also included.

The construction of the measures for oral health-related behaviours was described in Subsection 2.4.7.1. Other potential confounding variables which required reductions or transformation are described in detail below, and the remainders are shown in Table 2.2.

Socioeconomic status measurements
Information was collected mainly in order to determine social class of the families, using the Marxist concept (Lombardi et al, 1988). In addition, information on level of education of the mothers, household size, and family income (minimum wage) was also collected (Mothers’ questionnaire - Part 1, Appendix B.3.2). However, only social class and education of the mothers were analysed in the present study, since the number of blank responses to the others was high.
Social class

Within the classification system used in the present study the following socioeconomic groups were distinguished:
1- Bourgeoisie
2- Traditional petit bourgeoisie
3- New petit bourgeoisie
4- Typical proletariat
5- Non-typical proletariat
6- Sub-proletariat

For the purpose of the statistical analysis, social class was reduced to two categories and coded:
0- High social class (Codes 1 to 3, corresponding to the Bourgeoisie)
1- Low social class (Codes 4 to 6, corresponding to the Proletariat)

Social class is expected to be a strong confounder for SOC in the present study. The decision to dichotomize this variable was in order to increase its power, since there was little data in some of the groups initially obtained.

Mothers’ education

The question on educational qualification of mothers was in the following categories:
1- Illiterate (cannot read or write)
2- First phase of primary school not completed (less than 4 years)
3- First phase of primary school completed (4 years)
4- Second phase of primary school not completed (less than 8 years)
5- Second phase of primary school completed (8 years)
6- Secondary school not completed (less than 11 years)
7- Secondary school completed (11 years)
8- University not completed
9- University completed
10- Post-graduation
Later, this variable was reduced to four categories, according to the classification used in Brazil:

0- University degree completed or post-graduate (Codes 9 and 10)
1- Secondary school completed (11 years to university degree not completed) (Codes 7 and 8)
2- Second phase of primary school completed (8 to less than 11 years) (Codes 5 and 6)
3- Illiterate, to second phase of primary school not completed (none to less than 8 years) (Codes 1 to 4)

**Use of systemic fluoride**

Use of fluoridated water was used as an indicator of use of systemic fluoride. Information was obtained from Question 1 of the adolescents’ questionnaire (Appendix B.3.2). Subjects were asked if they had ever lived in another city apart from Goiânia, which was fluoridated since 1985. Information on water fluoridation of the other areas reported was obtained from the State Health Authority and published literature. Subjects were then classified into two groups:

0- Yes (always lived in Goiânia or other fluoridated areas)
1- No (have not always lived in Goiânia or other fluoridated areas)

**Presence of sealant**

Presence of fissure sealants was obtained through clinical examination (Appendix B.3.1). The variable was categorized and coded:

0- Yes (one or more permanent teeth with fissure sealant)
1- No (no permanent teeth with fissure sealant)

**Sports activity**

Information on sports activity was obtained from Question 4 of the adolescents’ questionnaire (Appendix B.3.2). Adolescents’ were asked: "Which activities do you have?", and four categories were given, including sports. The variable was categorized and coded:

0- Yes (subjects who reported sports activity)
1- No (subjects who reported no sports activity)
Failure at school examinations
Failure at school examination was used as an indicator of school performance. Information was obtained through the question "Have you ever failed an examination at school?" (Question 62 of the adolescents’ questionnaire - Appendix B.3.2), and categories were:
( )Yes, once
( )Yes, more than once
( )No, never
Later, the variable was reduced and coded:
0- No
1- Yes (failed once or more than once)

Mother-related variables
Questions regarding mother-related variables described here are in the mothers’ questionnaire - Part 2, Appendix B.3.2.

Mothers’ age
Mothers’ age was calculated from the answer to Question 1. Data was then categorized in two age groups, and coded:
0- ≥ 39 years
1- ≤ 38 years

Mothers’ dental health
Mothers’ self-reported use of denture and number of remaining natural teeth were used as indicators of the mothers’ dental health. Information was obtained from Questions 29 and 30 of the mothers’ questionnaire - Appendix B.3.2.
Question 29 was: "Do you use dentures?", and the categories were:
( )yes, upper denture only
( )yes, lower denture only
( )yes, upper and lower
( )no
Question 30 was: "How many natural teeth do you have at the moment?".
In order to obtain mothers’ dental health status the answers to these two questions were combined and the resulting categories dichotomized:

0- Good dental health (do not use denture and/or have 20 or more natural remaining teeth)
1- Poor dental health (use denture and/or have 19 or less natural remaining teeth)

**Mothers’ control over child’s sugar consumption**

Information on this variable was obtained from Questions 13 and 16. Question 13 was: "Does your family control (controlled) your child’s sugar consumption?", and the categories were:

( ) yes
( ) no
( ) do not know

Question 16 was: "Who controls (controlled) it?"

( ) the mother
( ) the father
( ) both parents
( ) other

Later, these two questions were combined and the resulting categories dichotomized:

0- Yes (mother or both parents control)
1- No (father only/others control, or no control)

**Mothers’ control over child’s dental visits**

This variable was obtained from Questions 23 and 24. Question 23 was: "Has your child ever been to the dentist?", and the categories were:

( ) yes
( ) no
( ) do not know

Question 24 was: "...who decides when your child should go to the dentist?", and the categories were:

( ) she herself/ he himself
( ) the mother
Later, these two questions were combined and the resulting categories were:

0 - Yes (mother or both parents control)
1 - No (father only or others control)
2 - No dental visit
3 - Do not know

**Mothers cleaned their children’s teeth**

This variable was obtained through the question "Did anyone brush your child’s teeth when he/she was a child?" (Question 18 of the mothers’ questionnaire - Appendix B.3.2).

Categories were:

( ) yes, the mother
( ) yes, the father
( ) yes, both parents
( ) yes, others
( ) no
( ) Cannot remember

The variable was then reduced and coded:

0 - Yes (mother or both parents cleaned)
1 - No (father only or others cleaned, or nobody)
2 - Cannot remember

**2.4.8- Data analysis**

Data analysis was carried out in three stages. Initially, a descriptive analysis was undertaken to assess the frequency distributions of the variables. In the next stage, bivariate analysis using Chi squared test was used to determine any statistically significant differences in dental health between the social classes. Subsequently, bivariate analysis was performed in order to compare groups of subjects with respect to SOC. Parametric methods, Student t-test and one-way analysis of variance (ANOVA), were used.
Correlation between adolescents' SOC and their mothers' SOC was calculated using Pearson correlation. Finally, the association between SOC and oral health was examined using multiple regression analysis. For all statistical tests, significance was considered when $P < 0.05$. For the regression models, $P$-values were obtained from the Wald test, and estimated odds ratios and their 95% confidence limits were determined. A description of the steps carried out in the regression modelling is presented below.

### 2.4.8.1- Steps in the regression modelling

Multiple regression analysis is a mathematical technique used to describe the relation between two or more variables, by predicting one variable from other variables. The concept of regression does not imply any causal relation between the outcome and the explanatory variables. It investigates the joint influence of the explanatory variables or predictors, taking account of possible correlations among them (Kirkwood, 1988; Altman, 1996).

Multiple regression encompasses a vast array of techniques. In the present study two regression methods were used for the data analysis: logistic regression and polytomous regression. Logistic regression is used when the outcome is dichotomous. It predicts a transformation of the outcome variable, or the probability of an outcome to occur for any combination of the explanatory variables in the model (Altman, 1996). Adjusted estimates of odds ratios of the factors of interest are obtained, which are adjusted for confounders. This method has been widely used in general health as well as oral health research. Also, it is easy to interpret, although by grouping in only two categories some important information may be lost. Logistic regression was used for the dichotomous outcome variables: caries-free status, DMFS, caries experience in second molars, caries experience in anterior teeth, Plaque Index, bleeding after probing, toothbrushing frequency, sugar consumption, pattern of dental attendance, self-rated dental health, and satisfaction with dental health.

If the outcome variable has more than two categories and these can be regarded as ordered, a technique called polytomous ordered regression or ordered logistic regression can be employed, which is an extension of the multiple logistic model (Greenland, 1998).
The idea behind polytomous ordered regression is that all true odds ratio are the same, and so it estimates the odds ratio for being above any cut-off for the independent variable. In other words, the odds ratio is interpreted as the odds of being in response category greater than or equal to $i$ compared with all categories less than $i$, or the odds of being in response category less than or equal $i$ compared with all categories greater than $i$.

Application of polytomous ordered regression can yield more precision and power than simple dichotomous-outcome analysis, although it is more difficult to interpret. Unlike ordinary logistic regression, studies utilizing polytomous ordered regression have been relatively rare and to the best of our knowledge only one study has been presented in the oral health field (Taylor and Becker, 1998). In the present study, polytomous ordered regression was particularly appropriate for the ordered polytomous variable caries severity, with categories of increasing severity ranging from 0 to 3 (see Sub-Section 2.4.7.1).

Since the outcome variables included in this study may be affected by different factors, different models were built for each of the outcomes. The original sets of variables included in each model are shown in Tables 2.3 to 2.6.

**2.4.8.2- Testing specification of model when fitting a continuous variable**

If an explanatory variable is continuous, the form of the relationship between that and the outcome variable must be assessed. Two methods for assessing whether the relationship between a continuous explanatory variable and an outcome is linear were used. When there is evidence of a non-linear trend, a suitable transformation of the variable may be more appropriate (Altman, 1996). For the first method, the sample was divided into quintiles (fifths) according to the distribution of the SOC scale. A model with SOC fitted as a continuous variable taking values 1,...,5, as defined by the quintiles, was compared with one where SOC was fitted as a categorical variable with 5 levels. A likelihood ratio test was then used to assess the improvement in fit of the second model over the first in order to see if there was an important non-linear component of the relationship (Kirkwood, 1988). The results showed no evidence against linearity in the relation between the variables. The second method involved allowing the relationship to be curved by fitting the SOC variable (on the original scale) and then testing whether a quadratic term was
also statistically significant. The results suggested a non-linear trend between adolescents’ SOC and Plaque Index.

2.4.8.3- Simple regression analysis
The starting point for each model was to examine the simple relation between each potential explanatory variable and the outcome of interest. For this, unadjusted regression analyses with SOC and each of the outcome variables was performed.

The inclusion of the potential confounding variables in the regression models was based on the strengths of their associations with the outcome variable. Therefore, the next stage was to carry out a simple (unadjusted) regression analysis with the outcome variables which showed an association with SOC in the previous stage and each one of the confounders in turn. To examine the relative importance of the significant explanatory and potential confounding variables for each of the outcome variables multiple regression analysis was performed. Potential confounders for each of the outcome variables are shown in Tables 2.3 to 2.6.

The log odds ratio are interpreted as the estimated additive changes (increases or decreases) in the outcome variable for an increase of one unit in the predictor or explanatory variable on the log odds scale (Altman, 1996). In order to facilitate interpretation of the results of this study, regression coefficients for the SOC scores were multiplied by 10 on the log scale, so that they indicate a change in the outcome variable for every increase of 10 units in the SOC.

Before constructing the models, correlation between some of the independent variables was tested. When two variables are highly correlated, there is no advantage in adding the two variables in the model at the same time, as they explain much the same variability of the outcome variable. As a result, the effect of one variable may obscure the effect of the other one, which could lead to misleading findings (Altman, 1996). In the present study, the highest correlation was found to be between social class and level of education of the mothers (r = 0.40; P=0.000). Therefore, when both social class and mothers’ education had a significant relationship with the outcome as well as the explanatory variable, only social
class was entered in the model, although mothers’ education was also shown in the tables. Correlations were also found between adolescents’ SOC and mothers’ SOC ($r= 0.25; P= 0.000$), and separate models were constructed for adolescents’ SOC and mothers’ SOC, followed by a full model including both at the same time. Social class was only slightly correlated with pattern of dental attendance ($r= 0.15; P= 0.000$) and so both were allowed in a model at the same time.

2.4.8.4- Multiple regression analysis

In the following step, multiple regression was used to adjust the relationship between Sense of Coherence and oral health outcome variables.

When both adolescents’ and their mothers’ SOC were associated with the outcome under investigation, three models were constructed:
Model I- Including only adolescents’ SOC
Model II- Including only mothers’ SOC
Model III- Including adolescents’ and their mothers’ SOC

All potential confounders which had an association with the outcome variable in the simple regression at the 5% level were included in the model. However, sex and socioeconomic status were kept in the models even when their association with the outcome was not statistically significant, because their importance to the oral health outcomes under study has been demonstrated in previous studies (see Chapter 1, Sub-Sections 1.2.3.1 and 1.2.6.1). The inclusion of potential confounding variables in the model was done in separate stages. In each stage, a set of variables was entered simultaneously.

In the analysis of the relationship between SOC and oral health status, multiple regression was performed in three stages:
Stage 1- Adjusted for socioeconomic status;
Stage 2- Adjusted for socioeconomic status, sex and oral health-related behaviours; and
Stage 3- Adjusted for socioeconomic status, sex, oral health-related behaviours, and other psychosocial factors: birth order, habits, participation in society, school performance, and
mother-related variables.

Multiple regression analysis for the oral health-related behaviours was performed in two stages:
Stage 1- Adjusted for socioeconomic status; and
Stage 2- Adjusted for socioeconomic status and sex.

Finally, multiple regression analysis for the relationship between SOC and self-assessment of oral health was also done in two stages:
Stage 1- Adjusted for socioeconomic status; and
Stage 2- Adjusted for socioeconomic status, sex and oral health status.

Inclusion of the variables in model III was done in two stages:
Stage 1- Adolescents and their mothers’ SOC, adjusted for each other; and
Stage 2- Adolescents and their mothers’ SOC, adjusted for the potential confounders (socioeconomic status, sex, and oral health status).

The multiple regression models including the variables mothers’ dental health and mothers’ education were checked to ensure that the results were not affected by the missing cases, which were included as an additional category. Sensitivity analysis was carried out by performing the multiple logistic regression without the missing cases in the models. Results showed that the estimates did not change significantly, and the category "missing" was kept in the models.

2.4.8.5- Checking for interactions between variables

One of the assumptions of the regression model is that the effects of each variable are independent, so that the effect of one variable is the same regardless of the values of the other variables in the model (Altman, 1996). Therefore, the final step in the data analysis was to check for interaction between some of the variables which could distort the results. The interaction between two variables is examined by creating a new variable which is their product and adding this to the model (Altman, 1996). In the present study, interaction was checked between each of the explanatory variables in turn (adolescents’
SOC and mothers’ SOC) and two confounders, sex and social class, if the main effect of these variables were significant. The results showed no interactions between the variables investigated, indicating that the effect of SOC is homogeneous over all levels of sex and social class.

2.4.8.6- Testing for between schools variation

Data in the present study have a hierarchical or clustered structure, since subjects were grouped within schools. As groupings tend to become differentiated and this differentiation implies that the group and its members both influence and are influenced by the group membership, the importance of group effects should not be ignored. For example, there may be school influences on oral health, such as awareness of health, dental education programmes, and dental care. Thus children within a school are more likely to be alike in terms of oral health than they are to be like children from other schools. However, traditional multiple regression techniques recognize only the individuals as the units of analysis and ignore their groupings into schools. They assume all individual observations are independent. The resulting similarity between observations in the same school reduces the statistical importance of any one response. This introduces extra-variation between-schools that artificially biases test statistics and variance estimates, often producing spuriously significant results (Donner, 1985; Donald and Donner, 1987).

In order to address the problem, the final step in the statistical analysis was to test for clustering. Intracluster correlation coefficient (ρ) was calculated for each outcome and a test carried out to test the null hypothesis that ρ=0. Intracluster correlation indicates the percentage of the total variation (between + within school) in the outcome measure which is due to between school variation (Donner, 1985; Donald and Donner, 1987).

Of the eight outcome variables investigated only one, caries experience in anterior teeth, showed some intracluster correlation. The estimate (ρ) for this variable was 0.059, which was significantly higher than 0. Therefore, results for this particular outcome must be interpreted with some caution. However, since ρ can vary between 0 and 1, the estimated value of 0.059 is not very large, even if it is statistically different from 0. Therefore, it was thought unnecessary to carry out more complex modelling.
Table 2.1- Outcome variables used in the statistical analysis

<table>
<thead>
<tr>
<th>Outcome variables</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ORAL HEALTH STATUS</strong></td>
<td></td>
</tr>
<tr>
<td>Dental caries status</td>
<td>Caries-free</td>
</tr>
<tr>
<td></td>
<td>With caries experience</td>
</tr>
<tr>
<td>DMFS</td>
<td>Low (0-7)</td>
</tr>
<tr>
<td></td>
<td>High (≥8)</td>
</tr>
<tr>
<td>Caries experience in second molars</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Caries severity</td>
<td>Zone 0 (caries-free)</td>
</tr>
<tr>
<td></td>
<td>Zone 1 (pit and fissure of posterior teeth)</td>
</tr>
<tr>
<td></td>
<td>Zone 2 (approximal of posterior teeth)</td>
</tr>
<tr>
<td></td>
<td>Zone 3 (approximal and labial of anterior teeth)</td>
</tr>
<tr>
<td>Caries experience in anterior teeth</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Oral cleanliness</strong></td>
<td></td>
</tr>
<tr>
<td>Plaque Index</td>
<td>Low (≤1)</td>
</tr>
<tr>
<td></td>
<td>High (&gt;1)</td>
</tr>
<tr>
<td><strong>Periodontal status</strong></td>
<td></td>
</tr>
<tr>
<td>Bleeding after probing</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>ORAL HEALTH-RELATED BEHAVIOURS</strong></td>
<td></td>
</tr>
<tr>
<td>Daily total frequency of sugar intake</td>
<td>None to once</td>
</tr>
<tr>
<td></td>
<td>Twice or more</td>
</tr>
<tr>
<td>Daily between meals frequency of sugar intake</td>
<td>None to once</td>
</tr>
<tr>
<td></td>
<td>Twice or more</td>
</tr>
<tr>
<td>Daily toothbrushing frequency</td>
<td>Three times or more</td>
</tr>
<tr>
<td></td>
<td>Once to twice</td>
</tr>
<tr>
<td>Pattern of dental attendance</td>
<td>Check-ups mainly</td>
</tr>
<tr>
<td></td>
<td>In trouble mainly</td>
</tr>
<tr>
<td><strong>SELF-ASSESSMENT OF ORAL HEALTH</strong></td>
<td></td>
</tr>
<tr>
<td>Self-rated dental health</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>Poor</td>
</tr>
<tr>
<td>Satisfaction with dental appearance</td>
<td>Satisfied</td>
</tr>
<tr>
<td></td>
<td>Not satisfied</td>
</tr>
</tbody>
</table>
Table 2.2- Potential confounding variables selected for statistical analysis

<table>
<thead>
<tr>
<th>Socio-demographic factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Adolescents’ sex (male; female)</td>
</tr>
<tr>
<td>2. Birth order (first child; second child; third or more)</td>
</tr>
<tr>
<td>3. Social class (high; low)</td>
</tr>
<tr>
<td>4. Mothers’ education (illiterate and primary; primary (2nd phase); secondary; university)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Oral health status</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. DMFS Index (low; high)</td>
</tr>
<tr>
<td>6. Caries severity (zones 0; 1; 2; and 3)</td>
</tr>
<tr>
<td>7. Plaque Index (low; high)</td>
</tr>
<tr>
<td>8. Trauma to anterior teeth (no; yes)</td>
</tr>
<tr>
<td>9. Use of orthodontic appliances (no; yes)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Oral health-related behaviours and other risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Daily total frequency of sugar intake (none to once; twice or more)</td>
</tr>
<tr>
<td>11. Daily between meals frequency of sugar intake (none to once; twice or more)</td>
</tr>
<tr>
<td>12. Daily toothbrushing frequency (4 times or more; 3 times; once to twice)</td>
</tr>
<tr>
<td>13. Use of fluoride gel (yes; no; do not know)</td>
</tr>
<tr>
<td>14. Use of fluoride mouthrinse (yes; no; do not know)</td>
</tr>
<tr>
<td>15. Always lived in fluoridated areas (yes; no)</td>
</tr>
<tr>
<td>16. Pattern of dental attendance (check-ups mainly; in trouble mainly; do not know; no dental visit)</td>
</tr>
<tr>
<td>17. Presence of sealant (yes; no)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Habits, participation in society and school performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. Smoking habits (no, never; yes, in the past; yes, currently)</td>
</tr>
<tr>
<td>19. Sports activity (yes; no)</td>
</tr>
<tr>
<td>20. Member of association (yes; no)</td>
</tr>
<tr>
<td>21. Position of trust in association (yes; no)</td>
</tr>
<tr>
<td>22. Frequency of attendance of religious activities (often; not often; almost never or never)</td>
</tr>
<tr>
<td>23. Failure at school examinations (no; yes)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other mother-related factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>24. Age ($\geq 39$; $\leq 38$)</td>
</tr>
<tr>
<td>25. Smoking habits (no, never; yes, in the past; yes, currently)</td>
</tr>
<tr>
<td>26. Dental health status (good; poor)</td>
</tr>
<tr>
<td>27. Feeding practices (breast only; breast and bottle; bottle only; do not know)</td>
</tr>
<tr>
<td>28. Access to advice on child’s dental care (yes; no)</td>
</tr>
<tr>
<td>29. Control over child’s sugar consumption (yes; no)</td>
</tr>
<tr>
<td>30. Control over child’s dental visits (yes; no; no dental visit; do not know)</td>
</tr>
<tr>
<td>31. Cleaned child’s teeth (yes; no; cannot remember)</td>
</tr>
</tbody>
</table>
Table 2.3- Variables included in the model to study the association between Sense of Coherence and dental caries status

<table>
<thead>
<tr>
<th>Explanatory</th>
<th>Potential confounding</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescents’ Sense of Coherence</td>
<td>Socio-demographic</td>
<td>Caries-free status</td>
</tr>
<tr>
<td></td>
<td>Sex</td>
<td>DMFS</td>
</tr>
<tr>
<td></td>
<td>Socioeconomic status</td>
<td></td>
</tr>
<tr>
<td>Mothers’ Sense of Coherence</td>
<td>Social class</td>
<td>Caries experience in second molars</td>
</tr>
<tr>
<td></td>
<td>Mothers’ education</td>
<td></td>
</tr>
<tr>
<td><strong>Oral health-related behaviours and other risk factors</strong></td>
<td></td>
<td>Caries severity</td>
</tr>
<tr>
<td>Daily frequency of sugar intake</td>
<td></td>
<td>Caries experience in anterior teeth</td>
</tr>
<tr>
<td>Daily between meals frequency of sugar intake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily toothbrushing frequency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of fluoride gel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of fluoride mouthrinse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always lived in fluoridated areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern of dental attendance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of sealant</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Habits, participation in society and school performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking habits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Member of association</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position of trust in association</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of attendance of religious activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure at school examinations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth order</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mother-related factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking habits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental health status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to advice on child’s dental care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeding practices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control over child’s sugar consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control over child’s dental visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaned child’s teeth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2.4- Variables included in the model to study the association between Sense of Coherence, periodontal status and oral cleanliness

<table>
<thead>
<tr>
<th>Explanatory</th>
<th>Potential confounding</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescents’ Sense of Coherence</td>
<td><strong>Socio-demographic factors</strong>&lt;br&gt;Sex&lt;br&gt;Socioeconomic status</td>
<td>Plaque Index</td>
</tr>
<tr>
<td>Mothers’ Sense of Coherence</td>
<td><strong>Oral health-related behaviours</strong>&lt;br&gt;Daily toothbrushing frequency</td>
<td>Bleeding after probing</td>
</tr>
<tr>
<td></td>
<td><strong>Oral cleanliness</strong>&lt;br&gt;Plaque Index*</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Habits, participation in society and school performance</strong>&lt;br&gt;Smoking habits&lt;br&gt;Sports activity&lt;br&gt;Member of association&lt;br&gt;Position of trust in association&lt;br&gt;Frequency of attendance of religious activities&lt;br&gt;Failure at school examinations&lt;br&gt;Birth order</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Mother-related factors</strong>&lt;br&gt;Age&lt;br&gt;Smoking habits&lt;br&gt;Dental health&lt;br&gt;Access to advice on child’s dental care&lt;br&gt;Cleaned child’s teeth</td>
<td></td>
</tr>
</tbody>
</table>

*Only for the variable bleeding after probing
Table 2.5- Variables included in the model to study the association between Sense of Coherence and oral health-related behaviours

<table>
<thead>
<tr>
<th>Explanatory</th>
<th>Potential confounding</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescents’ Sense of</td>
<td><strong>Socio-demographic factors</strong></td>
<td>Daily frequency of sugar</td>
</tr>
<tr>
<td>Coherence</td>
<td>Sex</td>
<td>consumption</td>
</tr>
<tr>
<td></td>
<td>Socioeconomic status</td>
<td>Pattern of dental attendance</td>
</tr>
<tr>
<td>Mothers’ Sense of Coherence</td>
<td>Social class</td>
<td>Daily frequency of toothbrushing</td>
</tr>
<tr>
<td></td>
<td>Mothers’ education</td>
<td></td>
</tr>
</tbody>
</table>

Table 2.6- Variables included in the model to study the association between Sense of Coherence and self-assessment of oral health

<table>
<thead>
<tr>
<th>Explanatory</th>
<th>Potential confounding</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescents’ Sense of</td>
<td><strong>Socio-demographic factors</strong></td>
<td>Self-rated dental health</td>
</tr>
<tr>
<td>Coherence</td>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Socioeconomic status</td>
<td></td>
</tr>
<tr>
<td>Mothers’ Sense of Coherence</td>
<td>Social class</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mothers’ education</td>
<td></td>
</tr>
<tr>
<td><strong>Oral health status</strong></td>
<td>Caries severity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DMF/S</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Socio-demographic factors</strong></th>
<th>Satisfaction with dental appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td></td>
</tr>
<tr>
<td>Social class</td>
<td></td>
</tr>
<tr>
<td>Mothers’ education</td>
<td></td>
</tr>
</tbody>
</table>

| **Oral health status**       |                                        |
| Caries severity              |                                        |
| Plaque Index                 |                                        |
| Trauma to anterior teeth     |                                        |
| Use of orthodontic appliances|                                        |
CHAPTER 3

RESULTS

3.1- Introduction

This chapter presents the findings of the study. In Section 3.2 the frequency distribution of the variables studied are presented. Section 3.3 presents the results of bivariate analysis on the relationships between social class and all other variables. Section 3.4 describes the bivariate associations between Sense of Coherence and other explanatory variables. Finally, the results regarding the relationship between Sense of Coherence and oral health are presented in Section 3.5.

3.2- Descriptive data

Socio-demographic characteristics of the study population are shown in Table 3.1. A group of 1328 people participated in the study. The sample was composed of 664 adolescents aged 15 years, 344 female (51.8%) and 320 male (48.2%), and their mothers.

Adolescents birth order ranged from first to eighth child, and almost half (44.7) of them were the first child in the family. The high social class group (Bourgeoisie) was composed of 325 subjects (48.9%), and low social class (Proletariat) of 339 subjects (51.1%). More than half (55.2%) of the mothers have completed secondary school or a university degree and only 1.7 % were illiterate.

The frequency distributions of the SOC scores are given in Figures 3.4 and 3.5. The shapes were compatible with a Normal distribution, although mothers’ SOC scores presented a slight departure from normality. Adolescents’ SOC ranged from 29 to 83 and the mean score was 57.5 (Fig. 3.4). Mothers’ SOC ranged from 13 to 91 and the mean score was 63.9 (Fig. 3.5).

Tables 3.2 and 3.3, and Figure 3.6 display the variables related to the adolescents' oral health status. Caries prevalence was high in the population studied, and only 12.2% of the adolescents were caries-free. More than half of the subjects (55.9%) had no caries
experience in the second molars (Table 3.2).

The frequency histogram of the DMFS Index was not compatible with a Normal distribution, showing a highly positive skewed distribution (Fig. 3.6). Almost half of the subjects had low DMFS (≤7) and 53.2% had high DMFS (≥ 8) (Table 3.2). The filled component accounted for most (83.5%) of the index, while the decayed and missing components accounted for 9.3% and 8.2% of the DMFS, respectively (Table 3.3).

Regarding caries severity, most of the adolescents (70.2 %) were classified in Zone 1 (pit and fissure caries in posterior teeth) or Zone 2 (caries in approximal surfaces of posterior teeth). Approximately 18% of the subjects had caries experience in anterior teeth (Table 3.2).

Almost 10% of the sample were using orthodontic appliances at the time of the examination. Trauma to anterior teeth was observed in 17.3% of the sample. Presence of teeth with fissure sealant was observed in 31.6% of the sample, and the number of sealed surfaces ranged from 0 to 16 (Table 3.2).

Sixty eight adolescents (10.2 % of the sample) were not examined for plaque and bleeding, including those using orthodontic appliances (66 subjects) and those who were recovering from oral surgery procedures (2 subjects). Among the subjects examined, low levels of plaque and bleeding were found. Mean plaque score ranged from 0 to 2.33. Only 5.4% of the sample had no plaque, the majority (72.3%) presented scores ≤ 1 and 22.3% had plaque scores higher than 1. The mean number of teeth with gums bleeding on probing was 0.56 and most of the adolescents (62.1%) had no bleeding (Table 3.2).

Adolescents' oral health-related behaviours are presented in Table 3.4. All subjects reported brushing their teeth daily. Toothbrushing frequency was high, ranging from 1 to 6 times per day, and the median was 3 times. Nearly 40% of the adolescents reported brushing their teeth more than three times per day, 38.4% three times per day and 22.3% two times or less. Daily overall frequency of sugar intake was high, ranging from 0 to 17 times per day. The majority of the sample (92.6%) had sugar twice a day or more. Daily
frequency between meals ranged from 0 to 16 times per day, and 73.6% had sugar twice a day or more between meals. Regarding pattern of dental attendance, more than half (53.3%) of the sample visited the dentist for check ups mainly, 41.1% in trouble mainly, and only 1.2% had never been to the dentist. Eight subjects (1.2%) did not know their pattern of dental attendance.

As shown in Table 3.4, the majority of the adolescents had access to fluoride. Almost 70% had always lived in the city of Goiânia or other fluoridated areas, and 17.2% had lived in fluoridated and non-fluoridated areas. Regarding the source of drinking water, 81.3% had fluoridated water supply or mineral water, while 16.9% had non-fluoridated water from wells or rivers and 1.8% did not know. Furthermore, only 1.8% reported they never had topical fluoride applications, either gel or mouthrinse, and 4.5% did not know.

Table 3.5 displays the frequency distribution of the adolescents according to their self-assessment of oral health. Most of the subjects studied (66.7%) reported good dental health. Regarding satisfaction with their dental appearance, 59.6% of the adolescents reported being satisfied.

Information on adolescents’ habits, participation in social activities and school performance are presented in Table 3.6. Nearly half of the respondents (48.3%) reported that they practised sports and only 3.6% were smokers. Regarding participation in social activities, 52.0% were members of an association, although only a few (8.1%) had a position of trust. Frequency of attendance at religious activities was high and only 14.9% reported a very low frequency or no attendance at all. Most of the adolescents (66.1%) reported they had never failed at school examinations.

Frequency distribution of the adolescents according to variables related to the mothers are presented in Table 3.7. Mothers’ age range varied from 29 to 60 years (mean age of 40.1 years, SD= 5.3). Less than half were smokers (24.8%) or smoked only in the past (20.5%). Most of them (77.6%) had good dental health status regarding reported use of dentures and number of natural remaining teeth. A high percentage of the mothers had received advice on their children’s dental care (70.3%).
The majority of the mothers reported they both breast and bottle fed their children (76.4%), and cleaned their teeth when they were younger (87.5%). More than half (53.0%) control or controled their children’s sugar consumption and 73.3% decide when they must go to the dentist.

3.3- The relationship between social class and the variables studied

Results of the bivariate analysis on the relationship between social class and all other variables are presented in Tables 3.8 to 3.10. High social class and low social class groups were compared using Chi-squared tests.

Table 3.8 shows the results regarding adolescents’ oral health status. An association was found between social class and all dental health indicators investigated. The high social class group included a higher percentage of adolescents who were caries-free (P= 0.007), had a low DMFS (P= 0.001), no caries experience in second molars (P= 0.001), lower levels of caries severity (P= 0.005) and no caries experience in anterior teeth (P= 0.021), compared with the low social class group. Also, a higher percentage of adolescents from the high social class group had teeth with fissure sealant (P=0.001), had trauma to anterior teeth (P= 0.016), and used orthodontic appliances at the time of the examination (P= 0.006). No statistically significant difference was found in relation to oral cleanliness and periodontal disease.

Results regarding dental health-related behaviours and self-assessment of oral health are shown in Table 3.9. The high social class group had a higher percentage of adolescents with a low frequency of total sugar intake (P= 0.018) as well as a low between meals sugar intake (P= 0.026). This group also had a higher percentage of subjects going to dentist for mainly for check-ups (P<0.001). The differences in toothbrushing frequency and use of fluoride were not significant. A higher percentage of adolescents in the high social class were satisfied with their dental appearance (P= 0.025), although no difference was found regarding self-ratings of dental health.

As shown in Table 3.10, the high social class group had more adolescents reporting sports activity (P= 0.005) and no failure at school examinations (P= 0.003). Low social class
groups reported slightly more membership of association (P= 0.065) and more subjects with a position of trust in association (P= 0.035) than the high social class group. The two groups did not differ significantly in relation to smoking habit and frequency of attendance at religious activities.

Results regarding the mother-related variables are presented in Table 3.11. A significant association was found only in relation to their dental health status. As for the adolescents, mothers from high social class were more likely to have good dental health than those from low social class (P= 0.018).

3.4- The relationship between Sense of Coherence and other explanatory variables

Before analysing the relationship between Sense of Coherence and oral health, an investigation of the factors affecting adolescents' and their mothers' SOC was carried out. Results are shown in Figure 3.7 and Tables 3.12 and 3.13.

The correlation between adolescents' SOC and mothers' SOC was initially examined using a scatterplot of the data. As shown in Figure 3.7, there appeared to be some association between the values of the two variables, and there was a tendency for the adolescents' SOC to increase with increases in their mothers' SOC. In order to measure the degree of association, Pearson's correlation coefficient was calculated. The results showed a moderate correlation between the two variables (r = 0.25; P = 0.000).

Table 3.12 shows the results of t-tests and ANOVAs comparing the mean SOC scores for adolescents' between groups. Highly significant test results (P< 0.001) were obtained for sex, smoking habits and failure at school examination. Significant results (P< 0.05) were also found for frequency of attendance of religious activities, and the mothers' education. Males had a higher mean SOC score (mean= 59.0) than females (mean= 56.1). Higher mean SOC scores were observed among non-smokers, regular attenders to religious activities, those who had never failed at school examinations, and those whose mothers had higher education attainment. Subjects from high social class had slightly higher scores than those from lower social class, but the difference was not statistically significant (P=0.303). No significant difference in SOC was observed in
relation to the remaining variables investigated.

Table 3.13 shows the results of t-tests and ANOVAs comparison between groups for mothers’ SOC. Highly significant results were obtained for social class, level of education and dental health status. Weaker, but still significant results (P< 0.05) were found for age, smoking habits, and two measures of child’s dental care by the mothers. A higher mean SOC was found among older mothers, those from high social class, non-smokers, with a higher education attainment and good dental health. Mothers who controlled their children’s sugar consumption and who had cleaned their children’s teeth in childhood had higher mean SOC scores than other mothers. The remaining mother-related variables investigated were not significantly associated with their SOC.

3.5- The relationship between Sense of Coherence and oral health

The primary purpose of using multiple regression in the statistical analysis of data was to study the effect of SOC (explanatory variable) on oral health related outcomes. Because oral health is also related to other variables, it was necessary to adjust for the effect of these variables (confounder variables). Although the interest was focused on SOC, the fact that some potential confounder variables may turn out to be important exposures was also taken into consideration.

Results of the simple and multiple regression analysis are described separately for each of the outcome variables in Sub-sections 3.5.1 to 3.5.3.

3.5.1- Sense of Coherence and oral health status

Figure 3.1 shows the hypothesized relationship between SOC and oral health status. Results are presented in Tables 3.14 to 3.27, and described in Sub-sections 3.5.1.1 to 3.5.1.3.
3.5.1.1- Sense of Coherence and dental caries status
In order to assess the relationship between Sense of Coherence and dental caries status five indices were used: caries-free status, DMFS index, caries experience in second molars, caries severity and caries experience in anterior teeth.

Results of the simple logistic regression showed that adolescents’ SOC was associated with caries experience in anterior teeth, while mothers’ SOC was associated with all variables related to dental caries status, except caries experience in second molars (Table 3.14). Therefore, further analysis was carried out only for the outcomes which presented significant relationships with SOC.

Sense of Coherence and caries-free status
Tables 3.15 and 3.16 display the findings of the regression for SOC and caries-free status.
Results of the simple logistic regression showed an association between adolescents' caries-free status and their mothers' SOC (P= 0.018). Adolescents whose mothers had higher SOC scores were less likely to have caries experience than those whose mothers had lower SOC scores, the odds ratio being 0.80 (CI= 0.67-0.96) for every 10 units increase on the SOC scale. A highly significant relationship (P< 0.01) was found between caries-free status and each of sex, social class, and pattern of dental attendance. Mothers' education, and oral health-related behaviours of daily between meals frequency of sugar consumption, presence of sealant (Table 3.15), birth order, failure at school examination, sports activity and mothers' dental health (Table 3.16) were also significantly associated with the outcome variable (P< 0.05). All other variables were not significant.

The next step was to carry out a multiple regression analysis including mothers' SOC and the significant confounding variables for caries experience in the model in three stages. The results showed that mothers' SOC remained significant after adjusting for social class (P= 0.041), indicating that mothers' SOC and social class were independently related to the adolescents' caries-free status (Table 3.15, Stage 1). However, when sex, frequency of sugar consumption, pattern of dental attendance and presence of sealant were entered in the model, mothers' SOC was no longer significant at the 5% level and the strength of the association decreased to 0.85 (CI= 0.69-1.03) (Table 3.15, Stage 2). Likewise, this variable did not remain significant after birth order, failure at school examination, sports activity and mothers' dental health were included in the model (Table 3.16, Stage 3). These results indicate that the relation between adolescents' caries-free status and their mothers' SOC may be partially explained by variation in the other variables, in particular the oral health-related behaviours.

After adjusting for all variables, caries-free status was independently associated with sex, pattern of dental attendance and birth order, while the association with failure at school examination was of borderline significance (P= 0.058) (Table 3.16, Stage 3). The model explained 11.6% of the variation in caries experience. Adolescents who were female (OR= 1.74, CI= 1.03-2.95), those who were the third or more child in the family (OR= 2.01, CI= 0.78-3.11) compared with the first born, and those who attended the dentist when in trouble mainly (OR= 3.36, CI= 1.72-6.53) compared with check-ups mainly had an
increased risk of having caries experience. Adolescents who had never been to the dentist had a lower risk of caries experience compared with those who had check-ups (OR= 0.08, CI= 0.02-0.40). The variable with the strongest association with the outcome variable was pattern of dental attendance (P< 0.001).

**Sense of Coherence and DMFS index**

Tables 3.17 and 3.18 present the results of regression for SOC and DMFS. Results of the simple logistic regression showed an association between adolescents’ DMFS and their mothers’ SOC (P= 0.039). Adolescents whose mothers had higher SOC scores were less likely to have a high DMFS compared with those with lower SOC scores, the odds ratio being 0.89 (CI= 0.79-1.00) for every 10 units increase on the SOC scale. A highly significant relationship was found between DMFS and sex (P< 0.001), social class (P= 0.001), mothers’ education (P= 0.002), pattern of dental attendance (P< 0.001), presence of sealant (P= 0.001) and mothers’ dental health (P= 0.001) (Table 3.17). Sports activity was also significantly associated with the outcome variable (P= 0.023) (Table 3.18). All other variables were not significant.

Multiple regression analysis was performed including mothers’ SOC and the significant confounding variables for DMFS in the model. The results showed that mothers’ SOC did not remain significant at the 5% level after adjusting for social class (Table 3.17, Stage 1) with the OR getting slightly weaker (OR= 0.91, CI= 0.80-1.02). The inclusion of sex, pattern of dental attendance and presence of sealant in the model (Table 3.17, Stage 2), as well as sports activity and mothers’ dental health (Table 3.18, Stage 3) reduced the significance of SOC further. After adjusting for all variables only sex, pattern of dental attendance, presence of sealant and mothers’ dental health remained significant (Table 3.18, Stage 3). The model accounted for 7.0% of the variance in DMFS. The probability of having a high DMFS was higher among female adolescents (OR= 1.58, CI= 1.14-2.19) than male, those who attended the dentist when in trouble mainly (OR= 1.58, CI= 1.12-2.22) compared with those attending mainly for check-ups, those who had no teeth with sealant (OR= 1.54, CI= 1.12-2.19) and whose mothers had poor dental health (OR= 1.48, CI= 1.04-2.11). Adolescents who had never been to the dentist and those who did not know their pattern of dental attendance had a lower probability of having a high DMFS
than those who attended mainly for check-ups.

**Sense of Coherence and caries severity**

Tables 3.19 to 3.21 present the results of the polytomous ordered regression for SOC and caries severity. Results of the simple regression showed a strong association between adolescents’ caries severity and their mothers’ SOC (P< 0.001). Adolescents whose mothers had higher SOC scores were less likely to be classified in increasing zones of caries severity than those whose mothers had lower SOC scores, the odds ratio being 0.80* (CI= 0.73-0.89) for every 10 units increase on the SOC scale. A highly significant relationship (P< 0.001) was found between caries severity and social class, pattern of dental attendance, and mothers’ dental health (Table 3.19). Other variables such as sex, mothers’ education, presence of sealant, fluoridated water, birth order, failure at school examination and sports activity were also significantly associated with the outcome variable (P< 0.05) (Table 3.21). All other variables were not significant.

The next step was to carry out a multiple regression analysis including mothers’ SOC and the significant confounding variables for caries severity in the model. The results showed that mothers’ SOC remained highly significant (P< 0.001) after adjusting for social class, indicating that mothers’ SOC, as well as social class were independent factors related to the adolescents’ caries severity (Table 3.19, Stage 1). The effect of mothers’ SOC on their children’s caries severity also remained highly significant (P< 0.001) after adjusting for social class, sex, fluoridated water, pattern of dental attendance and presence of sealant (Table 3.20, Stage 2). When all other variables - birth order, failure at school examination, sports activity and mothers’ dental health - were included in the model, this relationship still remained highly significant, although the estimated odds ratio moved slightly closer to 1 (from 0.80 unadjusted to 0.84) (Table 3.21, Stage 3).

After adjusting for all variables, caries severity was associated with mothers’ SOC, pattern

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*0.80 is an average of the three odds ratios observed for each different cut-off. Interpretation of the (log) odds ratio is for being in a category i or below, compared with being in categories above i for all values of i. For example, OR for being in most severe caries group for difference in 10 units SOC is 0.80, and OR for being in pit and fissure posterior group or more severe is 0.80 for difference in 10 units SOC.
of dental attendance, fluoridated water, failure at school examination and mothers’ dental health (Table 3.21, Stage 3). The model explained 5.5% of the variance in caries severity. An increased risk of having high caries severity was found among adolescents whose mothers had lower levels of SOC (OR= 0.84, CI= 0.76-0.94), those who attended the dentist when in trouble mainly (OR= 1.93, CI= 1.42-2.62) compared with those attending mainly for check-ups, who did not always live in fluoridated areas (OR= 1.47, CI= 1.08-1.99), who had failed at school examinations (OR= 1.55, CI= 1.14-2.11) and whose mothers had poor dental health (OR=1.39, CI= 1.01-1.91). Adolescents who had never been to the dentist had a lower risk of having high caries severity compared with those who had check-ups (OR= 0.09, CI= 0.02-0.42).

**Sense of Coherence and caries experience in anterior teeth**

Findings of the regression between SOC and adolescents’ caries experience in anterior teeth are shown in Tables 3.22 to 3.26. There was a strong association between adolescents’ caries experience in anterior teeth and their mothers’ SOC (P<0.001), and a less strong association between adolescents’ caries experience in anterior teeth and SOC (P= 0.029). As described in Section 3.4 and also in Chapter 2 (Sub-section 2.4.8.3), adolescents’ SOC and mothers’ SOC were correlated. Therefore, separate models for each of them, as well as a full model including both variables, were constructed.

Results of model I (Adolescents’ SOC) are presented in Tables 3.22 and 3.23. Adolescents with higher SOC scores were less likely to have caries experience in anterior teeth than those with lower SOC scores, the odds ratio being 0.81 (CI= 0.66-0.98) for every 10 units increase on the SOC scale. A highly significant relationship (P< 0.001) was found between caries experience in anterior teeth and pattern of dental attendance. Other variables showing significant associations (P< 0.05) with the outcome were social class, mothers’ education (Table 3.22), failure at school examinations, sports activity, and mothers’ dental health (Table 3.23).

Multiple logistic regression showed that, when adjusted for social class (Table 3.22, Stage 1), adolescents’ SOC remained significant. However, this association did not remain significant after social class, sex, and pattern of dental attendance were included in the
model (Table 3.22, Stage 2), with OR reducing to 0.84. Likewise, it did not remain significant after failure at school examinations, sports activity, and mothers’ dental health were taken into account (Table 3.23, Stage 3), with OR reducing further to 0.88. After adjusting for all variables, caries experience in anterior teeth was explained by pattern of dental attendance, failure at school examinations, and mothers’ dental health. Adolescents attending the dentist when in trouble mainly (OR= 2.31, CI= 1.49-3.58) compared with those attending mainly for check-ups, who had failed at school examinations (OR= 1.67, CI= 1.08-2.58) and had mothers with poor dental health (OR= 1.54, CI= 1.00-2.37) were more likely to have caries experience in anterior teeth.

Tables 3.24 and 3.25 show the findings of model II (Mothers’ SOC). Adolescents whose mothers had higher SOC scores were less likely to have caries experience in anterior teeth, than those whose mothers had lower SOC scores, the odds ratio being 0.72 (CI= 0.59-0.88) for every 10 units increase on the SOC scale.

Multiple logistic regression showed that, when adjusted for social class (Table 3.24, Stage 1), mothers’ SOC remained highly significant. This relationship remained significant also after adjusting for social class, sex, and pattern of dental attendance (Table 3.24, Stage 2), as well as failure at school examinations, sports activity, and mothers’ dental health (Table 3.25, Stage 3). After adjusting for all variables, caries experience in anterior teeth was explained by mothers’ SOC, pattern of dental attendance, and failure at school examinations. Adolescents whose mothers had lower levels of SOC (OR= 0.76, CI= 0.62-0.92), who attended the dentist when in trouble mainly (OR= 2.30, CI= 1.48-3.58) compared with those attending mainly for check-ups, and those who had failed at school examinations (OR= 1.76, CI= 1.14-2.70) were more likely to have caries experience in anterior teeth (Table 3.25).

Table 3.26 displays model III, including adolescents’ and their mothers’ SOC at the same time. The results showed that, when adjusted for each other (Stage 1), the effect of adolescents’ SOC did not remain significant. After adjusting for the effect of the other variables (Stage 2) caries experience in anterior teeth was associated with mothers’ SOC, pattern of dental attendance, and failure at school examinations. The model explained 8.6% of the variance.
Summary

There was a significant relationship between adolescents' SOC and dental caries status as measured by caries experience in anterior teeth. The association remained significant after adjusting for social class. However, it did not remain significant after taking into account social class as well as sex and pattern of dental attendance. Adolescents' SOC was not significantly related to caries-free status, DMFS, caries experience in second molars and caries severity.

There was a significant association between mothers' SOC and their children's dental caries status measured by all indicators used in the study, except caries experience in second molars. The association between mothers' SOC and caries severity, as well as caries experience in anterior teeth remained highly significant after adjusting for social class, sex, birth order, oral health-related behaviours, habits, school performance and their mothers' dental health. However, the effect of mothers' SOC on dental caries status measured by the other indicators did not remain significant after adjusting for social class and the other variables.

3.5.1.2- Sense of Coherence and oral cleanliness

As shown in Table 3.14, no association was found between adolescents' SOC and Plaque Index, as well as between mothers' SOC and Plaque Index. Therefore, no further analyses were carried out on these variables.

3.5.1.3- Sense of Coherence and periodontal status

Results of the simple logistic regression showed no association between bleeding after probing and adolescents' SOC, but a highly significant association between bleeding and mothers' SOC (P= 0.005) (Table 3.14). Thus, multiple logistic regression was performed only for mothers' SOC, and results are given in Table 3.27.

According to the results of simple regression, adolescents whose mothers had higher SOC scores were less likely to have teeth with gums bleeding after probing than those whose mothers had lower SOC scores, the odds ratio being 0.84 (CI= 0.74-0.94) for every 10 units increase on the SOC scale. A significant relationship was also found between prevalence of teeth with gums bleeding after probing, Plaque Index (P< 0.001) and daily
Multiple regression results showed that, when adjusted for social class, mothers' SOC remained significant (P= 0.005) and the odds ratio did not change (Table 3.27, Stage 1). Furthermore, statistical significance remained after taking social class, sex, Plaque Index and daily toothbrushing frequency into account, and there was only a slight reduction in the odds ratio (Table 3.27, Stage 2). After adjusting for all variables mothers' SOC (P= 0.013) and Plaque Index (P< 0.001) were the main determinants of bleeding. The model accounted for 10.2% of the variance in bleeding. Adolescents who had high Plaque Index (OR= 5.54, CI= 3.61-8.51) and whose mothers had lower SOC (OR= 0.85 for 10 units increase, CI= 0.74-0.96) were at higher risk of having teeth with gums bleeding after probing than those with low Plaque Index and whose mothers had higher SOC.

3.5.2- Sense of Coherence and oral health-related behaviours

Figure 3.2 shows the hypothesized relationship between SOC and oral health-related behaviours. Results are presented in Tables 3.28 and 3.29 and described in this Subsection.

Figure 3.2- Tentative framework to explain the relationship between Sense of Coherence and oral health-related behaviours (Dotted arrows show the hypotheses and solid arrows show known relationships and potential confounders)
In order to assess the relationship between Sense of Coherence and oral health-related behaviours three outcome variables were used: daily frequency of sugar consumption, daily toothbrushing frequency and pattern of dental attendance.

As shown in Table 3.14, adolescents’ SOC, as well as mothers’ SOC were associated with pattern of dental attendance. Daily toothbrushing frequency and sugar consumption were not associated with either adolescents’ SOC or their mothers’ SOC. Therefore, further analysis was carried out only for the relationship between SOC and pattern of dental attendance.

**Sense of Coherence and pattern of dental attendance**

Findings of the regression between SOC and adolescents’ pattern of dental attendance are shown in Tables 3.28 and 3.29. There was an association between pattern of dental attendance and adolescents’ SOC (P= 0.020), as well as between pattern of dental attendance and mothers’ SOC (P= 0.014). As for the outcome caries experience in anterior teeth, three models were constructed.

Results of model I (Adolescents’ SOC) are presented in Table 3.28. Adolescents with higher SOC scores were less likely to attend the dentist when in trouble mainly than those with lower SOC scores, the odds ratio being 0.83 (CI= 0.71-0.98) for every 10 units increase on the SOC scale. A highly significant relationship was found between pattern of dental attendance, social class and mothers’ education (P< 0.001). All other variables were not significant.

Multiple logistic regression showed that when adjusted for social class (Table 3.28, Model I, Stage 1), and also for sex and social class (Stage 2), adolescents’ SOC remained significant. In the final model, adolescents with higher SOC scores had less probability of attending the dentist when in trouble mainly than those with lower SOC scores, the odds ratio being 0.85 (CI= 0.73-1.00) for every 10 units increase on the SOC scale. Those from low social class were almost twice (OR= 1.92, CI= 1.39-2.32) more likely to attend the dentist when in trouble mainly than those from high social class.
Table 3.28 also shows the findings of model II (Mothers’ SOC). Adolescents whose mothers had higher SOC scores were less likely to attend the dentist when in trouble mainly than those whose mothers had lower SOC scores, the odds ratio being 0.86 (CI= 0.76-0.97) for every 10 units increase on the SOC scale.

Multiple logistic regression showed that when adjusted for social class (Table 3.8, Model II, Stage 1), mothers’ SOC remained significant, but the strength of the relationship was reduced (OR=0.88, P = 0.05). After adjusting for sex as well as social class (Stage 2) this relation was marginally significant (P= 0.06) and there was only a slight change in the estimated odds ratio (OR= 0.89). In the final model, social class was the main determinant of pattern of dental attendance. Adolescents from low social class were more likely to attend the dentist when in trouble mainly than those from high social class, the odds ratio being 1.87 (CI= 1.35-2.58) for every 10 units increase on the SOC scale.

Table 3.29 displays model III, including adolescents’ and their mothers’ SOC at the same time. The results showed that, when adjusted for each other (Stage 1), the effect of adolescents’ did not remain significant. After adjusting for the effect of social class and sex (Stage 2), both adolescents’ and their mothers’ SOC were no longer significant, and pattern of dental attendance was associated with social class (OR= 1.87, CI= 1.35-2.59). The model explained 2.9% of the pattern of dental attendance variance.

3.5.3- Sense of Coherence and self-assessment of oral health

Figure 3.3 shows the hypothesized relationship between SOC and self-assessment of oral health. Results are presented in Tables 3.30 to 3.35, and described in Sub-sections 3.5.3.1 and 3.5.3.2.
In order to assess the relationship between SOC and self-assessment of oral health two outcome variables were used: self-rated dental health and satisfaction with dental appearance.

Results of the simple logistic regression showed that adolescents’ SOC and mothers’ SOC were highly associated with both adolescents’ self-rated dental health and satisfaction with their dental appearance (Table 3.14). As for the outcomes caries experience in anterior teeth and pattern of dental attendance, three models were constructed for each outcome variable. Results are in Tables 3.30 to 3.35.

3.5.3.1- Sense of Coherence and self-rated dental health

Results of regression between adolescents’ SOC and their self-rated dental health (Model I) are presented in Table 3.30. Adolescents with higher SOC scores were less likely to rate their dental health as poor than those with lower SOC scores, the odds ratio being 0.65
(CI= 0.54-0.77) for every 10 units increase on the SOC scale. A highly significant relationship (P< 0.001) was also found between self-rated dental health and mothers’ education, DMFS, and caries severity. All other variables were not significant.

Results from the multiple linear regression showed that when adjusted for mothers’ education, adolescents’ SOC remained highly significant (P< 0.001) (Table 3.30, Stage 1). After adjusting for sex, mothers’ education, DMFS and caries severity (Stage 2) the association between adolescents’ SOC and self-rated dental health remained highly significant (P< 0.001) and the odds ratio got slightly stronger. Those with lower SOC (OR= 0.62 per 10 units increase, CI= 0.51-0.76), high DMFS (OR= 1.75, CI= 1.05-2.92), and with caries in anterior teeth (OR= 1.04, CI= 0.52-2.08) compared with those caries-free, had an increased probability of self-rating their dental health as poor. Adolescents whose mothers had completed secondary school were less likely to rate their dental health as poor (OR= 0.51, CI= 0.29-0.90) compared with those whose mothers had a university degree.

Similar findings were obtained in model II, including mothers’ SOC, as shown in Table 3.31. Adolescents whose mothers had higher SOC scores were less likely to rate their dental health as poor than those with lower SOC, the odds ratio being 0.75 (CI= 0.65-0.86) for every 10 units increase on the SOC scale.

Results from the multiple logistic regression showed that when adjusted for mothers’ education, mothers’ SOC remained highly significant (P= 0.001) (Table 3.31, Stage 1). After adjusting for sex, mothers’ education, DMFS and caries severity (Stage 2) the association between mothers’ SOC and self-rated dental health still remained highly significant (P= 0.007). Adolescents with lower levels of caries severity (P= 0.005) and whose mothers had higher SOC scores (OR= 0.81 per 10 units increase in the SOC scale, CI= 0.70-0.94) and had completed secondary school (OR= 0.49, CI= 0.28-0.87) compared with those with a university degree had a decreased probability of self-rating their health as poor.

Table 3.32 displays the model including adolescents’ and their mothers’ SOC at the same
time (Model III). The results showed that, after adjusting for each other (Stage 1), the effect of both adolescents’ and their mothers’ SOC remained significant. However, when mothers’ education, DMFS and caries severity were added to the model (Stage 2), only adolescents’ SOC remained significant. Self-rated dental health was explained by adolescents’ SOC, mothers’ education, DMFS and caries severity. The model explained 11.9% of the variance in self-rated dental health.

3.5.3.2- Sense of Coherence and satisfaction with dental appearance

Table 3.33 displays the results of the regression between adolescents’ SOC and satisfaction with their dental appearance (Model I). Adolescents with higher SOC scores were less likely to be not satisfied with the appearance of their teeth than those with lower SOC, the odds ratio being 0.65 (CI= 0.55-0.78) for every 10 units increase on the SOC scale. A highly significant relationship was also found between satisfaction with dental appearance and mothers’ education (P< 0.001) and caries severity (P= 0.006). Satisfaction with dental appearance was also associated with social class (P= 0.025) and Plaque Index (P= 0.015). All other variables were not significant.

Results from the multiple linear regression showed that when adjusted for social class, adolescents’ SOC remained highly significant (Table 3.33, Stage 1). After adjusting for sex, social class, caries severity and Plaque Index the association between adolescents’ SOC and satisfaction with their dental appearance still remained highly significant (P< 0.001) (Stage 2). After adjusting for all variables, those with higher SOC had a decreased probability of being not satisfied with their dental appearance (OR= 0.66 per 10 units, CI= 0.56-0.77). The effect of caries severity and Plaque Index had only a marginally significant relationship with the outcome (P = 0.05).

Table 3.34 shows similar findings in the model including mothers’ SOC (Model II). Adolescents whose mothers had higher SOC scores were less likely to be not satisfied with their dental appearance than those with lower SOC, the odds ratio being 0.77 (CI= 0.68-0.86) for every 10 units increase on the SOC scale.

Results from the multiple linear regression showed that when adjusted for social class,
mothers’ SOC remained highly significant (Table 3.34, Stage 2). After adjusting for sex, social class, caries severity, and Plaque Index the association between mothers’ SOC and satisfaction with their dental appearance still remained highly significant (P< 0.001), but the other variables did not (Stage 2). Adolescents whose mothers had higher SOC scores (OR= 0.80 per 10 units, CI= 0.71-0.90) had a decreased probability of being not satisfied with their dental appearance compared with those whose mothers had lower SOC scores.

Table 3.35 displays model III, including adolescents’ and their mothers’ SOC at the same time. The results showed that the effect of both adolescents’ and mothers’ SOC remained significant after adjusting for each other (Stage 1). Estimated odds ratios suggest a stronger effect of adolescents’ SOC than mothers’ SOC. The relationship remained significant also after social class, caries severity and Plaque Index were included in the model (Stage 2). In the final model, 6.1% of the variance in satisfaction with dental appearance was explained by adolescents’ and their mothers’ SOC.

The following chapter will present the discussion of the main results and concluding remarks, including implications for public health policy and suggestions for future research.
Table 3.1- Frequency distribution of the adolescents according to socio-demographic variables

<table>
<thead>
<tr>
<th>Socio-demographic variables</th>
<th>Frequency</th>
<th>Relative frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>344</td>
<td>51.8</td>
</tr>
<tr>
<td>Male</td>
<td>320</td>
<td>48.2</td>
</tr>
<tr>
<td><strong>Birth order</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First child</td>
<td>297</td>
<td>44.7</td>
</tr>
<tr>
<td>Second child</td>
<td>193</td>
<td>29.1</td>
</tr>
<tr>
<td>Third or more</td>
<td>174</td>
<td>26.2</td>
</tr>
<tr>
<td><strong>Social class</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>325</td>
<td>48.9</td>
</tr>
<tr>
<td>Low</td>
<td>339</td>
<td>51.1</td>
</tr>
<tr>
<td><strong>Level of education of the mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>131</td>
<td>19.7</td>
</tr>
<tr>
<td>Secondary</td>
<td>236</td>
<td>35.5</td>
</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>121</td>
<td>18.2</td>
</tr>
<tr>
<td>Illiterate and primary (1st phase)</td>
<td>171</td>
<td>25.8</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td>0.8</td>
</tr>
</tbody>
</table>
Figure 3.4 - Frequency distribution of adolescents' SOC scores

Figure 3.5 - Frequency distribution of mothers' SOC scores
Table 3.2- Frequency distribution of the adolescents according to oral health status

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Relative frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caries-free status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>81</td>
<td>12.2</td>
</tr>
<tr>
<td>No</td>
<td>583</td>
<td>87.8</td>
</tr>
<tr>
<td><strong>DMFS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (0-7)</td>
<td>311</td>
<td>46.8</td>
</tr>
<tr>
<td>High (≥8)</td>
<td>353</td>
<td>53.2</td>
</tr>
<tr>
<td><strong>Caries experience in second molars</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>293</td>
<td>44.1</td>
</tr>
<tr>
<td>Yes</td>
<td>371</td>
<td>55.9</td>
</tr>
<tr>
<td><strong>Caries severity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 0 (caries-free)</td>
<td>81</td>
<td>12.2</td>
</tr>
<tr>
<td>Zone 1 (pit and fissure of posterior teeth)</td>
<td>237</td>
<td>35.7</td>
</tr>
<tr>
<td>Zone 2 (approximal of posterior teeth)</td>
<td>229</td>
<td>34.5</td>
</tr>
<tr>
<td>Zone 3 (approximal and labial of anterior teeth)</td>
<td>117</td>
<td>17.6</td>
</tr>
<tr>
<td><strong>Caries experience in anterior teeth</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>547</td>
<td>82.4</td>
</tr>
<tr>
<td>Yes</td>
<td>117</td>
<td>17.6</td>
</tr>
<tr>
<td><strong>Presence of sealant</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>210</td>
<td>31.6</td>
</tr>
<tr>
<td>No</td>
<td>454</td>
<td>68.4</td>
</tr>
<tr>
<td><strong>Trauma to anterior teeth</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>549</td>
<td>82.7</td>
</tr>
<tr>
<td>Yes</td>
<td>115</td>
<td>17.3</td>
</tr>
<tr>
<td><strong>Use of orthodontic appliances</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>598</td>
<td>90.1</td>
</tr>
<tr>
<td>Yes</td>
<td>66</td>
<td>9.9</td>
</tr>
<tr>
<td><strong>Oral cleanliness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Plaque Index (≤1)</td>
<td>463</td>
<td>77.7</td>
</tr>
<tr>
<td>High Plaque Index (&gt;1)</td>
<td>133</td>
<td>22.3</td>
</tr>
<tr>
<td><strong>Bleeding after probing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>370</td>
<td>62.1</td>
</tr>
<tr>
<td>Yes</td>
<td>226</td>
<td>37.9</td>
</tr>
</tbody>
</table>
Figure 3.6- Frequency distribution of DMFS scores

Table 3.3- Distribution of DMFS index and components

<table>
<thead>
<tr>
<th></th>
<th>Minimum-Maximum</th>
<th>Quartiles</th>
<th>% of DMFS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>25 50 75</td>
<td></td>
</tr>
<tr>
<td>Total DMFS</td>
<td>0-57</td>
<td>4 8 14</td>
<td>100.0</td>
</tr>
<tr>
<td>Decayed</td>
<td>0-21</td>
<td>0 0 0</td>
<td>9.3</td>
</tr>
<tr>
<td>Missing</td>
<td>0-20</td>
<td>0 0 0</td>
<td>8.2</td>
</tr>
<tr>
<td>Filled</td>
<td>0-43</td>
<td>2 6 11</td>
<td>83.5</td>
</tr>
</tbody>
</table>
Table 3.4- Frequency distribution of the adolescents according to oral health-related behaviours

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Relative frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily toothbrushing frequency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four times or more</td>
<td>261</td>
<td>39.3</td>
</tr>
<tr>
<td>Three times</td>
<td>255</td>
<td>38.4</td>
</tr>
<tr>
<td>Once to twice</td>
<td>148</td>
<td>22.3</td>
</tr>
<tr>
<td>Daily total frequency of sugar consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None to once</td>
<td>49</td>
<td>7.4</td>
</tr>
<tr>
<td>Twice or more</td>
<td>615</td>
<td>92.6</td>
</tr>
<tr>
<td>Daily between meals frequency of sugar consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None to once</td>
<td>175</td>
<td>26.4</td>
</tr>
<tr>
<td>Twice or more</td>
<td>489</td>
<td>73.6</td>
</tr>
<tr>
<td>Pattern of dental attendance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td>354</td>
<td>53.3</td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>273</td>
<td>41.1</td>
</tr>
<tr>
<td>Do not know</td>
<td>29</td>
<td>4.4</td>
</tr>
<tr>
<td>No dental visit</td>
<td>8</td>
<td>1.2</td>
</tr>
<tr>
<td>Always lived in fluoridated areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>455</td>
<td>68.5</td>
</tr>
<tr>
<td>No</td>
<td>209</td>
<td>31.5</td>
</tr>
<tr>
<td>Use of fluoride mouthrinse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>494</td>
<td>74.4</td>
</tr>
<tr>
<td>No, never</td>
<td>104</td>
<td>15.7</td>
</tr>
<tr>
<td>Do not know</td>
<td>66</td>
<td>9.9</td>
</tr>
<tr>
<td>Use of fluoride gel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>538</td>
<td>81.0</td>
</tr>
<tr>
<td>No, never</td>
<td>47</td>
<td>7.1</td>
</tr>
<tr>
<td>Do not know</td>
<td>79</td>
<td>11.9</td>
</tr>
</tbody>
</table>
Table 3.5- Frequency distribution of the adolescents according to self-assessment of oral health

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Relative frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-rated dental health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>443</td>
<td>66.7</td>
</tr>
<tr>
<td>Poor</td>
<td>171</td>
<td>25.8</td>
</tr>
<tr>
<td>Do not know</td>
<td>50</td>
<td>7.5</td>
</tr>
<tr>
<td>Satisfaction with dental appearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfied</td>
<td>396</td>
<td>59.6</td>
</tr>
<tr>
<td>Not satisfied</td>
<td>268</td>
<td>40.4</td>
</tr>
</tbody>
</table>

Table 3.6- Frequency distribution of the adolescents according to habits, participation in social activities and school performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Relative frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking habit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No, never</td>
<td>609</td>
<td>91.7</td>
</tr>
<tr>
<td>Yes, in the past</td>
<td>31</td>
<td>4.7</td>
</tr>
<tr>
<td>Yes, nowadays</td>
<td>24</td>
<td>3.6</td>
</tr>
<tr>
<td>Sports activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>321</td>
<td>48.3</td>
</tr>
<tr>
<td>No</td>
<td>343</td>
<td>51.7</td>
</tr>
<tr>
<td>Member of association</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>345</td>
<td>52.0</td>
</tr>
<tr>
<td>No</td>
<td>319</td>
<td>48.0</td>
</tr>
<tr>
<td>Position of trust in association</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>54</td>
<td>8.1</td>
</tr>
<tr>
<td>No</td>
<td>610</td>
<td>91.9</td>
</tr>
<tr>
<td>Frequency of attendance at religious activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Often</td>
<td>369</td>
<td>55.6</td>
</tr>
<tr>
<td>Not often</td>
<td>196</td>
<td>29.5</td>
</tr>
<tr>
<td>Almost never or never</td>
<td>99</td>
<td>14.9</td>
</tr>
<tr>
<td>Failure at school examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>439</td>
<td>66.1</td>
</tr>
<tr>
<td>Yes</td>
<td>225</td>
<td>33.9</td>
</tr>
</tbody>
</table>
Table 3.7- Frequency distribution of the adolescents according to mothers-related factors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Relative frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥39</td>
<td>389</td>
<td>58.6</td>
</tr>
<tr>
<td>≤38</td>
<td>275</td>
<td>41.4</td>
</tr>
<tr>
<td><strong>Smoking habit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No, never</td>
<td>363</td>
<td>54.7</td>
</tr>
<tr>
<td>Yes, in the past</td>
<td>136</td>
<td>20.5</td>
</tr>
<tr>
<td>Yes, nowadays</td>
<td>165</td>
<td>24.8</td>
</tr>
<tr>
<td><strong>Dental health status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>515</td>
<td>77.6</td>
</tr>
<tr>
<td>Poor</td>
<td>146</td>
<td>22.0</td>
</tr>
<tr>
<td>Missing</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Access to advice on children’s dental care</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>467</td>
<td>70.3</td>
</tr>
<tr>
<td>No</td>
<td>167</td>
<td>25.2</td>
</tr>
<tr>
<td>Do not know</td>
<td>30</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Feeding practices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast only</td>
<td>84</td>
<td>12.7</td>
</tr>
<tr>
<td>Breast and bottle</td>
<td>507</td>
<td>76.4</td>
</tr>
<tr>
<td>Bottle only</td>
<td>70</td>
<td>10.5</td>
</tr>
<tr>
<td>Do not know</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Control over child’s sugar consumption</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>352</td>
<td>53.0</td>
</tr>
<tr>
<td>No</td>
<td>312</td>
<td>47.0</td>
</tr>
<tr>
<td><strong>Control over child’s dental visits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>487</td>
<td>73.3</td>
</tr>
<tr>
<td>No</td>
<td>163</td>
<td>24.5</td>
</tr>
<tr>
<td>No dental visit</td>
<td>8</td>
<td>1.2</td>
</tr>
<tr>
<td>Cannot remember</td>
<td>6</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Cleaned child’s teeth</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>581</td>
<td>87.5</td>
</tr>
<tr>
<td>No</td>
<td>73</td>
<td>11.0</td>
</tr>
<tr>
<td>Cannot remember</td>
<td>10</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Table 3.8- Bivariate analysis of the relationship between social class and adolescents’ oral health status using the Chi squared test

<table>
<thead>
<tr>
<th>Variable</th>
<th>High social class n(%)</th>
<th>Low social class n(%)</th>
<th>Test statistic($x^2$)</th>
<th>Significance level($P$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caries-free status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caries-free</td>
<td>51 (15.7)</td>
<td>30 (8.8)</td>
<td>$x^2=7.25$</td>
<td>$P=0.007$</td>
</tr>
<tr>
<td>With caries experience</td>
<td>274 (84.3)</td>
<td>309 (91.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DMFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (0-7)</td>
<td>173 (53.2)</td>
<td>138 (40.7)</td>
<td>$x^2=10.45$</td>
<td>$P=0.001$</td>
</tr>
<tr>
<td>High ($\geq$8)</td>
<td>152 (46.8)</td>
<td>201 (59.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caries experience in second molars</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>164 (50.5)</td>
<td>129 (38.1)</td>
<td>$x^2=10.36$</td>
<td>$P=0.001$</td>
</tr>
<tr>
<td>Yes</td>
<td>161 (49.5)</td>
<td>210 (61.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caries severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 0</td>
<td>51 (15.7)</td>
<td>30 (8.8)</td>
<td>$x^2=12.93$</td>
<td>$P=0.005$</td>
</tr>
<tr>
<td>Zone 1</td>
<td>124 (38.2)</td>
<td>113 (33.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 2</td>
<td>104 (32.0)</td>
<td>125 (36.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 3</td>
<td>46 (14.2)</td>
<td>71 (20.9)</td>
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<tr>
<td>Caries experience in anterior teeth</td>
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<tr>
<td>No</td>
<td>279 (85.8)</td>
<td>268 (79.1)</td>
<td>$x^2=5.27$</td>
<td>$P=0.021$</td>
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<td>Yes</td>
<td>46 (14.2)</td>
<td>71 (20.9)</td>
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<tr>
<td>Presence of sealant</td>
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<td>Yes</td>
<td>132 (40.6)</td>
<td>78 (23.0)</td>
<td>$x^2=23.79$</td>
<td>$P=0.000$</td>
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<td>No</td>
<td>193 (59.4)</td>
<td>261 (77.0)</td>
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<td>Trauma to anterior teeth</td>
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<td>No</td>
<td>257 (79.1)</td>
<td>292 (86.1)</td>
<td>$x^2=5.77$</td>
<td>$P=0.016$</td>
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<td>Yes</td>
<td>68 (20.9)</td>
<td>47 (13.9)</td>
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<td>Use of orthodontic appliances</td>
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<td>No</td>
<td>282 (86.8)</td>
<td>316 (93.2)</td>
<td>$x^2=7.70$</td>
<td>$P=0.006$</td>
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<td>Yes</td>
<td>43 (13.2)</td>
<td>23 (6.8)</td>
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<tr>
<td>Oral cleanliness</td>
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<tr>
<td>Low Plaque Index</td>
<td>224 (79.7)</td>
<td>239 (75.9)</td>
<td>$x^2=1.26$</td>
<td>$P=0.261$</td>
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<tr>
<td>High Plaque Index</td>
<td>57 (20.3)</td>
<td>76 (24.1)</td>
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<td>Bleeding after probing</td>
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<tr>
<td>No</td>
<td>177 (63.0)</td>
<td>193 (61.3)</td>
<td>$x^2=0.19$</td>
<td>$P=0.666$</td>
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<tr>
<td>Yes</td>
<td>104 (37.0)</td>
<td>122 (38.7)</td>
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Table 3.9- Bivariate analysis of the relationship between social class and adolescents' oral health-related behaviours and self-assessment of oral health using the Chi squared test

<table>
<thead>
<tr>
<th>Variable</th>
<th>High social class n(%)</th>
<th>Low social class n(%)</th>
<th>Test statistic($\chi^2$)</th>
<th>Significance level(P)</th>
</tr>
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<tbody>
<tr>
<td>Daily toothbrushing frequency</td>
<td></td>
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<tr>
<td>Four times or more</td>
<td>130 (40.0)</td>
<td>131 (38.6)</td>
<td>$\chi^2=0.14$</td>
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</tr>
<tr>
<td>Three times</td>
<td>124 (38.2)</td>
<td>131 (38.6)</td>
<td>P=0.930</td>
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</tr>
<tr>
<td>Once to twice</td>
<td>71 (21.8)</td>
<td>77 (22.7)</td>
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<td></td>
</tr>
<tr>
<td>Daily total frequency of sugar consumption</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>None to once</td>
<td>16 (4.9)</td>
<td>33 (9.7)</td>
<td>$\chi^2=5.62$</td>
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</tr>
<tr>
<td>Twice or more</td>
<td>309 (95.1)</td>
<td>306 (90.3)</td>
<td>P=0.018</td>
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<tr>
<td>Daily between meals frequency of sugar</td>
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<tr>
<td>consumption</td>
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<td></td>
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<tr>
<td>None to once</td>
<td>73 (22.5)</td>
<td>102 (30.1)</td>
<td>$\chi^2=4.97$</td>
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<tr>
<td>Twice or more</td>
<td>252 (77.5)</td>
<td>237 (69.9)</td>
<td>P=0.026</td>
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<tr>
<td>Pattern of dental attendance</td>
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<tr>
<td>Check-ups mainly</td>
<td>200 (64.7)</td>
<td>154 (48.4)</td>
<td>$\chi^2=16.9$</td>
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<tr>
<td>In trouble mainly</td>
<td>109 (35.3)</td>
<td>164 (51.6)</td>
<td>P=0.000</td>
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<tr>
<td>Always lived in fluoridated areas</td>
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<tr>
<td>Yes</td>
<td>279 (85.8)</td>
<td>218 (67.1)</td>
<td>$\chi^2=0.62$</td>
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<tr>
<td>No</td>
<td>46 (14.2)</td>
<td>107 (32.9)</td>
<td>P=0.432</td>
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<td>Use of fluoride mouthrinse</td>
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<td>Yes</td>
<td>245 (75.4)</td>
<td>249 (73.5)</td>
<td>$\chi^2=0.70$</td>
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<td>No, never</td>
<td>47 (14.5)</td>
<td>57 (16.8)</td>
<td>P=0.705</td>
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<td>Do not know</td>
<td>33 (10.2)</td>
<td>33 (9.7)</td>
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<td>Use of fluoride gel</td>
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<tr>
<td>Yes</td>
<td>264 (81.2)</td>
<td>274 (80.8)</td>
<td>$\chi^2=0.09$</td>
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<td>No, never</td>
<td>22 (6.8)</td>
<td>25 (7.4)</td>
<td>P=0.954</td>
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<td>Do not know</td>
<td>39 (12.0)</td>
<td>40 (11.8)</td>
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<tr>
<td>Self-rated dental health</td>
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<tr>
<td>Good</td>
<td>224 (74.2)</td>
<td>219 (70.2)</td>
<td>$\chi^2=1.21$</td>
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<tr>
<td>Poor</td>
<td>78 (25.8)</td>
<td>93 (29.8)</td>
<td>P=0.271</td>
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<tr>
<td>Satisfaction with dental appearance</td>
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<tr>
<td>Satisfied</td>
<td>208 (64.0)</td>
<td>188 (55.5)</td>
<td>$\chi^2=5.03$</td>
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<tr>
<td>Not satisfied</td>
<td>117 (36.0)</td>
<td>151 (44.5)</td>
<td>P=0.025</td>
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Table 3.10- Bivariate analysis of the relationship between social class and adolescents’ habits, participation in social activities, and school performance using the Chi squared test

<table>
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<tr>
<th>Variable</th>
<th>High social class n(%)</th>
<th>Low social class n(%)</th>
<th>Test statistic($x^2$)</th>
<th>Significance level(P)</th>
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<tbody>
<tr>
<td>Smoking habits</td>
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<tr>
<td>No, never</td>
<td>16 (4.9)</td>
<td>8 (2.4)</td>
<td>$x^2=4.38$</td>
<td>$P=0.112$</td>
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<td>Yes, in the past</td>
<td>18 (5.5)</td>
<td>13 (3.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, nowadays</td>
<td>291 (89.5)</td>
<td>318 (93.8)</td>
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<td></td>
</tr>
<tr>
<td>Sports activity</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>175 (53.8)</td>
<td>146 (43.1)</td>
<td>$x^2=7.72$</td>
<td>$P=0.005$</td>
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<td>No</td>
<td>150 (46.2)</td>
<td>193 (56.9)</td>
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<td>Member of association</td>
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<tr>
<td>Yes</td>
<td>157 (48.3)</td>
<td>188 (55.5)</td>
<td>$x^2=3.40$</td>
<td>$P=0.065$</td>
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<td>No</td>
<td>168 (51.7)</td>
<td>151 (44.5)</td>
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<tr>
<td>Position of trust in association</td>
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<tr>
<td>Yes</td>
<td>19 (5.8)</td>
<td>35 (10.3)</td>
<td>$x^2=4.45$</td>
<td>$P=0.035$</td>
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<td>No</td>
<td>306 (94.2)</td>
<td>304 (89.7)</td>
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<tr>
<td>Frequency of attendance at</td>
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<tr>
<td>religious activities</td>
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</tr>
<tr>
<td>Often</td>
<td>172 (52.9)</td>
<td>197 (58.1)</td>
<td>$x^2=1.84$</td>
<td>$P=0.399$</td>
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<tr>
<td>Not often</td>
<td>101 (31.1)</td>
<td>95 (28.0)</td>
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<tr>
<td>Almost never or never</td>
<td>52 (16.0)</td>
<td>47 (13.9)</td>
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<tr>
<td>Failure at school examination</td>
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<tr>
<td>No</td>
<td>233 (71.7)</td>
<td>206 (60.8)</td>
<td>$x^2=8.84$</td>
<td>$P=0.003$</td>
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<tr>
<td>Yes</td>
<td>92 (28.3)</td>
<td>133 (39.2)</td>
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Table 3.11- Bivariate analysis of the relationship between social class and the mothers-related variables using the Chi squared test

<table>
<thead>
<tr>
<th>Variable</th>
<th>High social class n(%)</th>
<th>Low social class n(%)</th>
<th>Test statistic($x^2$)</th>
<th>Significance level(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother’s smoking habits</td>
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<tr>
<td>No, never</td>
<td>79 (24.3)</td>
<td>87 (25.7)</td>
<td>$x^2=0.16$</td>
<td>P=0.921</td>
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<tr>
<td>Yes, in the past</td>
<td>67 (20.6)</td>
<td>69 (20.4)</td>
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<tr>
<td>Yes, nowadays</td>
<td>179 (55.1)</td>
<td>183 (54.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother’s dental health</td>
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<td></td>
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</tr>
<tr>
<td>Good</td>
<td>234 (72.0)</td>
<td>209 (61.7)</td>
<td>$x^2=8.08$</td>
<td>P=0.018</td>
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<tr>
<td>Poor</td>
<td>90 (27.7)</td>
<td>128 (37.8)</td>
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<td>Missing</td>
<td>1 (0.3)</td>
<td>2 (0.6)</td>
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<td>Mother’s access to advice on children’s dental care</td>
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<tr>
<td>Yes</td>
<td>240 (73.8)</td>
<td>227 (67.0)</td>
<td>$x^2=3.94$</td>
<td>P=0.139</td>
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<td>No</td>
<td>71 (21.8)</td>
<td>96 (28.3)</td>
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<tr>
<td>Do not know</td>
<td>14 (4.3)</td>
<td>16 (4.7)</td>
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<tr>
<td>Feeding practices</td>
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<tr>
<td>Breast only</td>
<td>35 (10.8)</td>
<td>49 (14.5)</td>
<td>$x^2=6.19$</td>
<td>P=0.102</td>
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<td>Breast and bottle</td>
<td>259 (79.7)</td>
<td>248 (73.2)</td>
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<td>Bottle only</td>
<td>31 (9.5)</td>
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<tr>
<td>Cannot remember</td>
<td>-</td>
<td>3 (0.9)</td>
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<tr>
<td>Control over child’s sugar consumption</td>
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<td>Yes</td>
<td>178 (54.8)</td>
<td>174 (51.3)</td>
<td>$x^2=0.79$</td>
<td>P=0.374</td>
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<td>No</td>
<td>147 (45.2)</td>
<td>165 (48.7)</td>
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<tr>
<td>Control over child’s dental visits</td>
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<td>Yes</td>
<td>244 (75.1)</td>
<td>243 (71.7)</td>
<td>$x^2=1.24$</td>
<td>P=0.742</td>
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<td>75 (23.1)</td>
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<td>No dental visit</td>
<td>3 (0.9)</td>
<td>5 (1.5)</td>
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<td>Cannot remember</td>
<td>3 (0.9)</td>
<td>3 (0.9)</td>
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<td>Cleaned child’s teeth</td>
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<tr>
<td>Yes</td>
<td>290 (89.2)</td>
<td>291 (85.8)</td>
<td>$x^2=2.02$</td>
<td>P=0.364</td>
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<td>No</td>
<td>30 (9.2)</td>
<td>43 (12.7)</td>
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<tr>
<td>Cannot remember</td>
<td>5 (1.5)</td>
<td>5 (1.5)</td>
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Figure 3.7- Correlation between adolescents’ SOC and mothers’ SOC
Table 3.12 - Bivariate analysis of the relationship between adolescents' Sense of Coherence and selected explanatory variables

<table>
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<th>Variable</th>
<th>Mean (SD)</th>
<th>Test statistic*</th>
<th>P-value</th>
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<tr>
<td>Sexual</td>
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<td>Female</td>
<td>56.1 (10.6)</td>
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<td>Male</td>
<td>59.0 (9.8)</td>
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<tr>
<td>Social class</td>
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<td>High</td>
<td>57.9 (10.3)</td>
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<td>0.303</td>
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<tr>
<td>Low</td>
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<td>Mothers' education</td>
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<td>University</td>
<td>59.4 (10.0)</td>
<td>$F = 2.83$</td>
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<td>Secondary</td>
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<tr>
<td>Primary (2nd phase)</td>
<td>55.9 (11.0)</td>
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<tr>
<td>Primary and illiterate</td>
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<td>Smoking habit</td>
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<td>No, never</td>
<td>58.0 (10.1)</td>
<td>$F = 11.95$</td>
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<td>Yes, in the past</td>
<td>55.4 (10.2)</td>
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<tr>
<td>Yes</td>
<td>48.0 (10.0)</td>
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<td>Sports activity</td>
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<td>57.5 (10.3)</td>
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<tr>
<td>Yes</td>
<td>57.8 (10.2)</td>
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<td>0.411</td>
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<tr>
<td>No</td>
<td>57.1 (10.5)</td>
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<td>Position of trust in association</td>
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<td>Yes</td>
<td>57.7 (9.8)</td>
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<td>57.5 (10.4)</td>
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<td>Attendance at religious activities</td>
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<td>Often</td>
<td>58.4 (10.3)</td>
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<td>0.029</td>
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<tr>
<td>Not often</td>
<td>56.8 (9.7)</td>
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<tr>
<td>Almost never or never</td>
<td>55.6 (11.2)</td>
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<tr>
<td>Failure at school examinations</td>
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<tr>
<td>No</td>
<td>58.8 (10.3)</td>
<td>$t = 4.68$</td>
<td>0.000</td>
</tr>
<tr>
<td>Yes</td>
<td>54.9 (9.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth order</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>First child</td>
<td>57.5 (10.2)</td>
<td>$F = 0.15$</td>
<td>0.857</td>
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<tr>
<td>Second child</td>
<td>57.8 (10.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third or more</td>
<td>57.2 (10.2)</td>
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</tr>
</tbody>
</table>

* When 2 categories, $t$-test was used; when 3 or more categories, F-test derived from ANOVA was used
Table 3.13 - Bivariate analysis of the relationship between mothers' Sense of Coherence and the mother-related variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>Test statistic*</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 39</td>
<td>65.0 (13.2)</td>
<td><em>t</em> = 2.49</td>
<td>0.013</td>
</tr>
<tr>
<td>≤ 38</td>
<td>62.4 (13.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>65.8 (12.8)</td>
<td><em>t</em> = 3.59</td>
<td>0.000</td>
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<tr>
<td>Low</td>
<td>62.1 (13.8)</td>
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<td></td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>70.4 (10.7)</td>
<td><em>F</em> = 21.96</td>
<td>0.000</td>
</tr>
<tr>
<td>Secondary</td>
<td>65.1 (13.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>62.2 (13.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary and illiterate</td>
<td>58.7 (12.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking habit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No, never</td>
<td>65.3 (13.3)</td>
<td><em>F</em> = 5.63</td>
<td>0.004</td>
</tr>
<tr>
<td>Yes, in the past</td>
<td>63.5 (12.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, nowadays</td>
<td>61.2 (14.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental health status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>65.5 (13.4)</td>
<td><em>t</em> = 4.17</td>
<td>0.000</td>
</tr>
<tr>
<td>Poor</td>
<td>60.9 (13.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeding practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast only</td>
<td>64.0 (11.9)</td>
<td><em>F</em> = 1.91</td>
<td>0.127</td>
</tr>
<tr>
<td>Breast and bottle</td>
<td>64.4 (13.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottle only</td>
<td>60.4 (14.6)</td>
<td></td>
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</tr>
<tr>
<td>Do not know</td>
<td>60.7 (10.0)</td>
<td></td>
<td></td>
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<tr>
<td>Control over child's sugar consumption</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>65.2 (13.5)</td>
<td><em>t</em> = 2.58</td>
<td>0.010</td>
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<tr>
<td>No</td>
<td>62.5 (13.2)</td>
<td></td>
<td></td>
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<tr>
<td>Control over child's dental visits</td>
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<td></td>
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<tr>
<td>Yes</td>
<td>64.1 (13.6)</td>
<td><em>F</em> = 0.45</td>
<td>0.719</td>
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<tr>
<td>No</td>
<td>63.5 (12.5)</td>
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<td></td>
</tr>
<tr>
<td>No dental visit</td>
<td>66.2 (14.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td>58.7 (24.0)</td>
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<td></td>
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<tr>
<td>Cleaned child’s teeth</td>
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<tr>
<td>Yes</td>
<td>64.4 (13.6)</td>
<td><em>F</em> = 3.32</td>
<td>0.037</td>
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<td>No</td>
<td>60.3 (12.5)</td>
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<tr>
<td>Do not know</td>
<td>61.0 (8.1)</td>
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</table>

* When 2 categories, *t*-test was used; when 3 or more categories, *F*-test derived from ANOVA was used
Table 3.14 - Results of simple regression between the outcome variables and Sense of Coherence

<table>
<thead>
<tr>
<th>Outcome variables</th>
<th>Explanatory variables</th>
<th>Adolescents' SOC (per 10 units)</th>
<th>OR (95% CI)</th>
<th>P</th>
<th>Mothers' SOC (per 10 units)</th>
<th>OR (95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
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<tr>
<td></td>
<td></td>
<td>Caries-free status</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Caries-free/with caries</td>
<td>0.96 (0.76-1.22)</td>
<td>0.731</td>
<td>0.80 (0.67-0.96)</td>
<td>0.018</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>DMFS</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Low (0-7)/High (&gt;8)</td>
<td>0.98 (0.87-1.15)</td>
<td>0.795</td>
<td>0.89 (0.79-1.00)</td>
<td>0.039</td>
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<tr>
<td></td>
<td></td>
<td>Caries experience in the second molar</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>No/Yes</td>
<td>0.95 (0.92-0.96)</td>
<td>0.469</td>
<td>0.92 (0.91-0.93)</td>
<td>0.169</td>
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<tr>
<td></td>
<td></td>
<td>Caries severity</td>
<td></td>
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<td></td>
<td>Zone 0/Zone 1/Zone 2/Zone 3*</td>
<td>0.89 (0.77-1.02)</td>
<td>0.077</td>
<td>0.80 (0.73-0.89)</td>
<td>0.000</td>
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<td></td>
<td></td>
<td>Caries experience in anterior teeth</td>
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<tr>
<td></td>
<td></td>
<td>No/Yes</td>
<td>0.81 (0.79-0.82)</td>
<td>0.029</td>
<td>0.72 (0.70-0.73)</td>
<td>0.000</td>
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<tr>
<td></td>
<td></td>
<td>Bleeding after probing</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>No/Yes</td>
<td>0.91 (0.78-1.07)</td>
<td>0.267</td>
<td>0.84 (0.74-0.94)</td>
<td>0.005</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Plaque Index</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Low (≤1)/High (&gt;1)</td>
<td>0.98 (0.80-1.19)</td>
<td>0.810</td>
<td>0.89 (0.77-1.02)</td>
<td>0.094</td>
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<tr>
<td></td>
<td></td>
<td>Pattern of dental attendance</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Check-ups mainly/In trouble mainly</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daily frequency of sugar intake</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>None to once a day/Twice and more</td>
<td>0.89 (0.67-1.19)</td>
<td>0.425</td>
<td>1.05 (0.84-1.31)</td>
<td>0.645</td>
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<tr>
<td></td>
<td></td>
<td>Daily between meals frequency of sugar intake</td>
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<tr>
<td></td>
<td></td>
<td>None to once a day/Twice and more</td>
<td>0.86 (0.71-1.02)</td>
<td>0.074</td>
<td>0.98 (0.85-1.12)</td>
<td>0.702</td>
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<tr>
<td></td>
<td></td>
<td>Daily toothbrushing frequency</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Three times and more/Once to twice</td>
<td>0.91 (0.76-1.09)</td>
<td>0.304</td>
<td>0.90 (0.78-1.03)</td>
<td>0.121</td>
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<td></td>
<td></td>
<td>Self-rated dental health</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Good/Poor</td>
<td>0.65 (0.54-0.77)</td>
<td>0.000</td>
<td>0.75 (0.65-0.86)</td>
<td>0.000</td>
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<tr>
<td></td>
<td></td>
<td>Satisfaction with dental appearance</td>
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<tr>
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<td></td>
<td>Satisfied/Not satisfied</td>
<td>0.65 (0.55-0.78)</td>
<td>0.000</td>
<td>0.77 (0.68-0.86)</td>
<td>0.000</td>
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</tr>
</tbody>
</table>

* Zone 0 (caries-free); Zone 1 (pit and fissure of posterior teeth); Zone 2 (approximal of posterior teeth) and Zone 3 (approximal and labial of anterior teeth)
Table 3.15- Frequency distribution and results of logistic regression of the variables included in the study of caries-free status (n=664)- Stages 1* and 2**

<table>
<thead>
<tr>
<th></th>
<th>Caries-free/With caries n (%)</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted' OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted** OR (95% c.i.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers' SOC (per 10 units)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>51 (63.0)/274 (47.0)</td>
<td>0.80 (0.67-0.96)</td>
<td>0.018</td>
<td>0.82 (0.69-0.99)</td>
<td>0.041</td>
<td>0.85 (0.69-1.03)</td>
</tr>
<tr>
<td>Low</td>
<td>30 (37.0)/309 (53.0)</td>
<td>1.92 (1.19-3.10)</td>
<td>0.008</td>
<td>1.80 (1.11-2.92)</td>
<td>0.017</td>
<td>1.59 (0.94-2.68)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>52 (64.2)/268 (46.0)</td>
<td>2.11 (1.30-3.46)</td>
<td>0.002</td>
<td></td>
<td></td>
<td>1.78 (1.07-2.95)</td>
</tr>
<tr>
<td>Female</td>
<td>29 (35.8)/315 (54.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily frequency of sugar intake between meals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None to once a day</td>
<td>30 (37.0)/145 (24.9)</td>
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</tr>
<tr>
<td>Twice and more</td>
<td>51 (63.0)/438 (75.1)</td>
<td>1.78 (1.09-2.90)</td>
<td>0.021</td>
<td></td>
<td></td>
<td>1.72 (1.02-2.92)</td>
</tr>
<tr>
<td>Pattern of dental attendance</td>
<td></td>
<td>0.000</td>
<td></td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td>59 (72.8)/295 (50.6)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>12 (14.8)/261 (44.8)</td>
<td>4.35 (2.29-8.27)</td>
<td>0.000</td>
<td></td>
<td></td>
<td>3.62 (1.88-6.98)</td>
</tr>
<tr>
<td>No dental visit</td>
<td>5 (6.2)/3 (0.5)</td>
<td>0.12 (0.03-0.52)</td>
<td>0.004</td>
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<td></td>
<td>0.11 (0.02-0.52)</td>
</tr>
<tr>
<td>Do not know</td>
<td>5 (6.2)/24 (4.1)</td>
<td>0.96 (0.35-2.62)</td>
<td>0.936</td>
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<td></td>
<td>0.80 (0.28-2.30)</td>
</tr>
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<td>Sealant</td>
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<tr>
<td>Yes</td>
<td>34 (42.0)/176 (30.2)</td>
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<tr>
<td>No</td>
<td>47 (58.0)/407 (69.8)</td>
<td>1.67 (1.04-2.69)</td>
<td>0.034</td>
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<td>1.48 (0.88-2.49)</td>
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<td>Mothers' education</td>
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<td>0.057</td>
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<tr>
<td>University</td>
<td>24 (29.6)/107 (18.4)</td>
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<tr>
<td>Secondary</td>
<td>31(38.3)/205 (35.2)</td>
<td>1.48 (0.83-2.65)</td>
<td>0.184</td>
<td></td>
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</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>13 (16.0)/108 (18.5)</td>
<td>1.86 (0.90-3.85)</td>
<td>0.093</td>
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<tr>
<td>Illiterate and primary</td>
<td>12 (14.8)/159 (27.3)</td>
<td>2.97 (1.42-6.20)</td>
<td>0.004</td>
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<tr>
<td>Missing</td>
<td>1 (1.2)/4 (0.7)</td>
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<td></td>
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</tr>
</tbody>
</table>

* Stage 1= Adjusted for social class  ** Stage 2= Adjusted for social class, sex, sugar intake, pattern of dental attendance and presence of sealant

Mothers' education was not included in the model due to its high correlation with social class
Table 3.16 - Frequency distribution and results of logistic regression of the variables included in the study of caries-free status (n= 664) - Stage 3

<table>
<thead>
<tr>
<th></th>
<th>Caries-free/With caries n (%)</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers' SOC (per 10 units)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>51 (63.0)/274 (47.0)</td>
<td>0.80 (0.67-0.96)</td>
<td>0.018</td>
<td>0.86 (0.81-1.20)</td>
<td>0.149</td>
</tr>
<tr>
<td>Low</td>
<td>30 (37.0)/309 (53.0)</td>
<td>1.92 (1.19-3.10)</td>
<td>0.008</td>
<td>1.43 (0.83-2.46)</td>
<td>0.196</td>
</tr>
<tr>
<td>Social class</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>High</td>
<td>52 (64.2)/268 (46.0)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>29 (35.8)/315 (54.0)</td>
<td>2.11 (1.30-3.46)</td>
<td>0.002</td>
<td>1.74 (1.03-2.95)</td>
<td>0.039</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Male</td>
<td></td>
<td>0.000</td>
<td></td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pattern of dental attendance</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td>59 (72.8)/295 (50.6)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>12 (14.8)/261 (44.8)</td>
<td>4.35 (2.29-8.27)</td>
<td>0.000</td>
<td>3.36 (1.72-6.53)</td>
<td>0.000</td>
</tr>
<tr>
<td>No dental visit</td>
<td>5 (6.2)/3 (0.5)</td>
<td>0.12 (0.03-0.52)</td>
<td>0.004</td>
<td>0.08 (0.02-0.40)</td>
<td>0.002</td>
</tr>
<tr>
<td>Do not know</td>
<td>5 (6.2)/24 (4.1)</td>
<td>0.96 (0.35-2.62)</td>
<td>0.936</td>
<td>0.73 (0.25-2.13)</td>
<td>0.559</td>
</tr>
<tr>
<td>Daily frequency of sugar intake</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>between meals</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>None to once a day</td>
<td>30 (37.0)/145 (24.9)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Twice and more</td>
<td>51 (63.0)/438 (75.1)</td>
<td>1.78 (1.09-2.90)</td>
<td>0.021</td>
<td>1.62 (0.95-2.78)</td>
<td>0.080</td>
</tr>
<tr>
<td>Presence of sealant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>34 (42.0)/176 (30.2)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>47 (58.0)/407 (69.8)</td>
<td>1.67 (1.04-2.69)</td>
<td>0.034</td>
<td>1.32 (0.76-2.27)</td>
<td>0.322</td>
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<tr>
<td>Birth order</td>
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<td>0.032</td>
<td></td>
<td></td>
<td>0.089</td>
</tr>
<tr>
<td>First</td>
<td>47 (58.0)/250 (42.9)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Second</td>
<td>20 (24.7)/173 (29.7)</td>
<td>1.63 (0.93-2.84)</td>
<td>0.088</td>
<td>1.56 (0.86-2.84)</td>
<td>0.143</td>
</tr>
<tr>
<td>Third or more</td>
<td>14 (17.3)/160 (27.4)</td>
<td>2.15 (1.15-4.03)</td>
<td>0.017</td>
<td>2.01 (0.78-3.11)</td>
<td>0.048</td>
</tr>
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</table>
Table 3.16 - (continued)

<table>
<thead>
<tr>
<th></th>
<th>Caries-free/With caries n (%)</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Failure at school examination</strong></td>
<td></td>
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</tr>
<tr>
<td>No</td>
<td>63 (77.8)/376 (64.5)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18 (22.2)/207 (35.5)</td>
<td>1.93 (1.11-3.34)</td>
<td>0.020</td>
<td>1.78 (0.98-3.22)</td>
<td>0.058</td>
</tr>
<tr>
<td><strong>Sports activity</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>32 (39.5)/311 (53.3)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>49 (60.5)/272 (46.7)</td>
<td>1.75 (1.09-2.81)</td>
<td>0.021</td>
<td>1.59 (0.94-2.69)</td>
<td>0.086</td>
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<tr>
<td><strong>Mother’s dental health</strong></td>
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</tr>
<tr>
<td>Good</td>
<td>64 (79.0)/379 (65.0)</td>
<td>1</td>
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<td>1</td>
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<tr>
<td>Poor</td>
<td>17 (21.0)/201 (34.5)</td>
<td>2.00 (1.14-3.50)</td>
<td>0.016</td>
<td>1.27 (0.68-2.40)</td>
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<tr>
<td>Missing</td>
<td>0/3 (0.5)</td>
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</tbody>
</table>

* Stage 3 = Adjusted for all variables shown
**Table 3.17- Frequency distribution and results of logistic regression of the variables included in the study of DMFS Index (n=664) - Stages 1* and 2**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low DMFS (0-7)/High DMFS (≥8)</th>
<th>Unadjusted OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted*OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted**OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers' SOC (per 10 units)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>173 (55.6)/152 (43.1)</td>
<td>0.89 (0.79-1.00)</td>
<td>0.039</td>
<td>0.91 (0.80-1.02)</td>
<td>0.099</td>
<td>0.91 (0.81-1.03)</td>
<td>0.137</td>
</tr>
<tr>
<td>Low</td>
<td>138 (44.4)/201 (56.9)</td>
<td>1.66 (1.22-2.25)</td>
<td>0.001</td>
<td>1.60 (1.17-2.18)</td>
<td>0.003</td>
<td>1.40 (1.01-1.94)</td>
<td>0.046</td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>174 (55.9)/146 (41.4)</td>
<td>1.80 (1.32-2.46)</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>137 (44.1)/207 (58.6)</td>
<td>1.0</td>
<td>1</td>
<td>1.69 (1.23-2.32)</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of sealant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>118 (37.9)/92 (26.1)</td>
<td>1.73 (1.25-2.41)</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>193 (62.1)/261 (73.9)</td>
<td>1.0</td>
<td>1</td>
<td>1.64 (1.15-2.33)</td>
<td>0.006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern dental attendance</td>
<td></td>
<td></td>
<td></td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td>185 (59.5)/169 (47.9)</td>
<td>1.0</td>
<td>1</td>
<td>1.63 (1.17-2.28)</td>
<td>0.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>99 (31.8)/174 (49.3)</td>
<td>1.92 (1.39-2.66)</td>
<td>0.000</td>
<td>1.63 (1.17-2.28)</td>
<td>0.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No dental visit</td>
<td>7 (2.3)/1 (0.3)</td>
<td>0.16 (0.02-1.28)</td>
<td>0.084</td>
<td>0.14 (0.02-1.16)</td>
<td>0.068</td>
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</tr>
<tr>
<td>Do not know</td>
<td>20 (6.4)/9 (2.5)</td>
<td>0.49 (0.22-1.11)</td>
<td>0.088</td>
<td>0.39 (0.17-0.91)</td>
<td>0.030</td>
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<tr>
<td>Mothers' education</td>
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<td>0.002</td>
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<tr>
<td>University</td>
<td>71 (22.8)/60 (17.0)</td>
<td>1.0</td>
<td>1</td>
<td>1.0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>120 (38.6)/116 (32.9)</td>
<td>1.14 (0.75-1.76)</td>
<td>0.538</td>
<td>1.14 (0.75-1.76)</td>
<td>0.538</td>
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<td></td>
</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>57 (18.3)/64 (18.1)</td>
<td>1.33 (0.81-2.18)</td>
<td>0.261</td>
<td>1.33 (0.81-2.18)</td>
<td>0.261</td>
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</tr>
<tr>
<td>Illiterate and primary</td>
<td>59 (19.0)/112 (31.7)</td>
<td>2.25 (1.41-3.58)</td>
<td>0.001</td>
<td>2.25 (1.41-3.58)</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Stage 1= Adjusted for social class  ** Stage 2= Adjusted for social class, sex, pattern of dental attendance, and presence of sealant

Mothers’ education was not included in the model due to its high correlation with social class

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Table 3.18 - Frequency distribution and results of logistic regression of the variables included in the study of DMFS Index (n=664) - Stage 3***

<table>
<thead>
<tr>
<th></th>
<th>Low DMFS (0-7)/High DMFS (≥8) n (%)</th>
<th>Unadjusted OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted** OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers' SOC (per 10 units)</td>
<td></td>
<td></td>
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<tr>
<td>Social class</td>
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<td></td>
</tr>
<tr>
<td>High</td>
<td>173 (55.6)/152 (43.1)</td>
<td>1.66 (1.22-2.25)</td>
<td>0.001</td>
<td>1.36 (0.98-1.89)</td>
<td>0.070</td>
</tr>
<tr>
<td>Low</td>
<td>138 (44.4)/201 (56.9)</td>
<td>1.80 (1.32-2.46)</td>
<td>0.000</td>
<td>1.58 (1.14-2.19)</td>
<td>0.006</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>174 (55.9)/146 (41.4)</td>
<td>1.80 (1.32-2.46)</td>
<td>0.000</td>
<td>1.58 (1.14-2.19)</td>
<td>0.006</td>
</tr>
<tr>
<td>Female</td>
<td>137 (44.1)/207 (58.6)</td>
<td>1.73 (1.25-2.41)</td>
<td>0.001</td>
<td>1.54 (1.12-2.19)</td>
<td>0.018</td>
</tr>
<tr>
<td>Presence of sealant</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>118 (37.9)/92 (26.1)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>193 (62.1)/261 (73.9)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pattern dental attendance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td>185 (59.5)/169 (47.9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>99 (31.8)/174 (49.3)</td>
<td>1.92 (1.39-2.66)</td>
<td>0.000</td>
<td>1.58 (1.12-2.22)</td>
<td>0.009</td>
</tr>
<tr>
<td>No dental visit</td>
<td>7 (2.3)/1 (0.3)</td>
<td>0.16 (0.02-1.28)</td>
<td>0.084</td>
<td>0.12 (0.01-0.99)</td>
<td>0.049</td>
</tr>
<tr>
<td>Do not know</td>
<td>20 (6.4)/9 (2.5)</td>
<td>0.49 (0.22-1.11)</td>
<td>0.088</td>
<td>0.36 (0.15-0.84)</td>
<td>0.018</td>
</tr>
<tr>
<td>Mothers' dental health</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Good</td>
<td>228 (73.3)/215 (60.9)</td>
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</tr>
<tr>
<td>Poor</td>
<td>81 (26.0)/137 (38.8)</td>
<td>1.79 (1.29-2.50)</td>
<td>0.001</td>
<td>1.48 (1.04-2.11)</td>
<td>0.032</td>
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<td>Missing</td>
<td>2 (0.6)/1 (0.3)</td>
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<tr>
<td>Sports activity</td>
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<td></td>
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<tr>
<td>Yes</td>
<td>165 (53.1)/156 (44.2)</td>
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<tr>
<td>No</td>
<td>146 (46.9)/197 (55.8)</td>
<td>1.43 (1.05-1.94)</td>
<td>0.023</td>
<td>1.21 (0.87-1.69)</td>
<td>0.254</td>
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</table>

*** Stage 3 = Adjusted for all variables shown
Table 3.19: Frequency distribution and results of polytomous ordered regression of the variables included in the study of caries severity (n=664) - Stage 1

<table>
<thead>
<tr>
<th>Caries-free</th>
<th>Caries severity n (%)</th>
<th>Approximal and labial posterior Zone 3</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 0</td>
<td>Pit and fissure posterior Zone 1</td>
<td>Approximal posterior Zone 2</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mothers' SOC (per 10 units)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social class</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>51(63.0)</td>
<td>124(52.3)</td>
<td>104(45.4)</td>
<td>46(39.3)</td>
<td>0.80 (0.73-0.89)</td>
<td>0.000</td>
</tr>
<tr>
<td>Low</td>
<td>30(37.0)</td>
<td>113(47.7)</td>
<td>125(54.6)</td>
<td>71(60.7)</td>
<td>1.65 (1.25-2.18)</td>
<td>0.000</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>52(64.2)</td>
<td>113(47.7)</td>
<td>106(46.3)</td>
<td>49(41.9)</td>
<td>1.00 (0.90-1.10)</td>
<td>0.930</td>
</tr>
<tr>
<td>Female</td>
<td>29(35.8)</td>
<td>124(52.3)</td>
<td>123(53.7)</td>
<td>68(58.1)</td>
<td>1.00 (0.90-1.10)</td>
<td>0.930</td>
</tr>
<tr>
<td>Pattern of dental attendance</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td>59(72.8)</td>
<td>131(55.3)</td>
<td>123(53.7)</td>
<td>41(35.0)</td>
<td>0.000 (0.90-1.10)</td>
<td>0.930</td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>12(14.8)</td>
<td>91(38.4)</td>
<td>99(43.2)</td>
<td>71(60.7)</td>
<td>0.29 (0.21-0.39)</td>
<td>0.000</td>
</tr>
<tr>
<td>No dental visit</td>
<td>5(6.2)</td>
<td>2(0.8)</td>
<td>1(0.9)</td>
<td>4(3.4)</td>
<td>0.83 (0.41-1.68)</td>
<td>0.603</td>
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<tr>
<td>Always lived in fluoridated areas</td>
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</tr>
<tr>
<td>Yes</td>
<td>63(77.8)</td>
<td>170(71.7)</td>
<td>145(63.3)</td>
<td>77(65.8)</td>
<td>1.00 (0.90-1.10)</td>
<td>0.930</td>
</tr>
<tr>
<td>No</td>
<td>18(22.2)</td>
<td>67(28.3)</td>
<td>84(36.7)</td>
<td>40(34.2)</td>
<td>1.44 (1.07-1.93)</td>
<td>0.017</td>
</tr>
<tr>
<td>Mothers' education</td>
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</tr>
<tr>
<td>University</td>
<td>24(29.6)</td>
<td>42(17.7)</td>
<td>50(21.8)</td>
<td>15(12.8)</td>
<td>0.98 (0.67-1.45)</td>
<td>0.930</td>
</tr>
<tr>
<td>Secondary</td>
<td>31(38.3)</td>
<td>99(41.8)</td>
<td>79(34.5)</td>
<td>27(23.1)</td>
<td>1.00 (0.90-1.10)</td>
<td>0.930</td>
</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>13(16.0)</td>
<td>42(17.7)</td>
<td>35(15.3)</td>
<td>31(26.5)</td>
<td>1.65 (1.04-2.60)</td>
<td>0.034</td>
</tr>
<tr>
<td>Illiterate and primary</td>
<td>12(14.8)</td>
<td>53(22.4)</td>
<td>63(27.5)</td>
<td>43(36.8)</td>
<td>2.04 (1.34-3.10)</td>
<td>0.001</td>
</tr>
<tr>
<td>Missing</td>
<td>1(1.2)</td>
<td>1(0.4)</td>
<td>2(0.9)</td>
<td>1(0.9)</td>
<td>0.000 (0.90-1.10)</td>
<td>0.930</td>
</tr>
</tbody>
</table>

* Stage 1= Adjusted for social class Zones 0 to 3 indicate increasing severity Mothers' education not included in the model due to its high correlation with social class
Table 3.20- Frequency distribution and results of polytomous ordered regression of the variables included in the study of caries severity (n=664) - Stage 2

<table>
<thead>
<tr>
<th>Caries-free</th>
<th>Pit and fissure posterior</th>
<th>Caries severity n(%)</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95%c.i.)</th>
<th>P</th>
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<td>Zone 0</td>
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<td><strong>Mothers’ SOC</strong> (per 10 units)</td>
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<tr>
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<td>124(52.3)</td>
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<td>46(39.3)</td>
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<tr>
<td>Low</td>
<td>30(37.0)</td>
<td>113(47.7)</td>
<td>125(54.6)</td>
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<td>71(60.7)</td>
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<tr>
<td><strong>Sex</strong></td>
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<tr>
<td>Male</td>
<td>52(64.2)</td>
<td>113(47.7)</td>
<td>106(46.3)</td>
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<td>49(41.9)</td>
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<td>29(35.8)</td>
<td>124(52.3)</td>
<td>123(53.7)</td>
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<tr>
<td><strong>Pattern of dental attendance</strong></td>
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<td>Check-ups mainly</td>
<td>59(72.8)</td>
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<td>123(53.7)</td>
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<td>99(43.2)</td>
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<td>71(60.7)</td>
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<tr>
<td>No dental visit</td>
<td>5(6.2)</td>
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<td>1(0.9)</td>
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<td>0.83 (0.41-1.68)</td>
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<td>13(5.5)</td>
<td>7(3.1)</td>
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<td>4(3.4)</td>
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<tr>
<td><strong>Presence of sealant</strong></td>
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</tr>
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<td>34(42.0)</td>
<td>81(34.2)</td>
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<td>29(24.8)</td>
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<td>156(65.8)</td>
<td>163(71.2)</td>
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<td>84(36.7)</td>
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<td>40(34.2)</td>
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* Stage 2= Adjusted for all variables shown

Zones 0 to 3 indicate increasing severity
Table 3.21- Frequency distribution and results of polytomous ordered regression of the variables included in the study of caries severity (n=664) - Stage 3

<table>
<thead>
<tr>
<th>Caries severity n(%)</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
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<tr>
<td>Zone 0</td>
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<tr>
<td>Pit and fissure</td>
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</tr>
<tr>
<td>posterior Zone 1</td>
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<tr>
<td>Approximal posterior</td>
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<tr>
<td>Zone 2</td>
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<tr>
<td>Approximal and labial posterior Zone 3</td>
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<tr>
<td>Mothers’ SOC (per 10 units)</td>
<td>0.80 (0.73-0.89) 0.000</td>
<td>0.84 (0.76-0.94) 0.002</td>
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<td>High</td>
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<tr>
<td>Sex</td>
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<tr>
<td>Female</td>
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<tr>
<td>Pattern of dental attendance</td>
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<td>0.000</td>
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<tr>
<td>Check-ups mainly</td>
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</tr>
<tr>
<td>In trouble mainly</td>
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<tr>
<td>No dental visit</td>
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<tr>
<td>Do not know</td>
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<tr>
<td>Presence of sealant</td>
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<td>Always lived in fluoridated areas</td>
<td>1.53 (1.13-2.07) 0.005</td>
<td>1.19 (0.87-1.64) 0.274</td>
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135
<table>
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<tr>
<th>Birth order</th>
<th>Caries-free</th>
<th>Pit and fissure</th>
<th>Approximal posterior</th>
<th>Approximal and labial posterior</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Zone 1</td>
<td>Zone 2</td>
<td>Zone 3</td>
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<td></td>
<td></td>
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<tr>
<td>First</td>
<td>47(58.0)</td>
<td>107(45.1)</td>
<td>94(41.0)</td>
<td>49(41.9)</td>
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<td>1.30 (0.93-1.80)</td>
<td>0.126</td>
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<td>Second</td>
<td>20(24.7)</td>
<td>70(29.5)</td>
<td>66(28.8)</td>
<td>37(31.6)</td>
<td>1.43 (1.02-2.01)</td>
<td>0.037</td>
<td>1.17 (0.84-1.64)</td>
<td>0.351</td>
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<td>Third or more</td>
<td>14(17.3)</td>
<td>60(25.3)</td>
<td>69(30.1)</td>
<td>31(26.5)</td>
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<td>1.43 (1.02-2.01)</td>
<td>0.037</td>
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<table>
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<tr>
<th>Failure at school examination</th>
<th>Caries-free</th>
<th>Pit and fissure</th>
<th>Approximal posterior</th>
<th>Approximal and labial posterior</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
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</thead>
<tbody>
<tr>
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<td>Zone 1</td>
<td>Zone 2</td>
<td>Zone 3</td>
<td></td>
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</tr>
<tr>
<td>No</td>
<td>63(77.8)</td>
<td>163(68.8)</td>
<td>149(65.1)</td>
<td>64(54.7)</td>
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<td>1.66 (1.23-2.23)</td>
<td>0.001</td>
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<td>18(22.2)</td>
<td>74(31.2)</td>
<td>80(34.9)</td>
<td>53(45.3)</td>
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<td>1.55 (1.14-2.11)</td>
<td>0.005</td>
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<tr>
<th>Sports activity</th>
<th>Caries-free</th>
<th>Pit and fissure</th>
<th>Approximal posterior</th>
<th>Approximal and labial posterior</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
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<td>Zone 1</td>
<td>Zone 2</td>
<td>Zone 3</td>
<td></td>
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<tr>
<td>Yes</td>
<td>49(60.5)</td>
<td>111(46.8)</td>
<td>116(50.7)</td>
<td>45(38.5)</td>
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<td>1.35 (1.03-1.79)</td>
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<td>No</td>
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<td>126(53.2)</td>
<td>113(49.3)</td>
<td>72(61.5)</td>
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<td>1.16 (0.87-1.56)</td>
<td>0.315</td>
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<th>Mother’s dental health</th>
<th>Caries-free</th>
<th>Pit and fissure</th>
<th>Approximal posterior</th>
<th>Approximal and labial posterior</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
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<td>Zone 0</td>
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<td>Zone 2</td>
<td>Zone 3</td>
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<tr>
<td>Good</td>
<td>64(79.0)</td>
<td>168(70.9)</td>
<td>148(64.6)</td>
<td>63(53.8)</td>
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<td>1.84 (1.36-2.47)</td>
<td>0.000</td>
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<tr>
<td>Poor</td>
<td>17(21.0)</td>
<td>67(28.3)</td>
<td>81(35.4)</td>
<td>53(45.3)</td>
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<td>1.39 (1.01-1.91)</td>
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<td>1(0.9)</td>
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* Stage 3= Adjusted for all variables shown
Zones 0 to 3 indicate increasing severity
Table 3.22- Frequency distribution and results of logistic regression of the variables included in the study of caries experience in anterior teeth (n=664) - Model I (Adolescents’ SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th>Caries experience in anterior teeth</th>
<th>No/Yes n (%)</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted** OR (95% c.i.)</th>
<th>P</th>
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<tbody>
<tr>
<td><strong>Adolescents’ SOC (per 10 units)</strong>*</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Social class</strong></td>
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<td></td>
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</tr>
<tr>
<td>High</td>
<td>279 (51.0)/46 (39.3)</td>
<td>0.81 (0.66-0.98)</td>
<td>0.029</td>
<td>0.81 (0.66-0.99)</td>
<td>0.036</td>
<td>0.84 (0.69-1.03)</td>
<td>0.104</td>
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<tr>
<td>Low</td>
<td>268 (49.0)/71 (60.7)</td>
<td>1.61 (1.07-2.41)</td>
<td>0.022</td>
<td>1.58 (1.05-2.38)</td>
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<td>1.38 (0.91-2.10)</td>
<td>0.132</td>
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<td><strong>Pattern of dental attendance</strong></td>
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<td>0.000</td>
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<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td>313 (57.2)/41 (35.0)</td>
<td>1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>202 (36.9)/71 (60.7)</td>
<td>2.68 (1.76-4.10)</td>
<td>0.000</td>
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</tr>
<tr>
<td>No dental visit</td>
<td>7 (1.3)/1 (0.9)</td>
<td>1.09 (0.13-9.09)</td>
<td>0.936</td>
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<tr>
<td>Do not know</td>
<td>25 (4.6)/4 (3.4)</td>
<td>1.22 (0.40-3.69)</td>
<td>0.723</td>
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<tr>
<td><strong>Mothers’ education</strong></td>
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<tr>
<td>University</td>
<td>116 (21.2)/15 (12.8)</td>
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<tr>
<td>Secondary</td>
<td>209 (38.2)/27 (23.1)</td>
<td>1.00 (0.51-1.95)</td>
<td>0.998</td>
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<tr>
<td>Primary (2nd phase)</td>
<td>90 (16.5)/31 (26.5)</td>
<td>2.66 (1.36-5.23)</td>
<td>0.004</td>
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<tr>
<td>Illiterate and primary</td>
<td>128 (23.4)/43 (36.8)</td>
<td>2.60 (1.37-4.92)</td>
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<tr>
<td>Missing</td>
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</table>
* Stage 1= Adjusted for social class  ** Stage 2= Adjusted for social class, sex, and pattern of dental attendance
Only the significant variables are shown
Mothers’ education was not included in the model due to its high correlation with social class
Table 3.23- Frequency distribution and results of logistic regression of the variables included in the study of caries experience in anterior teeth (n=664) - Model I (Adolescents' SOC) - Stage 3

<table>
<thead>
<tr>
<th>Caries experience in anterior teeth</th>
<th>No/Yes</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adolescents' SOC (per 10 units)</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>279 (51.0)/46 (39.3)</td>
<td>1</td>
<td>1</td>
<td>1.07-2.41 0.022</td>
<td>1.24 (0.81-1.90) 0.322</td>
</tr>
<tr>
<td>Low</td>
<td>268 (49.0)/71 (60.7)</td>
<td>1.61</td>
<td>0.022</td>
<td>1.07-2.41 0.022</td>
<td>1.24 (0.81-1.90) 0.322</td>
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<td><strong>Pattern of dental attendance</strong></td>
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</tr>
<tr>
<td>Check-ups mainly</td>
<td>313 (57.2)/41 (35.0)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>202 (36.9)/71 (60.7)</td>
<td>2.68</td>
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<td>1.76-4.10 0.000</td>
<td>2.31 (1.49-3.58) 0.000</td>
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<td>0.13-9.09 0.936</td>
<td>0.96 (0.11-8.25) 0.971</td>
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<td>0.40-3.69 0.723</td>
<td>0.96 (0.31-3.00) 0.947</td>
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<tr>
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<td>375 (68.6)/64 (54.7)</td>
<td>1</td>
<td>1</td>
<td>1.20-2.71 0.004</td>
<td>1.67 (1.08-2.58) 0.020</td>
</tr>
<tr>
<td>Yes</td>
<td>172 (31.4)/53 (45.3)</td>
<td>1.81</td>
<td>0.004</td>
<td>1.20-2.71 0.004</td>
<td>1.67 (1.08-2.58) 0.020</td>
</tr>
<tr>
<td><strong>Sports activity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>271 (49.5)/72 (61.5)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>276 (50.5)/45 (38.5)</td>
<td>1.63</td>
<td>0.019</td>
<td>1.08-2.45 0.019</td>
<td>1.44 (0.93-2.23) 0.101</td>
</tr>
<tr>
<td><strong>Mother's dental health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>380 (69.5)/63 (53.8)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Poor</td>
<td>165 (30.2)/53 (45.3)</td>
<td>1.94</td>
<td>0.002</td>
<td>1.29-2.91 0.002</td>
<td>1.54 (1.00-2.37) 0.048</td>
</tr>
<tr>
<td>Missing</td>
<td>2 (0.4)/1 (0.9)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* Stage 3= Adjusted for all variables shown and sex

Only the significant variables are shown.
Table 3.24- Frequency distribution and results of logistic regression of the variables included in the study of caries experience in anterior teeth (n=664) - Model II (Mothers’ SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th>Caries experience in anterior teeth</th>
<th>No/Yes</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted** OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers’ SOC (per 10 units)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>279 (51.0)/46 (39.3)</td>
<td>1</td>
<td>1.61 (1.07-2.41) 0.022</td>
<td>1.44 (0.95-2.18) 0.085</td>
<td>1.27 (0.83-1.94) 0.272</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>268 (49.0)/71 (60.7)</td>
<td>0.72 (0.59-0.88) 0.000</td>
<td>0.73 (0.60-0.90) 0.000</td>
<td>0.74 (0.61-0.90) 0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>313 (57.2)/41 (35.0)</td>
<td>1</td>
<td></td>
<td>1</td>
<td>2.68 (1.76-4.10) 0.000</td>
<td>2.42 (1.56-3.73) 0.000</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>202 (36.9)/71 (60.7)</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1.09 (0.13-9.09) 0.936</td>
<td>1.11 (0.13-9.47) 0.922</td>
<td></td>
</tr>
<tr>
<td>Pattern of dental attendance</td>
<td></td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>116 (21.2)/15 (12.8)</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1.00 (0.51-1.95) 0.998</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No dental visit</td>
<td>209 (38.0)/27 (23.1)</td>
<td>1</td>
<td></td>
<td>1</td>
<td>2.66 (1.36-5.23) 0.004</td>
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</tr>
<tr>
<td>Do not know</td>
<td>90 (16.5)/31 (26.5)</td>
<td>1</td>
<td></td>
<td>1</td>
<td>2.60 (1.37-4.92) 0.003</td>
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</tr>
<tr>
<td>Mothers’ education</td>
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</tr>
<tr>
<td>University</td>
<td>116 (21.2)/15 (12.8)</td>
<td>1</td>
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<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>209 (38.0)/27 (23.1)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>90 (16.5)/31 (26.5)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate and primary</td>
<td>128 (23.4)/43 (36.8)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>4 (0.7)/1 (0.9)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Stage 1= Adjusted for social class  ** Stage 2= Adjusted for social class, sex, and pattern of dental attendance
Only the significant variables are shown
Mothers’ education was not included in the model due to its high correlation with social class
Table 3.25 - Frequency distribution and results of logistic regression of the variables included in the study of caries experience in anterior teeth (n=664)
- Model II (Mothers' SOC) - Stage 3*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Caries experience in anterior teeth</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers' SOC (per 10 units)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>0.72 (0.59-0.88)</td>
<td>0.000</td>
<td></td>
<td>0.76 (0.62-0.92)</td>
<td>0.001</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>279 (51.0)/46 (39.3)</td>
<td>1</td>
<td></td>
<td>1.07-2.41)</td>
<td>0.022</td>
</tr>
<tr>
<td>Low</td>
<td>268 (49.0)/71 (60.7)</td>
<td>1.61</td>
<td></td>
<td>1.09 (0.13-9.09)</td>
<td>0.936</td>
</tr>
<tr>
<td>Pattern of dental attendance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td>313 (57.2)/41(35.0)</td>
<td>1</td>
<td></td>
<td>1.22 (0.40-3.69)</td>
<td>0.723</td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>202 (36.9)/71(60.7)</td>
<td>1.61</td>
<td></td>
<td>1.09 (0.13-9.09)</td>
<td>0.936</td>
</tr>
<tr>
<td>No dental visit</td>
<td>7 (1.3)/1(0.9)</td>
<td>1.09</td>
<td></td>
<td>0.94 (0.11-8.27)</td>
<td>0.953</td>
</tr>
<tr>
<td>Do not know</td>
<td>25 (4.6)/4 (3.4)</td>
<td>1.22</td>
<td></td>
<td>0.79 (0.25-2.52)</td>
<td>0.692</td>
</tr>
<tr>
<td>Failure at school examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>375 (68.6)/64 (54.7)</td>
<td>1</td>
<td></td>
<td>1.20-2.71)</td>
<td>0.004</td>
</tr>
<tr>
<td>Yes</td>
<td>272 (31.4)/53 (45.3)</td>
<td>1.81</td>
<td></td>
<td>1.40-2.70)</td>
<td>0.010</td>
</tr>
<tr>
<td>Sports activity</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>271 (49.5)/72 (61.5)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>276 (50.5)/45 (38.5)</td>
<td>1.63</td>
<td></td>
<td>0.89-2.15)</td>
<td>0.148</td>
</tr>
<tr>
<td>Mother's dental health</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>380 (69.5)/63 (53.8)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>165 (30.2)/53 (45.3)</td>
<td>1.94</td>
<td></td>
<td>1.29-2.91)</td>
<td>0.002</td>
</tr>
<tr>
<td>Missing</td>
<td>2 (0.4)/1(0.9)</td>
<td>1.94</td>
<td></td>
<td>1.40 (0.90-2.16)</td>
<td>0.135</td>
</tr>
</tbody>
</table>

* Stage 3= Adjusted for all variables shown and sex

Only the significant variables are shown
Table 3.26 - Frequency distribution and results of logistic regression of the variables included in the study of caries experience in anterior teeth (n=664) - Model III (Adolescents' SOC and mothers' SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th>Caries experience in anterior teeth</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted' OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted'' OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>No/Yes n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescents' SOC (per 10 units)</td>
<td>0.81 (0.66-0.98)</td>
<td>0.029</td>
<td>0.88 (0.72-1.07)</td>
<td>0.219</td>
<td>0.94 (0.77-1.15)</td>
<td>0.596</td>
</tr>
<tr>
<td>Mothers' SOC (per 10 units)</td>
<td>0.72 (0.59-0.88)</td>
<td>0.000</td>
<td>0.74 (0.60-0.90)</td>
<td>0.000</td>
<td>0.76 (0.62-1.07)</td>
<td>0.001</td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>279 (51.0)/46 (39.3)</td>
<td>1</td>
<td>1.61 (1.07-2.41)</td>
<td>0.022</td>
<td>1.16 (0.75-1.79)</td>
<td>0.501</td>
</tr>
<tr>
<td>Low</td>
<td>268 (49.0)/71 (60.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern of dental attendance</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-ups mainly</td>
<td>313 (57.2)/41(35.0)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In trouble mainly</td>
<td>202 (36.9)/71(60.7)</td>
<td>2.68</td>
<td>(1.76-4.10)</td>
<td>0.000</td>
<td>2.28 (1.46-3.55)</td>
<td>0.000</td>
</tr>
<tr>
<td>No dental visit</td>
<td>7 (1.3)/1(0.9)</td>
<td>1.09</td>
<td>(0.13-9.09)</td>
<td>0.936</td>
<td>0.94 (0.11-8.30)</td>
<td>0.957</td>
</tr>
<tr>
<td>Do not know</td>
<td>25 (4.6)/4 (3.4)</td>
<td>1.22</td>
<td>(0.40-3.69)</td>
<td>0.723</td>
<td>0.79 (0.24-2.46)</td>
<td>0.659</td>
</tr>
<tr>
<td>Failure at school examination</td>
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</tr>
<tr>
<td>No</td>
<td>375 (68.6)/64 (54.7)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>172 (31.4)/53 (45.3)</td>
<td>1.81</td>
<td>(1.20-2.71)</td>
<td>0.004</td>
<td>1.71 (1.10-2.66)</td>
<td>0.016</td>
</tr>
<tr>
<td>Sports activity</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>271 (49.5)/72 (61.5)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>276 (50.5)/45 (38.5)</td>
<td>1.63</td>
<td>(1.08-2.45)</td>
<td>0.019</td>
<td>1.40 (0.90-2.17)</td>
<td>0.139</td>
</tr>
<tr>
<td>Mother's dental health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>380 (69.5)/63 (53.8)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>165 (30.2)/53 (45.3)</td>
<td>1.94</td>
<td>(1.29-2.91)</td>
<td>0.002</td>
<td>1.40 (0.90-2.17)</td>
<td>0.132</td>
</tr>
<tr>
<td>Missing</td>
<td>2 (0.4)/1(0.9)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

* Stage 1 = Adjusted for adolescents' SOC and mothers' SOC  
** Stage 2 = Adjusted for all variables shown and sex  
Only the significant variables are shown
Table 3.27- Frequency distribution and results of logistic regression of the variables included in the study of bleeding after probing (n=596) - Stages 1* and 2**

<table>
<thead>
<tr>
<th></th>
<th>No bleeding n (%)</th>
<th>Bleeding n (%)</th>
<th>Unadjusted OR (95% c.i.)</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>Adjusted** OR (95% c.i.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers’ SOC (per 10 units)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>330 (89.2)</td>
<td>133 (58.8)</td>
<td>0.84 (0.74-0.94) 0.005</td>
<td>0.84 (0.74-0.95) 0.005</td>
<td>0.85 (0.74-0.96) 0.013</td>
</tr>
<tr>
<td></td>
<td>40 (10.8)</td>
<td>93 (41.2)</td>
<td>5.77 (3.78-8.80) 0.000</td>
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<td></td>
</tr>
<tr>
<td>Plaque Index</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
<td>5.54 (3.61-8.51) 0.000</td>
<td></td>
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</tr>
<tr>
<td>Daily toothbrushing frequency</td>
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<td>0.074</td>
<td>0.431</td>
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</tr>
<tr>
<td>Four times and more</td>
<td>73 (32.3)</td>
<td>148 (40.0)</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Three times</td>
<td>90 (39.8)</td>
<td>145 (39.2)</td>
<td>1.26 (0.86-1.85) 0.242</td>
<td>1.28 (0.85-1.93) 0.239</td>
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</tr>
<tr>
<td>Once to twice</td>
<td>63 (27.9)</td>
<td>77 (20.8)</td>
<td>1.66 (1.07-2.56) 0.023</td>
<td>1.28 (0.80-2.07) 0.305</td>
<td></td>
</tr>
</tbody>
</table>

* Stage 1= Adjusted for social class
** Stage 2= Adjusted for all variables shown, social class and sex

Only the significant variables are shown
Table 3.28- Frequency distribution and results of logistic regression of the variables included in the study of dental attendance (n=627) - Model I (Adolescents’ SOC) and model II (Mothers’ SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th>Pattern of dental attendance</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted** OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check-ups (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In trouble mainly (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MODEL I - ADOLESCENTS’ SOC</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescents’ SOC (per 10 units)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>0.83 (0.71-0.98)</td>
<td>0.020</td>
<td>0.84 (0.84-1.04)</td>
<td>0.029</td>
<td>0.85 (0.73-1.00)</td>
<td>0.045</td>
</tr>
<tr>
<td>Low</td>
<td>1.95 (1.42-2.69)</td>
<td>0.000</td>
<td>1.93 (1.40-2.67)</td>
<td>0.000</td>
<td>1.92 (1.39-2.32)</td>
<td>0.000</td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
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<tr>
<td>High</td>
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<tr>
<td>Mothers’ education</td>
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</tr>
<tr>
<td>University</td>
<td>86 (24.3)</td>
<td></td>
<td>1.11 (0.71-1.76)</td>
<td>0.648</td>
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</tr>
<tr>
<td>Secondary</td>
<td>142 (40.1)</td>
<td></td>
<td>2.35 (1.39-4.01)</td>
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</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>51 (14.4)</td>
<td></td>
<td>2.29 (1.43-3.67)</td>
<td>0.001</td>
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<tr>
<td>Illiterate and primary</td>
<td>75 (21.2)</td>
<td></td>
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<td>Missing</td>
<td>5 (1.8)</td>
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<tr>
<td><strong>MODEL II - MOTHERS’ SOC</strong></td>
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</tr>
<tr>
<td>Mothers’ SOC (per 10 units)</td>
<td>0.86 (0.76-0.97)</td>
<td>0.014</td>
<td>0.88 (0.79-1.00)</td>
<td>0.047</td>
<td>0.89 (0.79-1.00)</td>
<td>0.060</td>
</tr>
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<td>Social class</td>
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</tr>
<tr>
<td>High</td>
<td>200 (56.5)</td>
<td></td>
<td>1.95 (1.42-2.69)</td>
<td>0.000</td>
<td>1.88 (1.36-2.60)</td>
<td>0.000</td>
</tr>
<tr>
<td>Low</td>
<td>154 (43.5)</td>
<td></td>
<td>1.95 (1.42-2.69)</td>
<td>0.000</td>
<td>1.88 (1.36-2.60)</td>
<td>0.000</td>
</tr>
</tbody>
</table>

* Stage 1= Adjusted for social class  ** Stage 2= Adjusted for adolescents’ SOC or mothers’ SOC, social class and sex

Only the significant variables are shown
Mothers’ education was not included in the model due to its high correlation with social class
Table 3.29- Frequency distribution and results of logistic regression of the variables included in the study of dental attendance (n=627) - Model III (Adolescents’ and mothers’ SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th>Pattern of dental attendance</th>
<th>Unadj OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted** OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adolescents’ SOC</strong> (per 10 units)</td>
<td>0.83 (0.71-0.98) 0.020</td>
<td></td>
<td>0.86 (0.73-1.01) 0.072</td>
<td></td>
<td>0.87 (0.74-1.03) 0.105</td>
<td></td>
</tr>
<tr>
<td><strong>Mothers’ SOC</strong> (per 10 units)</td>
<td>0.86 (0.76-0.97) 0.014</td>
<td></td>
<td>0.89 (0.79-1.00) 0.050</td>
<td></td>
<td>0.91 (0.80-1.04) 0.142</td>
<td></td>
</tr>
<tr>
<td><strong>Social class</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>200 (56.5)</td>
<td>109 (39.9)</td>
<td>1</td>
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</tr>
<tr>
<td>Low</td>
<td>154 (43.5)</td>
<td>164 (60.1)</td>
<td>1.95 (1.42-2.69) 0.000</td>
<td></td>
<td>1.87 (1.35-2.59) 0.000</td>
<td></td>
</tr>
</tbody>
</table>

* Adjusted for adolescents’ and mothers’ SOC  
** Adjusted for all variables shown and sex  
Only the significant variables are shown
Table 3.30- Frequency distribution and results of logistic regression of the variables included in the study of self-rated dental health (n=614) - Model 1 (Adolescents’ SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unadjusted OR (95% c.i.)</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>Adjusted** OR (95% c.i.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good/Poor n (%)</td>
<td>P</td>
<td>Good/Poor n (%)</td>
</tr>
<tr>
<td>Adolescents’ SOC (per 10 units)</td>
<td>0.65 (0.54-0.77) 0.000</td>
<td>0.64 (0.53-0.79) 0.000</td>
<td>0.62 (0.51-0.76) 0.000</td>
</tr>
<tr>
<td>Mother’s education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>90 (20.3)/30 (17.5)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Secondary</td>
<td>187 (42.2)/36 (21.1)</td>
<td>0.58 (0.33-1.01) 0.049</td>
<td>0.52 (0.30-0.91) 0.022</td>
</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>69 (15.6)/42 (24.6)</td>
<td>1.83 (1.03-3.22) 0.036</td>
<td>1.58 (0.88-2.86) 0.123</td>
</tr>
<tr>
<td>Illiterate and primary</td>
<td>95 (21.4)/61 (35.7)</td>
<td>1.93 (1.14-3.28) 0.014</td>
<td>1.82 (1.07-3.09) 0.028</td>
</tr>
<tr>
<td>Missing</td>
<td>2 (0.5)/2 (1.2)</td>
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</tr>
<tr>
<td>DMFS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (0-7)</td>
<td>230 (51.9)/61 (35.7)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>High (≥8)</td>
<td>213 (48.1)/110 (64.3)</td>
<td>1.95 (1.35-2.84) 0.000</td>
<td>1.75 (1.05-2.92) 0.031</td>
</tr>
<tr>
<td>Caries severity</td>
<td></td>
<td>0.000</td>
<td>0.004</td>
</tr>
<tr>
<td>Zone 0 (caries-free)</td>
<td>58 (13.1)/15 (8.8)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Zone 1 (pit and fissure of posterior teeth)</td>
<td>172 (38.8)/51 (29.8)</td>
<td>1.15 (0.60-2.19) 0.679</td>
<td>1.04 (0.52-2.08) 0.910</td>
</tr>
<tr>
<td>Zone 2 (approximal of posterior teeth)</td>
<td>160 (36.1)/50 (29.2)</td>
<td>1.21 (0.63-2.32) 0.569</td>
<td>0.78 (0.36-1.71) 0.539</td>
</tr>
<tr>
<td>Zone 3 (approximal and labial of anterior teeth)</td>
<td>53 (12.0)/55 (32.2)</td>
<td>4.01 (2.03-7.93) 0.000</td>
<td>2.09 (0.89-4.88) 0.089</td>
</tr>
</tbody>
</table>

* Stage 1= Adjusted for mother’s education
** Stage 2= Adjusted for all variables shown and sex

Only the significant variables are shown
Table 3.31 - Frequency distribution and results of logistic regression of the variables included in the study of self-rated dental health (n=614) - Model II (Mothers’ SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th></th>
<th>Good/Poor n (%)</th>
<th>Unadjusted OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers’ SOC (per 10 units)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mother’s education</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>90 (20.3)/30 (17.5)</td>
<td>0.75 (0.65-0.86)</td>
<td>0.000</td>
<td>0.78 (0.68-0.90)</td>
<td>0.001</td>
<td>0.81 (0.70-0.94)</td>
<td>0.007</td>
</tr>
<tr>
<td>Secondary</td>
<td>187 (42.2)/36 (21.1)</td>
<td>0.58 (0.33-1.01)</td>
<td>0.049</td>
<td>0.49 (0.28-0.87)</td>
<td>0.013</td>
<td>0.49 (0.28-0.87)</td>
<td>0.015</td>
</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>69 (15.6)/42 (24.6)</td>
<td>1.83 (1.03-3.22)</td>
<td>0.036</td>
<td>1.47 (0.80-2.66)</td>
<td>0.198</td>
<td>1.32 (0.72-2.43)</td>
<td>0.364</td>
</tr>
<tr>
<td>Illiterate and primary</td>
<td>95 (21.4)/61 (33.7)</td>
<td>1.93 (1.14-3.28)</td>
<td>0.014</td>
<td>1.45 (0.84-2.51)</td>
<td>0.186</td>
<td>1.29 (0.73-2.27)</td>
<td>0.387</td>
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<tr>
<td>Missing</td>
<td>2 (0.5)/2 (1.2)</td>
<td></td>
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</tr>
<tr>
<td>DMFS</td>
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<td></td>
</tr>
<tr>
<td>Low (0-7)</td>
<td>230 (51.9)/61 (35.7)</td>
<td>1</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (≥8)</td>
<td>213 (48.1)/110 (64.3)</td>
<td>1.95 (1.35-2.84)</td>
<td>0.000</td>
<td></td>
<td></td>
<td>1.57 (0.95-2.60)</td>
<td>0.077</td>
</tr>
<tr>
<td>Caries severity</td>
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<td></td>
</tr>
<tr>
<td>Zone 0 (caries-free)</td>
<td>58 (13.1)/15 (8.8)</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 1 (pit and fissure of posterior teeth)</td>
<td>172 (38.8)/51 (29.8)</td>
<td>1.15 (0.60-2.19)</td>
<td>0.679</td>
<td></td>
<td></td>
<td>0.98 (0.49-1.94)</td>
<td>0.950</td>
</tr>
<tr>
<td>Zone 2 (approximal of posterior teeth)</td>
<td>160 (36.1)/50 (29.2)</td>
<td>1.21 (0.63-2.32)</td>
<td>0.569</td>
<td></td>
<td></td>
<td>0.78 (0.36-1.70)</td>
<td>0.533</td>
</tr>
<tr>
<td>Zone 3 (approximal and labial of anterior teeth)</td>
<td>53 (12.0)/55 (32.2)</td>
<td>4.01 (2.03-7.93)</td>
<td>0.000</td>
<td></td>
<td></td>
<td>2.01 (0.86-4.70)</td>
<td>0.105</td>
</tr>
</tbody>
</table>

* Stage 1= Adjusted for mother’s education
** Stage 2= Adjusted for all variables shown and sex

Only the significant variables are shown
Table 3.32 - Frequency distribution and results of logistic regression of the variables included in the study of self-rated dental health (n=614) - Model III (Adolescents’ SOC and mothers’ SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th></th>
<th>Good/Poor n (%)</th>
<th>Unadjusted OR (95% c.i.)</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>Adjusted** OR (95% c.i.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescents' SOC (per 10 units)</td>
<td>0.65 (0.54-0.77) 0.000</td>
<td>0.69 (0.56-0.84) 0.000</td>
<td>0.64 (0.53-0.79) 0.000</td>
<td></td>
</tr>
<tr>
<td>Mothers' SOC (per 10 units)</td>
<td>0.75 (0.65-0.86) 0.000</td>
<td>0.80 (0.69-0.91) 0.001</td>
<td>0.87 (0.74-1.02) 0.071</td>
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</tr>
<tr>
<td>Mother's education</td>
<td>0.000</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>90 (20.3)/30 (17.5)</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>187 (42.2)/36 (21.1)</td>
<td>0.58 (0.33-1.01) 0.049</td>
<td>0.46 (0.27-0.83) 0.010</td>
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</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>69 (15.6)/42 (24.6)</td>
<td>1.83 (1.03-3.22) 0.036</td>
<td>1.22 (0.66-2.25) 0.529</td>
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</tr>
<tr>
<td>Illiterate and primary</td>
<td>95 (21.4)/61 (35.7)</td>
<td>1.93 (1.14-3.28) 0.014</td>
<td>1.30 (0.73-2.34) 0.375</td>
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<td>2 (0.5)/2 (1.2)</td>
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<tr>
<td>DMFS</td>
<td>230 (51.9)/61 (35.7)</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Low (0-7)</td>
<td>213 (48.1)/110 (64.3)</td>
<td>1.95 (1.35-2.84) 0.000</td>
<td>1.78 (1.06-2.98) 0.028</td>
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</tr>
<tr>
<td>High (≥8)</td>
<td>58 (13.1)/15 (8.8)</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Caries severity</td>
<td>0.000</td>
<td>0.007</td>
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</tr>
<tr>
<td>Zone 0 (caries-free)</td>
<td>172 (38.8)/51 (29.8)</td>
<td>1.15 (0.60-2.19) 0.679</td>
<td>1.00 (0.50-2.01) 1.000</td>
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</tr>
<tr>
<td>Zone 1 (pit and fissure of posterior teeth)</td>
<td>160 (36.1)/50 (29.2)</td>
<td>1.21 (0.63-2.32) 0.569</td>
<td>0.75 (0.50-1.10) 0.466</td>
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<tr>
<td>Zone 2 (approximal of posterior teeth)</td>
<td>53 (12.0)/55 (32.2)</td>
<td>4.01 (2.03-7.93) 0.000</td>
<td>1.89 (0.80-4.46) 0.146</td>
<td></td>
</tr>
</tbody>
</table>

* Adjusted for adolescents’ and mothers’ SOC
** Adjusted for all variables shown and sex

Only the significant variables are shown.
Table 3.33- Frequency distribution and results of logistic regression of the variables included in the study of satisfaction with dental appearance (n=664) - Model I (Adolescents' SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th></th>
<th>Satisfied/Not satisfied n (%)</th>
<th>Unadjusted OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted** OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adolescents' SOC (per 10 units)</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>208 (52.5)/117 (43.7)</td>
<td>0.65 (0.55-0.78)</td>
<td>0.000</td>
<td>0.65 (0.55-0.76)</td>
<td>0.000</td>
<td>0.66 (0.56-0.77)</td>
<td>0.000</td>
</tr>
<tr>
<td>Low</td>
<td>188 (47.5)/151 (56.3)</td>
<td>1.43 (1.05-1.95)</td>
<td>0.025</td>
<td>1.40 (1.02-1.93)</td>
<td>0.038</td>
<td>1.32 (0.95-1.82)</td>
<td>0.098</td>
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<td><strong>Social class</strong></td>
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</tr>
<tr>
<td>High</td>
<td>53 (13.4)/28 (10.4)</td>
<td>1</td>
<td></td>
<td>1</td>
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<td>1</td>
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</tr>
<tr>
<td>Low</td>
<td>145 (36.6)/92 (34.3)</td>
<td>1.20 (0.71-2.03)</td>
<td>0.496</td>
<td>1.19 (0.69-2.06)</td>
<td>0.526</td>
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<tr>
<td>Zone 2 (approximal of posterior teeth)</td>
<td>145 (36.6)/84 (31.3)</td>
<td>1.10 (0.64-1.86)</td>
<td>0.734</td>
<td>1.02 (0.59-1.78)</td>
<td>0.935</td>
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</tr>
<tr>
<td>Zone 3 (approximal and labial of anterior teeth)</td>
<td>53 (13.4)/64 (23.9)</td>
<td>2.29 (1.27-4.10)</td>
<td>0.006</td>
<td>1.85 (1.00-3.41)</td>
<td>0.049</td>
<td></td>
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</tr>
<tr>
<td><strong>Caries severity</strong></td>
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</tr>
<tr>
<td>Low</td>
<td>283 (71.5)/180 (67.2)</td>
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<tr>
<td>High</td>
<td>66 (16.7)/67 (25.0)</td>
<td>1.60 (1.08-2.35)</td>
<td>0.018</td>
<td>1.48 (0.99-2.23)</td>
<td>0.058</td>
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</tr>
<tr>
<td>Not applicable</td>
<td>47 (11.9)/21 (7.8)</td>
<td>0.70 (0.41-1.21)</td>
<td>0.206</td>
<td>0.80 (0.46-1.42)</td>
<td>0.450</td>
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<td><strong>Plaque Index</strong></td>
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</tr>
<tr>
<td>Low</td>
<td>84 (21.2)/47 (17.5)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>163 (41.2)/73 (27.2)</td>
<td>0.80 (0.51-1.26)</td>
<td>0.334</td>
<td>0.80 (0.51-1.26)</td>
<td>0.334</td>
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</tr>
<tr>
<td>Primary (2nd phase)</td>
<td>60 (15.2)/61 (22.8)</td>
<td>1.82 (1.09-3.03)</td>
<td>0.020</td>
<td>1.82 (1.09-3.03)</td>
<td>0.020</td>
<td></td>
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</tr>
<tr>
<td>Illiterate and primary</td>
<td>86 (21.7)/85 (31.7)</td>
<td>1.77 (1.11-2.83)</td>
<td>0.017</td>
<td>1.77 (1.11-2.83)</td>
<td>0.017</td>
<td></td>
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</tr>
<tr>
<td>Missing</td>
<td>3 (0.8)/2 (0.7)</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

* Stage 1= Adjusted for social class  ** Stage 2= Adjusted for social class, caries severity, Plaque Index and sex
Only the significant variables are shown
Mothers' education was not included in the model due to its high correlation with social class
Table 3.34 - Frequency distribution and results of logistic regression of the variables included in the study of satisfaction with dental appearance (n=664) - Model II (Mothers’ SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th></th>
<th>Satisfied/Not satisfied</th>
<th>Unadjusted OR (95% c.i.)</th>
<th>Adjusted* OR (95% c.i.)</th>
<th>Adjusted** OR (95% c.i.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mothers’ SOC (per 10 units)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>208 (52.5)/117 (43.7)</td>
<td>0.77 (0.68-0.86) 0.000</td>
<td>0.78 (0.69-0.88) 0.000</td>
<td>0.80 (0.71-0.90) 0.000</td>
</tr>
<tr>
<td>Low</td>
<td>188 (47.5)/151 (56.3)</td>
<td>1.43 (1.05-1.95) 0.025</td>
<td>1.31 (0.95-1.80) 0.095</td>
<td>1.25 (0.90-1.73) 0.178</td>
</tr>
<tr>
<td><strong>Caries severity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 0 (caries-free)</td>
<td>53 (13.4)/28 (10.4)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 1 (pit and fissure of posterior teeth)</td>
<td>145 (36.6)/92 (34.3)</td>
<td>1.20 (0.71-2.03) 0.496</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 2 (approximal of posterior teeth)</td>
<td>145 (36.6)/84 (31.3)</td>
<td>1.10 (0.64-1.86) 0.734</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 3 (approximal and labial of anterior teeth)</td>
<td>53 (13.4)/64 (23.9)</td>
<td>2.29 (1.27-4.10) 0.006</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Plaque Index</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>283 (71.5)/180 (67.2)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>66 (16.7)/67 (25.0)</td>
<td>1.60 (1.08-2.35) 0.018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td>47 (11.9)/21 (7.8)</td>
<td>0.70 (0.41-1.21) 0.206</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Stage 1 = Adjusted for social class
** Stage 2 = Adjusted for all variables shown and sex

Only the significant variables are shown
Table 3.35 - Frequency distribution and results of logistic regression of the variables included in the study of satisfaction with dental appearance (n=664) - Model III (Adolescents' and mothers' SOC) - Stages 1* and 2**

<table>
<thead>
<tr>
<th></th>
<th>Satisfied/Not satisfied n (%)</th>
<th>Unadjusted OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted OR (95% c.i.)</th>
<th>P</th>
<th>Adjusted OR (95% c.i.)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescents’ SOC (per 10 units)</td>
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<tr>
<td></td>
<td>0.65 (0.55-0.78) 0.000</td>
<td>0.69 (0.59-0.81) 0.000</td>
<td></td>
<td>0.69 (0.58-0.83) 0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mothers’ SOC (per 10 units)</td>
<td>0.77 (0.68-0.86) 0.000</td>
<td>0.82 (0.73-0.92) 0.001</td>
<td></td>
<td>0.85 (0.76-0.96) 0.012</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Social class</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>208 (52.5)/117 (43.7)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>188 (47.5)/151 (56.3)</td>
<td>1.43 (1.05-1.95) 0.025</td>
<td></td>
<td>1.26 (0.91-1.75) 0.171</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caries severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 0 (caries-free)</td>
<td>53 (13.4)/28 (10.4)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 1 (pit and fissure of posterior teeth)</td>
<td>145 (36.6)/92 (34.3)</td>
<td>1.20 (0.71-2.03) 0.496</td>
<td></td>
<td>1.16 (0.67-2.00) 0.606</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 2 (approximal of posterior teeth)</td>
<td>145 (36.6)/84 (31.3)</td>
<td>1.10 (0.64-1.86) 0.734</td>
<td></td>
<td>0.99 (0.57-1.72) 0.964</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone 3 (approximal and labial of anterior teeth)</td>
<td>53 (13.4)/64 (23.9)</td>
<td>2.29 (1.27-4.10) 0.006</td>
<td></td>
<td>1.68 (0.90-3.11) 0.102</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plaque Index</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>283 (71.5)/180 (67.2)</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>66 (16.7)/67 (25.0)</td>
<td>1.60 (1.08-2.35) 0.018</td>
<td></td>
<td>1.46 (0.97-2.17) 0.071</td>
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</tr>
<tr>
<td>Not applicable</td>
<td>47 (11.9)/21 (7.8)</td>
<td>0.70 (0.41-1.21) 0.206</td>
<td></td>
<td>0.83 (0.47-1.46) 0.520</td>
<td></td>
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</tbody>
</table>

* Stage 1= Adjusted for adolescents' and mothers' SOC  ** Stage 2= Adjusted for all variables shown and sex  Only the significant variables are shown
4.1- Introduction

This chapter is divided into three sections. Section 4.2 presents the discussion of the most important results of this study, comparing them to other relevant research. Relevant methodological issues are then highlighted. Sections 4.3 and 4.4 present conclusions and recommendations.

4.2- Discussion

4.2.1- Discussion of main results

Socioeconomic status and oral health


Similar trends have also been observed among young children in Brazil (Freire et al, 1996), a country with marked social inequalities. The present study has corroborated these findings. Socioeconomic status was associated with several oral health-related variables such as dental caries status, presence of sealant, trauma to anterior teeth, use of orthodontic appliances, frequency of sugar consumption, and pattern of dental attendance. Significant associations were also found between socioeconomic status and self-rated oral health as well as satisfaction with dental appearance.
However, the lack of association in this study between socioeconomic status and toothbrushing frequency, as well as periodontal status, contrasts with the findings of other studies (Weissenbach et al., 1995; Taani, 1996). This may be explained by the high toothbrushing frequency in all socioeconomic groups found in the present study. All subjects reported brushing their teeth daily, and almost 78% of them brushed three times or more a day. Previous studies among Brazilian families have shown similar patterns (Marcenes, 1991; Pordeus, 1991).

Socioeconomic status and SOC

The present study offers some evidence that SOC is related to socioeconomic status, as measured by social class and level of education of the mothers. Adolescents whose mothers had higher levels of education had a higher mean SOC score. Also, mothers from higher social classes, as well as those with higher levels of education, had a higher mean SOC score than those from lower social class and lower education attainment.

But unlike the relationship between socioeconomic status and oral health, there is no unequivocal evidence that socioeconomic status is associated with SOC. Antonovsky (1987) has claimed that SOC is a social concept, which develops more positively among persons growing up in a socioeconomically stable environment with clearly defined norms and values. Also, as shown in Antonovsky’s framework explaining the salutogenic model (Figure 1.10), material resources as well as social support are among the major psychosocial generalized resistance resources (GRRs), which are mobilized by a strong SOC. However, Antonovsky never thoroughly explored the sociological background of the SOC, and much of the research in this field has been undertaken within a psychological framework.

In the very few studies considering the link between socioeconomic factors and SOC, the results are inconclusive. In a population survey in Sweden, workers and farmers were more likely to report a low SOC compared with white-collar workers and the self-employed (Lundberg and Peck, 1994); but a different measure of SOC to the one used in the present study, including only three questions, was used. Other studies have used both the 29-item and 13-item SOC scale, but most of these were carried out in a clinical
sample. For instance, Coe et al (1990), in a study among older North American veterans, found a negative correlation between SOC and perceived income adequacy, and also, no correlation between SOC and household size. Nyamathi (1993) found no association between SOC, education, and homelessness among minority women at risk for HIV infection. Two studies among North American patients with rheumatoid arthritis have reported weak correlations between SOC and family income (Hawley et al, 1992), and years of formal education (Callahan and Pincus, 1995). More recently, Bowman (1996) carried out a cross-validation of the SOC scale and showed that Native Americans living on a reservation and their Anglo-American counterparts living in a more urban environment had a similar level of SOC, despite socioeconomic differences.

The relationship among socioeconomic status, SOC and oral health is discussed throughout this Section.

_Sense of Coherence and oral health status_

Strongly statistically significant associations were found in this study between mothers’ SOC and their children’s oral health status, as measured by dental caries status and periodontal disease. Adolescents whose mothers had higher levels of SOC score were classified in less severe zones of caries severity, and were less likely to have caries experience in anterior teeth and gums bleeding after probing, than those whose mothers had lower levels of SOC. These relationships remained after social class, sex, and other risk factors for oral diseases were taken into account.

Mothers’ SOC was associated with their children’s caries-free status and DMFS Index, but the relationship did not remain significant after controlling for social class, sex and other risk factors. This suggests that the relationship between SOC and these two caries indicators is due, at least in part, to social class.

There are no published reports on the relationship between SOC and oral health. Moreover, studies using SOC as an explanatory variable have focused on mental rather than physical health. Thus results will be discussed in light of related research.
The findings of the present study show that the mothers' SOC may have more impact on their children's oral health status than the children's own SOC. In spite of the well-documented evidence on psychosocial factors and oral health, only a few studies have investigated the influence of the family psychological environment on children's oral health status. A study by Marcenes (1991) in Brazilian families showed that marital quality had an impact on the oral health status of fathers, mothers and their 13-year-old children. Reisine and Litt (1993) indicated that young children whose parents had more external locus of control, lower dental self-efficacy, and lower stress levels, had higher caries rates. Relatively poor dental and periodontal status have been found among children and adolescents from alcoholic families (Adamowiccz and Burkiewicz, 1990) and from families who had experienced stressful life events (Wendt et al, 1995).

Explanations for any link between SOC and health are unclear. Possibly, mothers with higher SOC are more likely to have more positive attitudes and behaviours towards their children's oral health than those with lower SOC. According to Antonovsky (1987), SOC may be linked to health in a variety of ways, including the selection of health behaviours. Previous studies have shown the influence of mothers on their children's oral health-related behaviours such as toothcleaning (Blinkhorn, 1976) and dental attendance (Attwood et al, 1993). The present study is cross-sectional, so adolescents' oral health status may reflect maternal care during childhood, rather than their current oral health-related behaviours and SOC. Indeed, bivariate analysis revealed that mothers with higher levels of SOC were more likely to control their children's sugar consumption and to clean their children's teeth when they were younger, than those with lower SOC. However, these variables were not associated with adolescent oral health status.

The hypothesis that high SOC in adolescence improves oral health status was not supported by the results of the present study. Adolescents' SOC was associated with only one outcome studied (caries experience in anterior teeth) but the association did not remain significant after controlling for social class, sex and dental attendance. Although this significant bivariate association may be due to chance, it gives some insights worth discussing here. Caries experience in anterior teeth is an indicator of high caries severity in adolescents and may affect their dental appearance. Poorer dental appearance, in turn,
may affect subjects' social relations, which are important resources for SOC. Therefore, there may be a potential relationship between SOC and dental caries experience, particularly when the condition cause impact on the subjects’ daily lives.

There is no strong evidence supporting the relationship between SOC and physical health. Therefore, it seems unlikely that the lack of association between adolescents’ SOC and oral health status in the present study are attributable to design and methodological factors. However, the lack of association may be a result of studying a young age group. As discussed previously, mother-related factors may have a stronger influence on adolescents’ current oral health status than their own self-care practices or psychological status. Possibly, in adolescence psychological and behavioural factors have not manifested themselves in time to affect clinical outcomes. Thus, oral health status may be mainly due to biological and family factors (Pordeus, 1991).

It may follow that in this age period, SOC is not yet stabilized, and therefore is less predictive of health outcomes. Antonovsky (1987) stated that SOC is developed throughout life, being tentative in childhood, more definite in adolescence, and fully stable only by the end of the third decade of life. It can be expected that younger adolescents would have a weaker SOC than older adolescents (Antonovsky and Sagy, 1986). However, there is as yet no strong evidence of changes in SOC over the life-course. Two studies carried out in adolescents have shown contradictory results. While Antonovsky and Sagy (1986) found an association between SOC and age, Margalit and Eysenck (1990) reported no significant age difference regarding SOC.

Further support for the hypothesis linking SOC and oral health status was found in the bivariate analysis between mothers’ SOC and their own dental health status. Mothers with higher SOC scores had better dental health than those with lower SOC scores, suggesting that the mothers’ SOC has an impact on their dental health status, as well as on their children’s dental caries and periodontal status. This finding also suggests that the influence of psychosocial factors such as SOC on health is clearer in adult life.
The present study highlighted other important aspects of the relationship between mothers' and their children's dental health. Adolescents whose mothers had better dental health were more likely to be caries-free, and to have lower DMFS levels, lower caries severity, and no caries experience in anterior teeth. Similarities in caries experience of parents and offspring have been reported in several studies (Klein, 1946; Martinsson and Petersson, 1972; Ringelberg et al, 1974; Garn et al, 1976; Shaw and Murray, 1980; Tijmstra, 1981; Friis-Haschè, 1981; Alaluusua et al, 1989; Pordeus, 1991). Mother-child similarities have been found to be higher than father-child similarities (Ringelberg et al, 1974; Garn et al, 1976; Alaluusua et al, 1989; Pordeus, 1991). Researchers have proposed that genetic, bacteriological, behavioural and immunological factors may explain the patterns. However, the possible influence of the psychosocial environment shared by family members has received little attention. The findings of the present study suggest that psychosocial factors, as measured by Sense of Coherence, may also contribute to the explanation of similarities in oral health status, since an association was found between the adolescents' and their mothers' SOC as well as between the adolescents' and their mothers' dental health status.

Besides mothers' SOC and dental health status, other significant associations were found with the adolescents' oral health status. These findings corroborated previous researchers who have reported a significant association between adolescents' dental caries status and sex (Megas and Athanassouli, 1989; Tubert-Jeannin et al, 1994; Petridou et al, 1996), and also between dental caries and sugar consumption (Martinsson, 1972; Lachapelle-Harvey and Sévigny, 1983; Hölund et al, 1985; Tubert-Jeannin et al, 1994; Weissenbach et al, 1995; Árnadóttir et al, 1998). Previous studies also corroborate the finding of the present study that dental caries is associated with other psychosocial factors such as birth order (Primosch, 1982; Nitzschmann et al, 1990) and school performance (Nitzschmann et al, 1990; Weissenbach et al, 1995; Petridou et al, 1996). The lack of a significant relationship between toothbrushing frequency and dental caries has been demonstrated in other studies (Sutcliffe, 1996).
Sense of Coherence and oral health-related behaviours

Three oral health-related behaviours were investigated in the present study: frequency of sugar consumption; pattern of dental attendance; and toothbrushing frequency. Adolescents’ SOC was significantly, although weakly, associated with their pattern of dental attendance. Subjects who had higher levels of SOC were more likely to visit the dentist mainly for checkups than those with lower SOC. This suggests that SOC may increase subjects awareness of oral health.

The present results also support studies showing correlations between SOC and other health-related behaviours among adults, such as dietary habits (Larsson and Setterlind, 1990), risk behaviours for HIV infection (Nyamathi, 1991), and alcohol consumption (Midanik et al, 1992).

There was also an association between mothers’ SOC and their children’s pattern of dental attendance, but this relationship was only marginally significant after adjusting for social class and sex. In addition, when both adolescents’ and their mothers’ SOC were included in the model simultaneously, and controlled for social class, and sex, only social class remained significant. This finding indicates that social class was the most important variable explaining pattern of dental attendance. Adolescents from a higher social class were more likely to visit the dentist mainly for checkups than those from a lower social class.

The influence of social class on the pattern of dental attendance of Brazilian families has been shown by other authors (Marcenes, 1991; Pordeus, 1991), suggesting that this variable may be more important than other psychosocial factors, at least in the populations studied. Studies among European adolescents also showed that occupational level of the father (Linn, 1976) and social conditions as well as self-perceived economic barriers (Lissau et al, 1989) were significant predictors of use of dental services.

Other oral health-related behaviours investigated here were not associated with SOC. Again, the lack of association may be a result of including a young age group, when oral health behaviours are more likely to be influenced by the parents than by the adolescents.
themselves. Only a few studies have attempted to relate oral health behaviours to psychological factors. Results have shown that adolescents with higher self-esteem were more likely to brush their teeth regularly (Macgregor and Balding, 1991; Regis et al, 1994; Macgregor et al, 1997a), and to make more frequent dental visits (Macgregor et al, 1997a), than those with lower self-esteem. Significant associations between health locus of control and toothbrushing behaviour have also been reported, as well as between health locus of control and dental attendance (Macgregor et al, 1997a). However these concepts measure different dimensions from SOC.

**Sense of Coherence and self-assessment of oral health**

In the present study SOC was the most important determinant of people’s perception of their oral health status. As predicted, adolescents with higher levels of SOC reported better dental health and more satisfaction with their dental appearance than those with lower levels of SOC. Similarly, adolescents whose mothers had higher levels of SOC reported better dental health and more satisfaction with their dental appearance than those whose mothers had lower levels of SOC.

The highly significant associations remained after controlling for other relevant factors, such as socio-demographic factors, dental caries status, oral cleanliness, trauma to anterior teeth, and current use of orthodontic appliances. This suggests that SOC is more related to how people perceive their oral health than to their actual clinical health status, as defined by the dentist. However, the analysis did not include malocclusion, which is a potential confounder for the associations found between SOC and satisfaction with dental appearance.

These findings also corroborate previous research reporting a significant relationship between SOC and different measures of subjective health status among adults (Larsson and Setterlind, 1990; Langius et al, 1993; Anson et al, 1993; Kivimäki et al, 1997; Strümpfer, 1997). In the present study, SOC was strongly associated with self-rated oral health despite the adolescents’ objective oral health status. Thus individuals with higher levels of SOC may have clinically poor dental health but still report good dental health, and report satisfaction with their dental appearance regardless the presence of oral health
problems. These findings substantiate extensive research showing that SOC is positively related to adjustment to other chronic diseases such as insulin-dependent diabetes (Lundman and Norberg, 1993), cancer (Langius et al, 1994), AIDS (Linn et al, 1993), and rheumatoid arthritis (Hawley et al, 1992; Callahan and Pincus, 1995; Büchi et al, 1998).

The relationship between SOC and self-assessment of oral health in the present study is also consistent with earlier studies on related concepts. Matthias et al (1995) reported that subjects who rated their dental health better had more positive scores for mental health, were less depressed, and were happier. Two studies among the elderly showed that self-assessed oral health is related to measures of morale. Berkey et al (1985) found an association between self-concept and self-perceived current dental appearance. Gordon et al (1988) reported that subjects with higher self-esteem perceived fewer dental problems compared with those with lower self-esteem. Also, there is evidence that psychological states, particularly distress, affect perceived general health (Maddox, 1962; Tessler and Mechanic, 1978; Krause, 1987; Levkoff et al, 1987; Farmer and Ferraro, 1997).

4.2.2- Methodological considerations
The findings of the present study should be considered in relation to its methodological strengths and weaknesses.

This study is an improvement on most previous studies linking SOC and health (Chapter 1, Sub-Section 1.2.5.5), for three main reasons. First, it consisted of a population study including a randomized sample from all socioeconomic groups, in a metropolitan city of Brazil. Second, multivariate statistical methods were used in the data analysis, which consider the simultaneous effects of several variables. Third, this was one of the first studies to test Antonovsky’s theory that SOC is related to physical health status. Besides self-reports of health status and health-related behaviours, this study included objective health status measured by means of actual clinical examination.

Another strength of this study is its agreement with a large body of epidemiological studies that have found that socioeconomic status and behavioural factors affect oral health. This gives greater validity to the findings in relation to SOC.
The study does have limitations. One major weakness relates to the SOC scale. Although the questionnaire was originally formulated to be used cross-culturally, questions refer to complex issues and were difficult to answer, especially by Brazilian individuals from a low socioeconomic background. Because this research was carried out in schools and the scale explained by the researcher, this problem was partially overcome among the adolescents. However, due to constraints of time and costs, mothers answered the questionnaire at home and their educational attainment varied substantially. While this method avoided interviewer bias that could be caused by the researcher’s direct explanations, mothers’ answers could have been affected by their children. Furthermore, the lack of control over the mothers’ questionnaire resulted in several blank or incomplete responses, which meant that some variables could not be analysed.

The definition and measurement of psychosocial variables through questionnaires are often problematic. One problem in the interpretation of the present findings is the nature of the SOC concept itself. The salutogenic model is a relatively new theory, and although it has gained widespread attention, it is not free from problems and inconsistencies (Geyer, 1997). For instance, little empirical evidence concerning the stability of SOC is available. Also, as stated previously, the issue of socioeconomic status and SOC has been insufficiently considered in the literature.

Further, the analysis could have included other variables regarding the mother-child relationship, useful in clarifying the pathways linking mothers’ SOC and their children’s oral health status and behaviours. Originally some data on this aspect were collected in the mothers’ questionnaire, but it was not possible to include them in the statistical analysis, as explained above. Also, a more precise measure of mothers’ dental health status would have been obtained if the data were collected through clinical examination, instead of self-reports. Finally, a larger sample size would have enabled further analysis of subgroups such as gender, and would have also increased the power to detect any differences in statistical tests.

The relationship between SOC and oral health was demonstrated in this study, but no causal inferences should be made. The results of cross-sectional studies cannot demonstrate
whether higher SOC is causally predictive of better oral health, according to the theory proposed by Antonovsky (1987), or whether a better oral health increases SOC. Ideally, this question should be addressed by means of a prospective study, in which subjects’ SOC and oral health are measured repeatedly. Indeed, interactional influence is also possible: a strong SOC may foster a better oral health, through behavioural or physiological pathways; better oral health, in turn, may reinforce the SOC. Since no longitudinal study using SOC as an explanatory variable has yet been undertaken, the question on any causal relationship between SOC and any health outcomes remains unresolved.

4.3- Conclusions
The main conclusions of the present study are now outlined:

(1) Socioeconomic status of families is an important determinant of SOC and oral health. Adolescents whose mothers had higher levels of education had higher SOC scores. Also, mothers from the higher social class group, as well as those with higher levels of education, had higher SOC scores than those from the lower social class group and lower education attainment. Socioeconomic status is related to dental caries status, frequency of sugar consumption, pattern of dental attendance, self-rated oral health, and satisfaction with dental appearance. However, no significant association was found between socioeconomic status and Plaque Index, bleeding after probing or toothbrushing frequency.

(2) Adolescents’ SOC is associated with their own caries experience in anterior teeth, but the relationship does not remain significant after controlling for sex, social class, and pattern of dental attendance. No significant association is found between adolescents’ SOC and the other indicators of oral health status - caries-free status, caries experience in second molars, DMFS Index, caries severity, Plaque Index, and presence of bleeding after probing.

(3) Mothers’ SOC is strongly associated with their children’s oral health status. Adolescents whose mothers have higher levels of SOC are classified in less severe zones of caries severity, and are less likely to have caries experience in anterior teeth and to
have bleeding after probing than those whose mothers had lower levels of SOC. Mothers’ SOC is associated with their children’s caries-free status and DMFS Index, but the relationship does not remain significant after controlling for social class. No significant association was found between mothers’ SOC and their children’s caries experience in the second molar, as well as Plaque Index.

(4) Adolescents’ SOC as well as their mothers’ SOC are associated with pattern of dental attendance. Adolescents with higher SOC are more likely to visit the dentist mainly for checkups, compared with those with lower SOC. However, the association between mothers’ SOC and their children’s dental attendance is only marginally significant after controlling for social class. Other oral health behaviours, sugar consumption and toothbrushing frequency, were not significantly related to SOC.

(5) Adolescents’ SOC as well as their mothers’ SOC are strongly associated with adolescents’ self-assessment of oral health. Adolescents with higher SOC are more likely to rate their dental health as good, and to be satisfied with their dental appearance than those with lower SOC. Also, those whose mothers had higher SOC are more likely to rate their dental health as good, and to be satisfied with their dental appearance than those whose mothers had lower SOC.

4.4- Recommendations

4.4.1- Recommendations for future research
This study, of Brazilian adolescents and their mothers, is the first investigation into the relationship between Sense of Coherence (SOC) and oral health.

Other population groups may show different results. More research, preferably of greater statistical power, is needed to validate the findings of this study, and further to explore the complex psychosocial interrelationships between SOC and oral health.

In particular, longitudinal studies should elucidate the pathways over time by which SOC is mediated by socioeconomic status and itself mediates oral health; and by which
mothers’ own SOC affects their children’s oral health status and self-assessment of oral health.

This study also suggests that further research on gender differences in SOC, and on possible relationships between SOC and oral health impact on daily life, should be fruitful.

4.4.2- Recommendations for public health policy

Sense of coherence (SOC) and socioeconomic status are interrelated, and independently or interdependently, affect oral health status, oral health-related behaviour, and self-assessment of oral health.

Mothers influence the oral health of their children. As well as similarity between the oral health of mothers and their children, the mothers’ own SOC affects their children’s experience of dental caries and periodontal disease.

The findings of this study therefore have implications for oral (and general) health promotion. Interventions designed to improve or maintain the oral health of young people should take into consideration the family environment. If more evidence confirms that SOC can be increased, as proposed by Antonovsky (1981), programmes designed to strengthen SOC may help to prevent oral (and other) diseases.

More importantly, the role of personal traits, such as SOC, on health should not be considered in isolation from the social and political environment. The impact of socioeconomic status, independently and interdependently, on SOC and on oral (and other) health outcomes, suggests that broad public health and other policies designed to reduce social inequalities, in Brazil and elsewhere, could substantially improve oral health in populations.
REFERENCES


Ainamo, J. and Parviainen, K. (1979) Occurrence of plaque, gingivitis and caries as related to self reported frequency of toothbrushing in fluoride areas in Finland. Community Dent Oral Epidemiol 7, 142-146.


References


References


Hanson, B.S. (1988) *Social Network, Social Support and Health in Elderly Men - A Population Study*, Malmo-Sweden, Department of Community Health Sciences, Lund University.


References


References


References


APPENDIX A

First pilot study

A.1- Data analysis and results

A.2- Clinical form and questionnaires* in English

A.3- Questionnaires* in Portuguese

* The Sense of Coherence (SOC) scale is in Appendix B.3.2 (version in English) and Appendix B.3.3 (version in Portuguese)
APPENDIX A.1- Data analysis and results

1- Data processing and analysis
After coding the responses, all data were entered into a computer and the main variables were analysed for statistical significance using the Statistical Package for Social Sciences (SPSS for windows) software. The statistical methods used were Chi-squared tests for categorical data and Mann-Whitney U test for dental caries scores. This task was done over a period of two months. The purpose of analysing the data collected was to have an initial idea of the association between the variables studied, in order to assess the adequacy of the research design, and calculate the sample size for the main study.

2- Results
2.1- Socioeconomic status
Two classifications of social class were used in this pilot-study. Using the classification adapted to the Brazilian socioeconomic characteristics by Lombardi et al (1988), six social classes were distinguished: bourgeoisie, traditional petit bourgeois, new petit bourgeois, typical proletariat, non-typical proletariat, and sub-proletariat. For the purpose of the pilot study the six social classes were grouped into two: bourgeoisie (upper social classes) and proletariat (lower social classes). Almost half of the families studied (49.2%) belonged to the bourgeoisie, while 50.8% were proletarian.

Within the ABA-ABIPEME classification (Almeida and Wickerhouser, 1991), the following social classes were distinguished: A, B, C, D and E. For the purpose of this pilot study these five social classes were grouped into two: A+B (upper social class) and C+D+E (lower social class). Nearly half of the families studied (53.3%) belonged to upper social class and 45.8% to lower social class, according to the ABA criteria. Using the ABIPEME criteria, 47.5% were from upper social class, while 51.7% were from lower social class.

The analysis of the pilot data, and also of the main study data, was carried out using the classification proposed by Lombardi et al (1988), which seemed to be based on broader definitions of socioeconomic status and on a more comprehensive theoretical model, compared to the other classification. Furthermore, the ABA-ABIPEME criteria has
recently been criticized as a system to describe the Brazilian reality (Mattar, 1995).

2.2- Dental caries status
Fifteen percent of the total sample were caries-free. DMFS scores ranged from 0 to 37, and the frequency histogram was not compatible with a Normal distribution, showing a highly positive skewed distribution. Mean DMFS was 9.7 and median was 8.0. Filled component represented 73.1% of the index, followed by decayed (13.7%) and missing (13.2%).

Table A.1.1 shows DMFS and percentage of caries-free according to sex. Girls had a lower percentage of caries-free (p<0.05) and higher levels of DMFS (p<0.01) and decayed teeth (p<0.05), compared to boys. Table A.1.2 shows DMFS and percentage of caries-free according to school. Public schools had a lower percentage of caries-free adolescents (p<0.05) and higher levels of DMFS, decayed and missing teeth (p<0.001), compared with private schools. Private and public schools were used as indicators of socioeconomic status in this analysis, since data on social class was obtained only from the caries-free and high caries groups.

2.3- Factors affecting dental caries experience
Variables included in the analysis of caries experience are listed in Table A.1.3. Caries-free group (30 subjects with DMFS=0) and high caries group (30 subjects with the highest DMFS, ranging from 9 to 37) were compared using Chi-squared test. The caries-free group had a higher proportion of subjects with a low Sense of Coherence, but the difference was not statistically significant. There was a statistically significant association between dental caries and sugar consumption, use of fluoride, use of mouthwashes, as well as level of information about prevention methods, visits to the same dentist, and reasons for the last dental visit.

Caries-free adolescents had a lower number of sugared items at meals and between meals a day, a higher consumption of diet soft drinks, and a lower frequency of consumption of school snacks than the high caries group (p<0.05). They had also a higher consumption of fluoridated water (p<0.05), but less fluoride gel, compared to the high caries group (p<0.01). No statistically significant difference was found regarding fluoride mouthrinse,
however caries-free subjects had a higher frequency of mouthwashes in general.

A higher proportion of caries-free than high caries adolescents reported having information about prevention methods (p<0.05). Regarding dental visits, a higher proportion of caries-free group used to visit the same dentist and reported check-ups, prevention, orthodontics and dental trauma as the reasons for the last dental visit (p<0.05).

2.4- Factors affecting the Sense of Coherence

Adolescents’ SOC ranged from 19 to 86 and the shape of the frequency distribution presented a slight departure from normality (Fig. A.1). Mean score was 60.4 (SD= 12.5) and median was 61. Variables included in the analysis of Sense of Coherence are listed in Table A.1. The SOC scores were divided in quartiles and categorized in three groups: low (quartile 25%), moderate (quartile 50% and 75%), and high SOC (quartile 100%). The three groups were compared using Chi-squared test.

A statistically significant association was found between SOC and social class, degree at school, and amount of money spent on snacks per week. Moderate and high Sense of Coherence groups had a higher proportion of subjects in the upper social class, and also a higher proportion of subjects in the second grade of school, compared to the low SOC group (p<0.05). They also spent less money per week on snacks (p<0.05). No statistically significance difference was found in relation to the other variables investigated.

![Figure A.1 - Frequency distribution of the adolescents' SOC scores - Pilot study data](image)
Table A.1.1- DMFS and percentage of caries-free according to sex in 15 year-olds - Goiânia-GO, Brazil - August/1996 - Pilot study data

<table>
<thead>
<tr>
<th>Sex</th>
<th>Sample</th>
<th>Decayed mean</th>
<th>Filled mean</th>
<th>Missing mean</th>
<th>DMFS mean(SD)</th>
<th>Caries-free %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>250</td>
<td>1.5&lt;sup&gt;a&lt;/sup&gt;</td>
<td>7.6</td>
<td>1.4</td>
<td>10.5&lt;sup&gt;b&lt;/sup&gt;</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>56.9</td>
<td>14.3</td>
<td>72.4</td>
<td>13.3</td>
<td></td>
<td>12.0&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Male</td>
<td>189</td>
<td>1.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>6.6</td>
<td>1.1</td>
<td>8.8&lt;sup&gt;b&lt;/sup&gt;</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>43.1</td>
<td>12.5</td>
<td>75.0</td>
<td>12.5</td>
<td></td>
<td>19.0&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Total</td>
<td>439</td>
<td>1.3</td>
<td>7.1</td>
<td>1.3</td>
<td>9.7</td>
<td>66</td>
</tr>
</tbody>
</table>

<sup>a</sup>p<0.05 (Mann-Whitney U test)  <sup>b</sup>p<0.01 (Mann-Whitney U test)  <sup>c</sup>p<0.05 (x² test)

** Percentage in relation to total DMFS

Table A.1.2- DMFS and percentage of caries-free according to school in 15 year-olds - Goiânia-GO, Brazil - August/1996 - Pilot study data

<table>
<thead>
<tr>
<th>School</th>
<th>Sample</th>
<th>Decayed mean</th>
<th>Filled mean</th>
<th>Missing mean</th>
<th>DMFS mean</th>
<th>Caries-free %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>%**</td>
<td>%**</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>299</td>
<td>1.9&lt;sup&gt;b&lt;/sup&gt;</td>
<td>7.0</td>
<td>1.9&lt;sup&gt;b&lt;/sup&gt;</td>
<td>10.8&lt;sup&gt;b&lt;/sup&gt;</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>68.1</td>
<td>17.6</td>
<td>64.8</td>
<td>17.6</td>
<td></td>
<td>12.0&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Private</td>
<td>140</td>
<td>0.2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>7.3</td>
<td>0.0&lt;sup&gt;b&lt;/sup&gt;</td>
<td>7.5&lt;sup&gt;b&lt;/sup&gt;</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>31.9</td>
<td>2.7</td>
<td>97.3</td>
<td></td>
<td></td>
<td>21.4&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Total</td>
<td>439</td>
<td>1.3</td>
<td>7.1</td>
<td>1.3</td>
<td>9.7</td>
<td>66</td>
</tr>
</tbody>
</table>

<sup>a</sup>p<0.05 (x² test)  <sup>b</sup>p<0.01 (Mann-Whitney U test)

** Percentage in relation to total DMFS
Table A.1.3- Frequency distribution and bivariate analysis of the relationship between dental caries and the other variables using the Chi squared test - Pilot study data

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>Relative frequency (%)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Caries-free</td>
</tr>
<tr>
<td>Adolescents' Sense of Coherence</td>
<td>Low</td>
<td>37.3</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>49.2</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>13.6</td>
</tr>
<tr>
<td>Dietary habits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Money spent weekly on snacks (R$)</td>
<td>0-3</td>
<td>45.8</td>
</tr>
<tr>
<td></td>
<td>4-7</td>
<td>23.7</td>
</tr>
<tr>
<td></td>
<td>8-30</td>
<td>30.5</td>
</tr>
<tr>
<td>Having snacks at school</td>
<td>Yes, always</td>
<td>21.7*</td>
</tr>
<tr>
<td></td>
<td>Yes, sometimes</td>
<td>61.7*</td>
</tr>
<tr>
<td></td>
<td>No, never</td>
<td>16.7*</td>
</tr>
<tr>
<td>Time for snacks at school</td>
<td>During the break</td>
<td>77.6</td>
</tr>
<tr>
<td></td>
<td>Break and classes</td>
<td>22.4</td>
</tr>
<tr>
<td>Type of snacks eaten at school</td>
<td>Sugared</td>
<td>14.0</td>
</tr>
<tr>
<td></td>
<td>Non-sugared</td>
<td>28.0</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>58.0</td>
</tr>
<tr>
<td>Number of hours per day watching TV</td>
<td>&lt;1</td>
<td>11.7</td>
</tr>
<tr>
<td></td>
<td>1-2</td>
<td>21.7</td>
</tr>
<tr>
<td></td>
<td>2-4</td>
<td>36.7</td>
</tr>
<tr>
<td></td>
<td>4-6</td>
<td>21.7</td>
</tr>
<tr>
<td></td>
<td>&gt;6</td>
<td>8.3</td>
</tr>
<tr>
<td>Type of snacks eaten when watching TV</td>
<td>Sugared</td>
<td>48.4</td>
</tr>
<tr>
<td></td>
<td>Non-sugared</td>
<td>32.2</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>19.4</td>
</tr>
<tr>
<td>Number of sugared items per day</td>
<td>0-2</td>
<td>11.7*</td>
</tr>
<tr>
<td></td>
<td>3-5</td>
<td>48.3*</td>
</tr>
<tr>
<td></td>
<td>6-15</td>
<td>40.0*</td>
</tr>
<tr>
<td>Consumption of diet soft drinks</td>
<td>Yes</td>
<td>74.6*</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>55.9*</td>
</tr>
<tr>
<td>Consumption of diet confectionery</td>
<td>Yes</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>68.3</td>
</tr>
<tr>
<td>Use of fluoride</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking water</td>
<td>Clean water supply</td>
<td>70.0*</td>
</tr>
<tr>
<td></td>
<td>Well</td>
<td>13.3*</td>
</tr>
<tr>
<td></td>
<td>Mineral water</td>
<td>16.7*</td>
</tr>
<tr>
<td>Fluoride gel</td>
<td>Yes</td>
<td>54.5*</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>45.5*</td>
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Table A.1.3- (continued)

<table>
<thead>
<tr>
<th>Oral hygiene</th>
<th>Yes</th>
<th>71.2</th>
<th>66.1</th>
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<tr>
<td></td>
<td>No</td>
<td>28.8</td>
<td>33.9</td>
</tr>
<tr>
<td>Daily frequency of toothcleaning</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1-2 times</td>
<td>15.0</td>
<td>23.3</td>
<td></td>
</tr>
<tr>
<td>3 times</td>
<td>48.3</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>4-6 times</td>
<td>36.7</td>
<td>36.7</td>
<td></td>
</tr>
<tr>
<td>Use of dental floss</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>56.7</td>
<td>60.0</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>43.3</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>Use of mouthwashes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16.7*</td>
<td>83.3*</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3.3*</td>
<td>96.7*</td>
<td></td>
</tr>
<tr>
<td>Dental attendance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental visits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>85.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>15.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Visits to the same dentist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>56.9*</td>
<td>35.0*</td>
<td></td>
</tr>
<tr>
<td>No, change sometimes</td>
<td>23.5*</td>
<td>50.0*</td>
<td></td>
</tr>
<tr>
<td>No, always change</td>
<td>19.6*</td>
<td>15.0*</td>
<td></td>
</tr>
<tr>
<td>Last dental visit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Now or &lt;6 months</td>
<td>46.0</td>
<td>47.5</td>
<td></td>
</tr>
<tr>
<td>7-12 months</td>
<td>26.0</td>
<td>33.9</td>
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<tr>
<td>12-24 months</td>
<td>10.0</td>
<td>6.8</td>
<td></td>
</tr>
<tr>
<td>&gt;24 months</td>
<td>18.0</td>
<td>11.9</td>
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<tr>
<td>Reasons for last dental visit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain and extraction</td>
<td>11.8*</td>
<td>18.3*</td>
<td></td>
</tr>
<tr>
<td>Treatment (fillings)</td>
<td>7.8*</td>
<td>38.3*</td>
<td></td>
</tr>
<tr>
<td>Check-ups</td>
<td>52.9*</td>
<td>30.0*</td>
<td></td>
</tr>
<tr>
<td>Orthodontics</td>
<td>21.6*</td>
<td>10.0*</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>5.9*</td>
<td>3.3*</td>
<td></td>
</tr>
<tr>
<td>More frequent reason for dental visits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check ups</td>
<td>60.8</td>
<td>39.2</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>39.2</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>Frequency of dental check-ups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 6 months</td>
<td>12.9</td>
<td>16.7</td>
<td></td>
</tr>
<tr>
<td>6/6 months</td>
<td>51.6</td>
<td>58.3</td>
<td></td>
</tr>
<tr>
<td>Once a year</td>
<td>32.3</td>
<td>19.4</td>
<td></td>
</tr>
<tr>
<td>2 years or more</td>
<td>3.2</td>
<td>5.6</td>
<td></td>
</tr>
<tr>
<td>Other variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self reported use of sealants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>31.7</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>45.0</td>
<td>33.3</td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td>23.3</td>
<td>41.7</td>
<td></td>
</tr>
<tr>
<td>Information received about prevention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>93.3*</td>
<td>80.0*</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>6.7*</td>
<td>20.0*</td>
<td></td>
</tr>
<tr>
<td>Smoking habits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, at the moment</td>
<td>3.3</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>Yes, in the past</td>
<td>5.0</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>91.7</td>
<td>93.0</td>
<td></td>
</tr>
</tbody>
</table>

* p<0.05  b p<0.01
Table A.1.4- Frequency distribution and bivariate analysis of the relationship between Sense of Coherence and the other variables using the Chi squared test - Pilot study data

<table>
<thead>
<tr>
<th>Variables</th>
<th>Relative frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense of coherence</td>
<td>Low</td>
</tr>
<tr>
<td>Demographic and socioeconomic data</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>35.0</td>
</tr>
<tr>
<td>Male</td>
<td>22.0</td>
</tr>
<tr>
<td>Social class</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>18.6</td>
</tr>
<tr>
<td>Low</td>
<td>38.3</td>
</tr>
<tr>
<td>Mothers’ education</td>
<td></td>
</tr>
<tr>
<td>Illiterate and up to 3 years</td>
<td>35.3</td>
</tr>
<tr>
<td>8-10</td>
<td>35.3</td>
</tr>
<tr>
<td>11-13</td>
<td>27.8</td>
</tr>
<tr>
<td>13 and more</td>
<td>18.8</td>
</tr>
<tr>
<td>Size of the family</td>
<td></td>
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<td>3-4 people</td>
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<td>5</td>
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<td>6-15</td>
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<td>Monthly income per capita (R$)</td>
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<td>0- 1.09</td>
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<tr>
<td>1.20- 4.30</td>
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<td>Dietary habits</td>
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<td>Money spent per week on snacks (R$)</td>
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<tr>
<td>0-3</td>
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<td>8-30</td>
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<tr>
<td>Number of sugared items between and at meals per day</td>
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<tr>
<td>0-3</td>
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<td>Use of fluoride</td>
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<td>Fluoridated water</td>
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<td>Yes</td>
<td>26.4</td>
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<tr>
<td>No</td>
<td>45.0</td>
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<tr>
<td>Fluoride gel</td>
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<td>Yes</td>
<td>25.3</td>
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Table A.1.4- (continued)

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<td>Daily frequency of toothcleaning</td>
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<tr>
<td>1-2 times</td>
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<td>3 times</td>
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<td>4-6 times</td>
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<td>Last dental visit</td>
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<td>Now or &lt;6 months</td>
<td>25.5</td>
<td>52.9</td>
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<td>7-12 months</td>
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<td>&gt;24 months</td>
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<td>More frequent reason for dental visits</td>
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<td>Check-ups</td>
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<td>Frequency of dental check-ups</td>
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<tr>
<td>&lt; 6 months</td>
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<td>50.0</td>
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<td>6/6 months</td>
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<td><strong>Other variables</strong></td>
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<td>Self reported use of sealants</td>
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<tr>
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<td>20.6</td>
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<tr>
<td>No</td>
<td>34.8</td>
<td>54.3</td>
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<td>Don’t know</td>
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<td>Information received about prevention</td>
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<td>29.1</td>
<td>50.5</td>
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<tr>
<td>No</td>
<td>25.0</td>
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</tr>
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</table>

\(^a\) p<0.05
APPENDIX A.2 - Clinical form (Pilot study)

Name ________________________________ Sex: F( ) M( ) Birth date / / 
School: Public( ) Private( ) Class ________ Date of exam / / 

DENTAL HEALTH STATUS FORM - adolescents

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<td>4</td>
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<tr>
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<td>3</td>
<td>2</td>
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<tr>
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<table>
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<th></th>
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<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CODES

**Surface codes**

- 0- Sound
- 1- Decayed
- 2- Decayed (pulpal involvement)
- 3- Filled and decayed
- 4- Filled (no decay)
- 5- Sealed surface
- 6- Traumatized surface
- 7- Crown/advanced restoration

**Tooth codes**

- 8- Unerupted
- 9- Extracted (caries)
- 10- Extracted (other reasons)
- 11- Decayed (extraction indicated)
APPENDIX A.2- Questionnaires in English (Pilot study)

Dear Parents,

I would like to inform you that the school where your child attends was selected to participate in a research study about dental caries prevention, carried out by one of the lecturers of the Faculty of Dentistry of the Federal University of Goiás. The results of this research will bring great benefits to the oral health of our population, because although caries is a very common disease, there is no study about its characteristics among teenagers in Goiânia.

In this first part of the research, we are sending a form to be answered by one of the parents or the person in charge of the child and to be returned to the school as soon as possible. The form has questions about circumstances of the family and will be used only for the statistical analyses of the results. **We would like to emphasize that all answers are strictly CONFIDENTIAL and will not be available to other persons.** In order to do that, please use the envelope which is enclosed.

Your collaboration will be vital for the success of this research and for the improvement of oral health status of your family, as well as of the whole population of Goiânia. However, if you do not consent to your child’s participation, please write a letter and send it to the school.

Thank you very much for your collaboration.

______________________________

Prof. Maria do Carmo Matias Freire
QUESTIONNAIRE ABOUT THE SOCIOECONOMIC STATUS OF THE FAMILY
(Pilot study)

Name of the child:______________________________________________________________

1. How many people live in your house? (Do not count yourself) _____
   Who are the people living in your house?
   ( ) Father
   ( ) Mother
   ( ) Brothers and/or sisters. How many? _____
   ( ) Grandparents. How many? _____
   ( ) Uncle or aunt. How many? _____
   ( ) Maids. How many? _____
   ( ) Other. How many? _____

2. What is your father’s educational level?
   ( ) none (cannot read or write)
   ( ) primary school not completed. How many years of study? _____
   ( ) primary school completed
   ( ) secondary school not completed. How many years of study? _____
   ( ) secondary school completed
   ( ) university not completed
   ( ) university completed
   ( ) post graduate
   ( ) do not know

3. What is your mother’s educational level?
   ( ) none (cannot read or write)
   ( ) primary school not completed. How many years of study? _____
   ( ) primary school completed
   ( ) secondary school not completed. How many years of study? _____
   ( ) secondary school completed
   ( ) university not completed
   ( ) university completed
   ( ) post graduate
   ( ) do not know

NEXT QUESTIONS MUST BE ANSWERED ONLY BY THE HEAD OF THE FAMILY. CONSIDER AS HEAD OF THE FAMILY THE ONE WHO HAS THE HIGHER INCOME.

4. Are you working at the moment?
   ( ) yes, actively
   ( ) yes, with health problems
   ( ) yes, and also retired
   ( ) no, unemployed
   ( ) no, retired
   ( ) no, housewife (GO TO QUESTION 11)
   ( ) no, only student (GO TO QUESTION 11)
   ( ) no, other situation. Specify ______________ (GO TO QUESTION 11)
   ( ) do not know (GO TO QUESTION 11)
5. What do (did) you do in your main job? (Describe in details your main tasks in your job)


6. What is (was) the activity of the establishment where you work (worked)?


7. In your main job you are (were):
   ( ) employed with social welfare
   ( ) employed without social welfare
   ( ) family employee without salary
   ( ) self-employed with a business
   ( ) self-employed without a business
   ( ) employer. How many fixed employees in your company? ___
   ( ) do not know

8. How much did you receive in this job last month?
   Salary after tax: R$ ______,00

9. Apart from this job do you have another paid job?
   ( ) no
   ( ) yes. How much did you get last month? R$ ______,00
   ( ) do not know

10. Do you have any other income or retirement salary?
    ( ) no
    ( ) yes. How much? R$ __________,00
    ( ) do not know

11. How much money did people living in your house and who work get last month?
    1st person: R$ ________,00  4th person: R$ ________,00
    2nd person: R$ ________,00  5th person: R$ ________,00
    3rd person: R$ ________,00  6th person: R$ ________,00

12. FINALLY, PLEASE ANSWER WHICH HOUSEHOLD GOODS YOU HAVE AT HOME AND HOW MANY:

   HOW MANY         HOW MANY
   ( ) Car ________   ( ) Radio (except the car radio) _______
   ( ) Black and white TV set ________  ( ) Washing machine _______
   ( ) Colour TV set ________  ( ) Video cassette _______
   ( ) Bathroom ________  ( ) Vacuum cleaner _______
   ( ) Maid ________  ( ) Refrigerator or freezer _______

THANK YOU VERY MUCH FOR YOUR HELP!
ORAL HEALTH QUESTIONNAIRE - FOR THE ADOLESCENTS (Pilot study)

Name: ______________________________________________________________
Place of birth: _____________________________Birth date: / /
School: ____ Grade: ____ Class:____ Period:_________ Date of the interview: ____

1. In which city and state have you lived most of the time up to now?  
a. Goiania-GO 
b. other ________________________________
c. do not know

2. What is the source of the drinking water you have at home?  
a. clean water supply 
b. well 
c. river/lake 
d. other ________________________________ 
e. do not know

I would be grateful for your help in answering a few questions about dental health. The questions are NOT a test and there are no right or wrong answers. I just want to know what you think and do about your teeth. All the answers are CONFIDENTIAL. Your identity will only be known by the interviewer. Please answer all the questions.

Thank you for your help.

FOOD HABITS

3. I would like to ask you a few questions about eating habits within your family now. I will start with what you ate and drank yesterday. Please tell me what you ate and drank at the main meals yesterday. (PROBE: sugary food and its nature, if helped herself/himself at home, if was given or if bought herself/himself) (Marcenes,1991)

DAY OF THE WEEK: __________________________
BREAKFAST: ________________________________________
LUNCH: ____________________________________________
DINNER: ____________________________________________
4. Please tell me what you ate and drank in between the main meals yesterday (PROBE: sugary foods and its nature, if helped herself/himself, if at school or at home) (Marcenes, 1991)

<table>
<thead>
<tr>
<th>WHAT DID YOU EAT OR DRINK?</th>
<th>Sugar</th>
<th>How much</th>
<th>How frequent</th>
<th>Where</th>
<th>Source</th>
</tr>
</thead>
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<td>Morning</td>
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<td></td>
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<tr>
<td>Afternoon</td>
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<tr>
<td>Evening</td>
<td></td>
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</table>

5. Did you eat or drink any of the following items yesterday? (If yes, PROBE: when and how many, if helped herself/himself at home, if was given or if bought herself/himself) (Adapted from Marcenes, 1991)

<table>
<thead>
<tr>
<th>Item</th>
<th>How many</th>
<th>How often</th>
<th>When</th>
<th>Where</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>( )Chewing gum</td>
<td></td>
<td></td>
<td>R( )</td>
<td>ER( )</td>
<td></td>
</tr>
<tr>
<td>( )Sweets</td>
<td></td>
<td></td>
<td>R( )</td>
<td>ER( )</td>
<td></td>
</tr>
<tr>
<td>( )Chocolate</td>
<td></td>
<td></td>
<td>R( )</td>
<td>ER( )</td>
<td></td>
</tr>
<tr>
<td>( )Biscuits salt/sugar</td>
<td></td>
<td></td>
<td>R( )</td>
<td>ER( )</td>
<td></td>
</tr>
<tr>
<td>( )Cake/pie salt/sugar</td>
<td></td>
<td></td>
<td>R( )</td>
<td>ER( )</td>
<td></td>
</tr>
<tr>
<td>( )Ice creams/ice lollies</td>
<td></td>
<td></td>
<td>R( )</td>
<td>ER( )</td>
<td></td>
</tr>
<tr>
<td>( )Bread salt/sugar</td>
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<td></td>
<td>R( )</td>
<td>ER( )</td>
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<tr>
<td>Item</td>
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<td>ER</td>
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<td>Milk with/without sugar/chocolate</td>
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<td>Fruit juice with/without sugar</td>
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<td>Rapadura (sweet made from sugar cane)</td>
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<td>Skinys (corn snacks)</td>
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<td>Biscuits salt/sugar</td>
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<td>Lollies</td>
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</table>

R = At meals    ER = Between meals

6. Do you ever drink "diet" versions of soft drinks? (Adapted from Hornett, 1989)
   a. yes
   b. no (GO TO QUESTION 8)
   c. don’t know

   IF YES,

   7. Do you drink "diet" soft drinks less, more often or about the same as regular versions? (Adapted from Hornett, 1989)
      a. less
      b. more often
      c. same
      d. only drink "diet" versions
      e. don’t know

8. Do you usually have "diet" confectionery?
   a. yes
   b. no (GO TO QUESTION 10)
   c. don’t know
IF YES,
9. Do you eat "diet" soft drinks less, more often or about the same as regular versions? (Adapted from Hornett, 1989)
   a. less
   b. more often
   c. same
   d. only drink "diet" versions
   e. don't know

10. How often do you usually sit down and eat your meals with your family? (Adapted from Watt, 1995)
   a. every day
   b. some days a week. (Specify)
   c. weekends only
   d. less often than once a week
   e. never
   f. do not know

11. Do you usually have snacks at school? (PROBE: how often?) (Adapted from Tubert-Jeannin et al., 1994)
   a. yes, always
   b. yes, sometimes
   c. no, never (GO TO QUESTION 15)

   IF YES,
12. What do you usually have for a snack at school? (Adapted from Tubert-Jeannin et al., 1994)

13. Where does the snack come from?
   a. Purchased in the school canteen
   b. Purchased in the shops around the school
   c. Purchased from the salesman at the school gate
   d. Free school snack
   e. Packed snack from home

14. When do you usually have the snack?
   a. During the break
   b. During the class
   c. Both during the class and break

15. How many hours a day do you usually spend watching television? (Honkala, 1985)
   a. Less than one hour a day
   b. One to two hours a day
   c. Two to four hours a day
   d. Four to six hours a day
   e. More than six hours a day
   f. Never watch TV
16. Do you usually have snacks when watching TV?
a. yes (PROBE: what do you usually have?) ________________________________
b. no

17. How much money do you spend each week on snacks? R$ ___________

18. Are you trying to lose weight?
a. yes
b. no

ORAL HYGIENE
Now I would like to ask you a few questions on tooth cleaning behaviour.

19. Do you clean your teeth? (Abegg, 1996)
a. yes
b. no (GO TO QUESTION 27)

IF YES,

20. Some people brush their teeth after each meal, others do it less often such as not every day. And you? How often do you usually clean your teeth? (Marcenes, 1991) ________________________________

21. At what time of the day do you usually clean your teeth? (Marcenes, 1991)
a. before breakfast
b. after breakfast
c. after lunch
d. after dinner
e. before going to bed
f. other (SPECIFY) ________________________________

22. Can you tell me who was the person who first told you about cleaning your teeth? (Abegg, 1996)
a. mother
b. father
c. teacher
d. friend
e. brother
f. sister
g. dentist
h. someone on television
i. other (SPECIFY) ________________________________
J. do not know/can not remember

23. Could you tell me what items do you use to clean your teeth? (Abegg, 1996)
a. toothbrush
b. toothpaste
c. dental floss
d. wood stick
e. mouthwash
f. other (SPECIFY) ________________________________
24. Can you remember what brand of toothpaste do you use? (Adapted from Marcenes, 1991)
   a. yes. (SPECIFY) ______________________________
   b. no

25. Do you wash your mouth after toothbrushing?
   a. yes
   b. no (GO TO QUESTION 27)

   a. with the toothbrush
   b. putting the mouth under the tap
   c. with the hands
   d. with a glass or other utensil

USE OF FLUORIDE
Now I would like to ask you some questions about fluoride, which is a substance recommended by dentists in order to prevent caries.

27. Fluoride gels are usually applied by dentists or hygienists using dental trays or cotton rolls. Have you ever received any topical fluoride application (gels)? (Adapted from Tubert-Jeannin et al, 1994)
   a. Yes, in the past
   b. Yes, I am having it at the moment. (PROBE: for how long?) ______________________
   c. No. (GO TO QUESTION 30)
   c. don't know/cannot remember

IF YES:
28. Where have you received this application?
   a. at the dentist
   b. at school
   c. other ______________________________
   d. do not know/cannot remember

29. How often have you received this application?
   a. more often than every six months
   b. every 6 months
   c. once a year
   d. once every 2 years
   e. less often
   f. do not know/cannot remember

30. Another type of fluoride application is fluoride solutions, which usually have to be mouthrinsed for 1 minute. Have you ever had a mouthrinse with fluoride?
   a. yes, in the past. (PROBE: For how long?) ______________________
   b. yes, I am having it at the moment. (PROBE: Since when?) ______________________
   b. no (GO TO QUESTION 33)
   c. don’t know/cannot remember
IF YES,
31. Where do (did) you use to mouthrinse?
   a. at school
   b. at home
   c. other
   d. do not know/cannot remember

32. How often do (did) you use to mouthrinse?
   a. Daily
   b. once a week
   c. fortnightly
   d. less often
   e. do not know/cannot remember

USE OF FISSURE SEALANTS

33. Sealant is a substance applied by dentists on the surface of the back teeth in order to prevent dental caries. Have you ever had sealant applied to your permanent teeth?
   a. yes
   b. no
   c. do not know/cannot remember

PATTERN OF DENTAL ATTENDANCE

Finally I would like to ask you some questions about going to the dentist.

34. Have you ever been to the dentist? (Marcenes, 1991)
   a. yes
   b. no (GO TO QUESTION 41)

IF YES,
35. What kind of service do you usually use? (Adapted from Marcenes, 1991)
   a. Private
   b. Health insurance
   c. Discounted (‘convênio’)
   d. Public
   e. School dental service
   f. Don’t know

36. Do you always go to the same dentist?
   a. Yes
   b. No, I have changed some times
   c. No, I always change

37. When did you last go to the dentist? (Marcenes, 1991)
   a. being treated now
   b. within 6 months
   c. within 7-12 months
   d. within 13-24 months
e. over 24 months  
f. do not know/can’t remember  

38. What was the reason for your last visit to the dentist? (Marcenes, 1991)  
a. pain  
b. tooth extraction  
c. for treatment (fillings)  
d. for check up  
e. for preventive procedures: polishing, fluoride, etc  
f. other (specify) ____________________________________________ 

39. People have different patterns of going to the dentist. Some go mainly for check ups while others mainly when in trouble. What about you? What is your usual pattern of going to the dentist? (Marcenes, 1991)  
a. check ups mainly  
b. in trouble mainly  
c. don’t know  

40. IF CHECK UPS, how often do you usually go? (Marcenes, 1991)  
a. more often than every six months  
b. every 6 months  
c. once a year  
d. once every 2 years  
e. less often  
f. don’t know/cannot remember  

SELF-EVALUATION OF DENTAL HEALTH STATUS  

41. Did you have caries when you were younger?  
a. yes  
b. no  
c. do not know  

42. Do you think your teeth are decayed at the moment?  
a. yes  
b. no  
c. do not know  

43. Has anyone ever explained to you what can be done to prevent tooth decay? IF YES, who? (Marcenes, 1991)  
a. yes, my dentist  
b. yes, my mother  
c. yes, my father  
d. yes, both  
e. yes, a friend  
f. yes, my teacher  
g. yes, other. (specify) _____________________________  
h. no
SMOKING HABITS

44. Do you smoke?
a. yes
b. yes, in the past. (PROBE: for how long?) ______________
c. no, never (GO TO QUESTION 48)

IF YES:
45. How often? ______________

46. How many cigarettes a day? ______

47. At which age you started smoking? _____ years old.

OCCUPATION OF THE MOTHER

48. Finally, could you tell me if your mother works?
a. yes
b. yes, at home, for others
c. student (GO TO QUESTION 51)
d. no. (GO TO QUESTION 51)
e. other situation (specify) ___________________________

IF YES:
49. What does she do? __________________________

50. How many hours per day does she work? _____ hs

51. Could you tell me your mother’s name? ____________________________

THANK YOU VERY MUCH FOR YOUR COLLABORATION!
CHILD'S BIRTH AND EARLY INFANCY

I would like to start by asking you some questions about you and your child when he/she was born.

1. How old were you when ____ was born? ____ years old

2. Was ____ your first child?
   a. yes
   b. no (specify) ________

3. What was ____’s weight at birth?
   a. ____ kilos ____ grams
   b. Cannot remember

4. How did you feed ____?
   a. Breast only
   b. Breast and bottle
   c. Bottle only (GO TO QUESTION 7)
   d. Cannot remember

5. At which age breastfeeding was stopped? ____ years

6. At which age bottlefeeding was introduced? ____ years

7. At which age bottlefeeding was stopped? ____ years

8. Did you use to add sugar to the milk?
   a. yes
   b. no
   c. do not know/cannot remember

9. With who ____ spent most of the day time when he/she was younger?
   a. with the mother
   b. with the father
   c. with both of them
   d. with the grandmother
   e. with a maid or nanny
   f. at a day care centre
   g. with others (specify) ________________________________
   h. do not know/cannot remember

10. Did ____ ever had any serious disease when he/she was younger?
    a. no
    b. yes. (Specify)____________________________________________
    c. cannot remember
11. Has your child's doctor ever said she/he was below normal weight and height?
a. yes
b. no
c. do not know/cannot remember

12. Has _____ ever taken liquid antibiotics? (IF YES, PROBE: how long)
a. no
b. yes, for a short time
c. yes, for a long time
d. cannot remember

CHILD'S SUGAR CONSUMPTION

13. Some parents control the amount of sweet food their children eat, while others do not control it. What about your family? Is there any control of the amount of sugary food _____ eats nowadays? (Adapted from Marcenes, 1991)
a. yes
b. no (GO TO QUESTION 17)
c. do not know

IF YES,

14. When?
a. always
b. recently
c. in the past (PROBE: when started and stopped?) _____________________
d. do not know

15. What is (was) controlled?
a. quantity
b. frequency
c. quantity and frequency
d. other (Specify) ____________________
e. do not know

16. Who controls it? (Marcenes, 1991)
a. the mother
b. the father
c. both parents
d. other (specify) ____________________

17. Children tend to start eating sweet food at different ages. Could you tell how old _____ was when she/he first tasted sugary food or drink? (Marcenes, 1991)
a. yes (specify) ____________
b. no
18. When shopping for food for home, how often are confectionery and soft drinks included?
   a. always
   b. sometimes
   c. never
   d. do not know

19. Who usually buy food for home?
   a. mother
   b. father
   c. both
   d. the maid
   e. others (specify) ___________________

20. Who decides what is going to be served at meals at home?
   a. mother
   b. father
   c. both
   d. the maid
   e. other (specify) ___________________

CHILD’S ORAL HYGIENE

I would like to ask you a few questions on _____’s tooth cleaning behaviour. As you will see some questions are about what he/she used to do when younger, while others are about what he/she is doing now. Shall we start with what _____ is doing nowadays? (Marcenes, 1991)

21. Some children have to be reminded to brush their teeth while others do not. What about _____? Does anyone have to remind her/him to brush the teeth? IF YES, by whom? (Marcenes, 1991)
   a. yes, mother
   b. yes, father
   c. yes, both parents
   d. yes, other (specify) _____________________________
   e. no, does not need to be reminded
   f. don’t know

22. How do you know if _____ brushed the teeth last night? (Friis-Hasché, 1981)
   a. I asked the child
   b. I saw the child brushing
   c. I helped the child brushing
   d. I know the child did not brush
   e. do not know

Now I would like to ask some questions about when _____ was younger.
23. Children tend to start having their teeth brushed at different ages. Some parents start cleaning their children’s mouth before the teeth come out, others may wait until the child is older. What about ____? At what age did she/he start having the teeth cleaned? (Marcenes, 1991)

24. Did anyone usually brush ____’s teeth? IF YES, who.
   a. yes, mother
   b. yes, father
   c. yes, both parents
   d. yes, other ____________________________
   e. no
   f. do not know/cannot remember

25. Once ____ was older and brushed the teeth on her/his own, let’s say, by the age of 6-7, would anyone remind her/him to brush the teeth? IF YES, who. (Marcenes, 1991)
   a. yes, mother would
   b. yes, father would
   c. yes, both parents would
   d. yes, other would (specify) ____________________________
   e. no need to be remembered
   f. don’t know/cannot remember

CHILD’S USE OF FLUORIDE

26. Fluoride tablets or drops are medicines prescribed by doctors or dentists to the young child to prevent dental caries. Did ____ take fluoride tablets or drops when he/she was younger? (O’Brien, 1994)
   a. yes
   b. no. (GO TO QUESTION 29)
   c. do not know/cannot remember

   IF YES,
   27. At which age did he/she start taking? ____ years ___ months
       ( ) do not know/cannot remember

   28. At which age did he/she stop taking? __ years __ months
       ( ) do not know/cannot remember

CHILD’S USE OF FISSURE SEALANTS

29. Sealant is a substance applied by dentists on the surface of back posterior teeth in order to prevent caries. Have ____ ever had fissure sealants on permanent teeth?
   a. yes
   b. no
   c. do not know/cannot remember
I would like to talk to you about _____’s going to the dentist.

30. I would like to start by asking you if _____ has ever been to the dentist. (Marcenes, 1991)
   a. yes
   b. no (GO TO QUESTION 35)
   c. don’t know

   IF YES,
   31. Deciding when a child should go to the dentist varies between families. In some families the child may ask to go, in others the dentist may send a reminder. And in your family? Who decides when _____ should go to the dentist? (Marcenes, 1991)
      a. she herself / he himself
      b. mother
      c. father
      d. both parents
      e. other (specify) ________________________________
      f. nobody
      g. don’t know

I WOULD LIKE TO ASK YOU A FEW QUESTIONS ON _____’S GOING TO THE DENTIST WHEN SHE/HE WAS YOUNGER.

32. At what age did _____ first go to the dentist? ________________________ (Marcenes, 1991)
( ) do not know/cannot remember

33. Was there any special reason you may recall why _____ went to the dentist at this particular age? (Adapted from Marcenes, 1991)
   a. yes (specify)
   b. no
   c. do not know/cannot remember

34. Whose decision was it that _____ should go to the dentist? (Marcenes, 1991)
   a. mother
   b. father
   c. both parents
   d. other (specify) ________________________________
   e. don’t know/cannot remember

EVALUATION OF THE CHILD’S DENTAL HEALTH

35. Did _____ have caries when he/she was younger?
   a. yes
   b. no
   c. do not know/cannot remember

36. Do you think _____’s teeth are decayed at the moment? (O’Brien, 1994)
   a. yes
   b. no
   c. do not know

THANK YOU VERY MUCH!
APPENDIX A.3- Questionnaires in Portuguese (Pilot study)

SENHORES PAIS,

Gostaria de comunicá-los que a escola onde seu(sua) filho(a) estuda foi selecionada para participar de uma pesquisa sobre prevenção da cárie, realizada por uma das professoras da Faculdade de Odontologia/UFG. Os resultados desta pesquisa trarão grandes benefícios à saúde bucal da nossa população, pois apesar da cárie ser uma doença bastante comum, até o momento nenhum estudo foi realizado sobre as suas características na população adolescente de Goiânia.

Nesta primeira parte da pesquisa, estamos lhes enviando um formulário, pedindo que seja respondido por um dos pais ou responsáveis e devolvido à escola o mais rápido possível. O formulário contém perguntas sobre as condições de vida da família e serão utilizadas somente para a análise estatística dos resultados. É muito importante que todas as perguntas sejam respondidas. Gostaria de ressaltar que todas as respostas são de caráter estritamente CONFIDENCIAL e não serão fornecidas a outras pessoas em hipótese alguma. Para isso, por favor devolva o formulário respondido dentro de um envelope lacrado, que está sendo enviado junto com esta carta.

Sua colaboração será fundamental para o êxito desta pesquisa e melhoria das condições de saúde bucal de sua família, assim como de toda a população de Goiânia. Se o Sr(a) não concordarem que seu filho(a) participe da pesquisa, por favor escrevam uma carta e enviem a escola.

Desde já agradecemos a sua valiosa colaboração.

Atenciosamente,

Prof. Maria do Carmo Matias Freire
QUESTIONÁRIO SOBRE A CONDIÇÃO SÓCIO-ECONÔMICA DA FAMÍLIA
(Pilot study)

Nome do(a) aluno(a): ______________________________________________________

1. MARQUE COM UM X AS PESSOAS QUE MORAM NA CASA E RESPONDA QUANTOS SÃO (SEM CONTAR A CRIANÇA QUE ESTÁ PARTICIPANDO DA PESQUISA):
( ) Pai
( ) Mãe
( ) Irmãos ou irmãs. Quantos? ____
( ) Avós. Quantos? ____
( ) Tios ou tias. Quantos? ____
( ) Empregada doméstica que dorme na casa. Quantas? ____
( ) Outros. Quantos? ____
TOTAL = ____

2. ATÉ QUE SÉRIE DA ESCOLA O PAI DA CRIANÇA ESTUDOU?
( ) não sabe ler nem escrever
( ) 1º grau incompleto, sabe ler e/ou escrever. Qual foi a última série completada?____
( ) 1º grau completo
( ) 2º grau incompleto. Qual foi a última série completada?____
( ) 2º grau completo
( ) curso universitário incompleto
( ) curso universitário completo
( ) pós-graduação
( ) não sei

3. ATÉ QUE SÉRIE DA ESCOLA A MÃE ESTUDOU?
( ) não sabe ler nem escrever
( ) 1º grau incompleto, sabe ler e/ou escrever. Qual foi a última série completada?____
( ) 1º grau completo
( ) 2º grau incompleto. Qual foi a última série completada?____
( ) 2º grau completo
( ) curso universitário incompleto
( ) curso universitário completo
( ) pós-graduação
( ) não sei

AS PRÓXIMAS PERGUNTAS DEVEM SER RESPONDIDAS SOMENTE PELO CHEFE DA FAMÍLIA. CONSIDERE CHEFE DA FAMÍLIA AQUELE QUE POSSUIR MAIOR RENDA EM CASA.
4. ATUALMENTE O SR(A) ESTÁ TRABALHANDO?
( ) sim, em atividade
( ) sim, afastado por motivo de doença
( ) sim, e também aposentado
( ) não, desempregado
( ) não, aposentado
( ) não, dona de casa (PULE PARA A PERGUNTA 11)
( ) não, so estudante (PULE PARA A PERGUNTA 11)
( ) não, outra situação. Qual? ______________ (PULE PARA A PERGUNTA 11)
( ) não sei (PULE PARA A PERGUNTA 11)

5. O QUE O SR(A) FAZ/FAZIA EM SEU TRABALHO PRINCIPAL? (Descreva detalhadamente as tarefas mais frequentes que desenvolve em seu trabalho).

________________________

________________________

6. QUAL É/ERA A ATIVIDADE DO ESTABELECIMENTO EM QUE O SR(A) TRABALHA/TRABALhou?
_________________________________________________________________

7. NO SEU TRABALHO PRINCIPAL O SR(A) É/ERA:
( ) empregado assalariado com carteira profissional assinada ou hollerit
( ) empregado assalariado sem carteira profissional assinada
( ) empregado familiar nao remunerado
( ) conta própria ou autônomo com estabelecimento
( ) conta própria ou autônomo sem estabelecimento
( ) empregador. Quantos funcionários fixos? _____
( ) não sei

8. QUANTO O SR(A) GANHOU COM ESSE TRABALHO NO MÊS PASSADO?
Salário líquido: R$ ____________,00

9. ALÉM DESTE TRABALHO A SR(A) TEM ALGUM OUTRO TIPO DE TRABALHO REMUNERADO?
( ) não
( ) sim. Quanto ganhou no mês passado? R$ ____________,00
( ) não sei

10. O SR(A) TEM ALGUM OUTRO RENDIMENTO OU APOSENTADORIA?
( ) não
( ) sim. Quanto? R$ ____________,00
( ) não sei

11. NO MÊS PASSADO, QUANTO GANHARAM AS PESSOAS QUE MORAM NA CASA E QUE TRABALHAM?
1ª pessoa: R$ ____________,00
2ª pessoa: R$ ____________,00
3ª pessoa: R$ ____________,00
4ª pessoa: R$ ____________,00
5ª pessoa: R$ ____________,00
6ª pessoa: R$ ____________,00
12. PARA TERMINAR, POR FAVOR, MARQUE COM UM X OS EQUIPAMENTOS QUE TEM NA SUA CASA E RESPONDA QUANTOS SÃO:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTIDADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automóvel</td>
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<tr>
<td>Televisão preto e branco</td>
<td></td>
</tr>
<tr>
<td>Televisão colorida</td>
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<tr>
<td>Banheiro</td>
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<tr>
<td>Empregada mensalista</td>
<td></td>
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<tr>
<td>Rádio (sem contar o do carro)</td>
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<tr>
<td>Máquina de lavar roupa</td>
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<tr>
<td>Vídeo cassette</td>
<td></td>
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<tr>
<td>Aspirador de pó</td>
<td></td>
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<tr>
<td>Geladeira comum ou com freezer</td>
<td></td>
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</tbody>
</table>

**MUITO OBRIGADO!**
NAME: ______________________________________________________________
Local de nascimento: ___________________________Data de nascimento: __/__/__
Escola: _______Serie:_____ Turma:___Turno:_____ Data da entrevista:__/__/__

1. Em qual cidade e Estado você morou mais tempo até hoje?
   a. Goiania-GO
   b. outra: ____________________________________________
   c. não sei

2. De onde vem a água da casa usada para beber?
   a. rede pública
   b. poço (cisterna)
   c. rio/riacho/lagoa
   d. outro: ___________________________________________
   e. não sei

As perguntas que eu gostaria de te fazer agora são sobre a saúde da boca. Estas perguntas
não são um teste e, portanto, NÃO existe uma resposta certa ou errada. Eu só gostaria que
você respondesse a todas as perguntas dizendo o que você realmente faz e pensa. Todas
as respostas são de caráter CONFIDENCIAL. Sua identificação só será conhecida pelo
entrevistador.

ALIMENTAÇÃO

3. Eu gostaria de fazer algumas perguntas a respeito dos seus hábitos alimentares. Para
começar, eu gostaria de saber o que você comeu e bebeu ontem.

DIA DA SEMANA: ____________________________
CAFÉ DA MANHÃ: ______________________________________
____________________________________________________
____________________________________________________
_ALMOÇO: ______________________________________
____________________________________________________
____________________________________________________
JANTAR: ______________________________________
____________________________________________________
____________________________________________________

4. Você comeu ou bebeu algum alimento ENTRE AS REFEICOES? PROBE: horário
   (manhã, tarde e noite), alimentos acucarados, quantos e quantas vezes, forma dos
   alimentos, se foi dado a ele(ela), se foi comprado por ele(ela), se foi pego em casa.
5. Você comeu ou bebeu algum desses itens ontem ENTRE AS REFEIÇÕES? NOS CASOS AFIRMATIVOS, PROBE: quando, quantos e quantas vezes, se foi dado a ele(ela), se foi comprado por ele(ela), se foi pego em casa.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantos</th>
<th>Quantas vezes</th>
<th>Quando</th>
<th>Onde</th>
<th>Fonte</th>
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<td>R( )</td>
<td>ER( )</td>
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<tr>
<td>( )Balas/drops</td>
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<td>R( )</td>
<td>ER( )</td>
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<tr>
<td>( )Chocolate/bombom</td>
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<tr>
<td>( )Biscoito sal/doce</td>
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<tr>
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<td>R( )</td>
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<td>R( )</td>
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<tr>
<td>( )Queijo</td>
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<td>R( )</td>
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<tr>
<td>( )Leite com/s açúcar/choco</td>
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<td>R( )</td>
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<tr>
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<td>R( )</td>
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<tr>
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<td>R( )</td>
<td>ER( )</td>
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<tr>
<td>( )Suco fruta com/sem açúcar</td>
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<td>R( )</td>
<td>ER( )</td>
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<tr>
<td>( )Café com/sem açúcar</td>
<td>R( ) ER( )</td>
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<tr>
<td>( )Chá com/sem açúcar</td>
<td>R( ) ER( )</td>
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<td>( )Suco artif. com/sem açúcar</td>
<td>R( ) ER( )</td>
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<td>( )Rapadura</td>
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<td>R( ) ER( )</td>
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<tr>
<td>( )Bolacha sal/doce</td>
<td>R( ) ER( )</td>
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<tr>
<td>( )Pirulito</td>
<td>R( ) ER( )</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

R=As refeições  ER=Entre as refeições

6. Você já tomou refrigerantes "diet"?
   a. sim
   b. não (VÁ PARA A QUESTÃO 8)
   c. não sei

SE AFIRMATIVO,
7. Com que frequência você toma refrigerantes "diet", comparando com os refrigerantes comuns?
   a. menos frequentemente
   b. mais frequentemente
   c. mesma frequência
   d. somente refrigerantes "diet"
   e. não sei

8. Você já comeu doces (balas, chocolates, chicletes) "diet"?
   a. sim
   b. não (VÁ PARA A QUESTÃO 10)
   c. não sei

SE AFIRMATIVO,
9. Com que frequência você come doces "diet", comparando com os doces comuns?
   a. menos frequentemente
   b. mais frequentemente
   c. mesma frequência
   d. somente doces "diet"
   e. não sei

10. Com que frequência você geralmente senta a mesa com sua família para tomar as refeições?
    a. todos os dias
    b. algumas vezes por semana. (especifique)__________________________
    c. somente nos finais de semana
d. menos que uma vez por semana
e. nunca
f. não sei

11. Você toma lanche na escola? (PROBE: com que frequência?)
a. sim, sempre
b. sim, algumas vezes
c. não, nunca (VA PARA A QUESTÃO 15)

SE AFIRMATIVO,
12. O que você geralmente lanche na escola?

13. De onde vem o lanche que você come na escola?
a. comprado na cantina da escola
b. comprado nas lanchonetes perto da escola
c. comprado do vendedor na porta da escola
d. merenda escolar
e. trazido de casa

14. Quando você come o lanche?
a. durante o recreio
b. durante as aulas
c. durante as aulas e no recreio

15. Quantas horas por dia você geralmente assiste televisão?
a. menos que uma hora por dia
b. uma a duas horas por dia
c. duas a quatro horas por dia
d. quatro a seis horas por dia
e. mais de seis horas por dia
f. nunca assisto TV

16. Você costuma comer ou beber alguma coisa enquanto assiste TV?
a. sim. (PROBE: o que?)
b. não

17. Quantos reais você costuma gastar por semana em lanches? R$ ______________

18. Você está tentando perder peso ("de regime")?
a. sim
b. não

HIGIENE ORAL

Agora eu gostaria de fazer algumas perguntas sobre o hábito de limpeza dos dentes.
19. Você limpa seus dentes?
   a. sim
   b. não (VA PARA A QUESTÃO 27)

SE AFIRMATIVO,
20. Algumas pessoas escovam os dentes depois de cada refeição, outras escovam com menor frequência, digamos, nem todos os dias. Você poderia me dizer a frequência com que você limpa os seus dentes? ____________________________

21. A que horas do dia você normalmente escova os seus dentes?
   a. ao acordar
   b. após o café da manhã
   c. após o almoço
   d. após o jantar
   e. ao se deitar
   f. outro (especificar) ____________________________

22. Qual das pessoas citadas abaixo foi a que lhe deu as primeiras instruções sobre a necessidade de limpar seus dentes?
   a. mãe
   b. pai
   c. professora
   d. amigo(a)
   e. irmão
   f. irmã
   g. dentista
   h. alguém na TV
   i. outro (especificar) ____________________________
   J. não sei/não me lembro

23. Você poderia me dizer o que você usa para limpar os dentes?
   a. escova dental
   b. pasta dental
   c. fio dental
   d. palito dental
   e. líquido para fazer bochechos
   f. outro (especificar) ____________________________

24. Você se lembra qual é a marca da pasta de dente que você normalmente usa?
   a. sim. (especificar) ____________________________
   b. não

25. Você enxuga a boca depois de escovar os dentes?
   a. sim
   b. não (VÁ PARA A QUESTÃO 27)
SE AFIRMATIVO,
26. De que maneira você enxagua a boca?
   a. com a escova
   b. com a boca direto na torneira
   c. com as mãos
   d. com um copo ou outro vasilhame

USO DE FLUORETOS

Agora eu gostaria de te fazer algumas perguntas sobre o fluor, que é uma substância recomendada pelos dentistas para prevenir carie.

27. Fluor gel é uma substância geralmente aplicada pelos dentistas ou técnicos em higiene dental usando moldeiras ou rolos de algodão. Você já recebeu alguma aplicação de fluor (gel)?
   a. sim, no passado. (PROBE: Durante quanto tempo?)______________________________
   b. sim, estou recebendo no momento. (PROBE: Desde quando?)_______________________
   c. não (VA PARA A QUESTÃO 30)
   d. não sei/ não me lembro

SE AFIRMATIVO:
28. Onde você recebe/recebeu esta aplicação?
   a. no dentista
   b. na escola
   c. outro:______________________________________________________________
   d. não sei/ não me lembro

29. Com que frequência você recebe/recebeu esta aplicação?
   a. num intervalo menor do que seis meses
   b. a cada seis meses
   c. uma vez por ano
   d. uma vez a cada 2 anos
   e. menos frequentemente
   f. não sei/ não me lembro

30. Outro tipo de aplicação de fluor são os bochechos com fluor, que geralmente são bochechados por um minuto. Você já fez bocecho com fluor?
   a. sim, no passado. (PROBE: Durante quanto tempo?)___________________________
   b. sim, estou fazendo no momento. (PROBE: Desde quando?)____________________
   c. não (VA PARA A QUESTÃO 33)
   d. não sei/ não me lembro

SE AFIRMATIVO,
31. Onde você costuma/costumava fazer os bochechos?
   a. na escola
   b. em casa
   c. outro:___________________________________________________________________
   d. não sei/ não me lembro
32. Com que frequência você costuma/costumava bochechar?
   a. todos os dias
   b. uma vez por semana
   c. de 15 em 15 dias
   d. menos frequentemente
   e. não sei/não me lembro

USO DE SELANTES PELA CRIANÇA
33. Selante é uma substância aplicada pelos dentistas sobre a superfície dos dentes de trás para prevenir cárie. Você já recebeu aplicação de selante nos dentes permanentes?
   a. sim
   b. não
   c. não sei/não me lembro

ATENDIMENTO ODONTOLÓGICO
Finalmente, eu gostaria de te fazer algumas perguntas a respeito de ir ao dentista.

34. Você já foi ao dentista?
   a. sim
   b. não. (VÁ PARA A QUESTÃO 41)

   SE AFIRMATIVO,
35. Qual o tipo de serviço que você normalmente vai?
   a. particular
   b. seguro saúde
   c. convênio
   d. público
   e. público, na escola
   f. não sei

36. Você sempre vai ao mesmo dentista?
   a. sim
   b. não, eu mudo de vez em quando
   c. não, eu sempre mudo de dentista

37. Qual foi a última vez que você foi ao dentista?
   a. em tratamento no momento
   b. há menos de 6 meses
   c. há 7-12 meses
   d. há 12-24 meses
   e. há mais de 24 meses
   f. não sei/não me lembro

38. Qual foi o motivo pelo qual você procurou o seu dentista desta última vez que você esteve lá?
   a. dor
   b. extrair o dente
   c. para tratar os dentes (restaurações)
d. para revisão
e. fazer limpeza, aplicar fluor, etc.
f. outro. (especifique) ________________________________________________

39. As pessoas vão ao dentista por diversos motivos. Enquanto alguns vão somente quando tem dor, outros vão regularmente para uma revisão. Qual seria o motivo mais frequente pelo qual você vai ao dentista?
a. na maioria das vezes, para revisões
b. na maioria das vezes, para tratamento
c. não sei/nao me lembro

40. SE REVISÕES, qual a frequência com que você vai?
a. num intervalo menor de 6 meses
b. a cada 6 meses
c. uma vez por ano
d. uma vez a cada dois anos
e. com menor frequência
f. não sei/nao me lembro

AUTO-AVALIAÇÃO DO ESTADO DE SAÚDE BUCAL

41. Você já teve dentes cariados?
a. sim
b. não
c. não sei

42. Você acha que os seus dentes estão cariados atualmente?
a. sim
b. não
c. não sei

43. Alguém já te disse o que pode ser feito para prevenir carie? (SE AFIRMATIVO, PROBE: quem?)
a. sim, meu dentista
b. sim, minha mãe
c. sim, meu pai
d. sim, ambos
e. sim, um amigo(a)
f. sim, meu professor(a)
g. sim, outro. (especifique) __________________________________
h. não

HABITO DE FUMAR

44. Você fuma?
a. sim.
b. não, fumei no passado. (PROBE: por quanto tempo?) ______
c. não, nunca fumei (VA PARA QUESTÃO 48)
SE AFIRMATIVO:
45. com que frequência? ________________

46. quantos cigarros por dia? _____

47. com que idade você começou a fumar? _____ anos

PROFISSÃO DA MãE

48. Para finalizar, gostaria de perguntar se sua mãe trabalha fora.
   a. sim
   b. sim, em casa, para fora
   c. estudante. (VÁ PARA A QUESTÃO 51)
   d. não. (VÁ PARA A QUESTÃO 51)
   e. outra situação. (especifique)________________________

   Em caso afirmativo:
   49. que atividade ela realiza? ____________________________

   50. quantas horas por dia ela trabalha? ____ hs.

51. Você poderia me dizer o nome da sua mãe?______________________________

MUITO OBRIGADA PELA SUA COLABORAÇÃO!
NASCIMENTO E PRIMEIROS ANOS DA CRIANÇA

Eu gostaria de começar fazendo algumas perguntas sobre você e _____ quando ele(ela) nasceu.

1. Quantos anos você tinha quando _____ nasceu?

2. _____ foi o seu primeiro filho?
   a. sim
   b. não (especifique) ______

3. Qual era o peso do(a) ao nascer?
   a. _____ kilos _____ gramas
   b. não sei/não me lembro

4. Como_____ foi amamentado?
   a. no peito somente
   b. no peito e na mamadeira
   c. mamadeira somente (VÁ PARA A QUESTÃO 7)
   d. não sei/não me lembro

5. Que idade _____ tinha quando deixou de mamar no peito? __ anos
   ( )não sei/não me lembro

6. Com que idade _____ iniciou a mamadeira? __ anos
   ( )não sei/não me lembro

7. Que idade _____ tinha quando deixou de receber mamadeira? __ anos
   ( )não sei/não me lembro

8. Você costumava colocar açúcar na mamadeira?
   a. sim
   b. não
   c. não sei/não me lembro

9. Com quem _____ geralmente ficava a maior parte do dia quando ele(ela) era mais novo(a)?
   a. com a mãe
   b. com o pai
   c. com ambos
   d. com a avó
   e. com a babá ou empregada
   f. na creche
   g. com outros (especifique): ____________________________
   h. não sei/não me lembro
10. _____ teve alguma doença seria quando era mais jovem?
a. sim. (especifique): ________________________________________________________
b. não
c. não sei/ não me lembro

11. Alguma vez o(a) médico(a) de _____ disse que ele(ela) estava com o peso e a altura abaixo do normal? (Criança desnutrida)
a. sim
b. não
c. não sei/ não me lembro

12. _____ tomou antibióticos líquidos (tipo xarope) quando era mais novo? (SE SIM, PROBE: por quanto tempo?)
a. sim, por um tempo curto
b. sim, por um tempo longo
c. não
d. não sei/ não me lembro

CONSUMO DE ALIMENTOS ACUCARADOS

13. Alguns pais se preocupam com a quantidade e a frequência de alimentos doces que seus filhos estão ingerindo, outros não. E na sua família? Existe ou existiu algum controle sobre a ingestão de alimentos acucarados pelo(a) _____?
   a. sim
   b. não. (VA PARA A QUESTÃO 17)
   c. não sei

SE AFIRMATIVO,
14. Quando?
a. sempre foi controlado
b. recentemente
c. no passado. (PROBE: quando começou e quando parou?) ______________________
d. não sei

15. O que e/era controlado?
a. a quantidade
b. a frequência
c. a quantidade e a frequência
d. outro. (especificar) __________________________________
e. não sei

16. Quem controla/controlava?
a. mãe
b. pai
c. ambos
d. outro (especificar) ____________________________
17. Existe uma grande variação de quando uma criança é introduzida, pela primeira vez, a um alimento que contenha açúcar. Você saberia me dizer que idade tinha na primeira vez que ele(ela) teve o primeiro contato com um alimento que contivesse açúcar?  
   a. sim. (especifique) ________________  
   b. não

18. Nas compras de alimentos para a casa com que frequência são incluídos doces (confeitos) e refrigerantes?  
   a. sempre  
   b. às vezes  
   c. nunca  
   d. não sei

19. Qual é a pessoa da família que normalmente faz as compras de alimentos para a casa?  
   a. mãe  
   b. pai  
   c. ambos  
   d. empregada  
   e. outro. (especifique) ________________

20. Quem decide o que vai ser servido nas refeições da casa?  
   a. mãe  
   b. pai  
   c. ambos  
   d. empregada  
   e. outro (especifique) ________________

HIGIENE BUCAL

Eu gostaria de fazer algumas perguntas sobre o hábito de escovar dentes de _____ . Como você verá, algumas perguntas são a respeito do que ele(ela) fazia quando era criança, enquanto que outras serão sobre o que _____ desta fazendo atualmente. Vamos começar pelo que _____ esta fazendo atualmente?  

21. Algumas crianças na idade de _____ precisam ser lembradas que devem escovar os dentes, outras crianças já não precisam. E _____ ? Ele(a) precisa ser lembrado/a de escovar os dentes? (SE AFIRMATIVO, quem?)  
   a. sim, a mãe  
   b. sim, o pai  
   c. sim, ambos  
   d. sim, outro (especifique) ________________
   e. não precisa ser lembrado(a)  
   f. não sei
22. Como você sabe se ____ escovou os dentes na noite passada?
   a. eu perguntei a ele(ela)
   b. eu o(a) vi escovando
   c. eu o(a) ajudei a escovar
   d. eu sei que ele(ela) não escovou
   e. não sei

Agora eu gostaria de te fazer algumas perguntas a respeito de quando ____ era mais novo(a).

23. Existe uma grande variação na época em que os dentes de uma criança começam a ser limpos. Algumas vezes, os pais começam a limpar a boca de seus filhos antes mesmo dos dentes nascerm. Outras vezes, eles podem esperar um pouco mais até que a criança esteja um pouco maior. E ____? Com que idade seus dentes começaram a ser limpos? _________

24. Alguém costumava escovar os dentes do(a) ____ quando ele era pequeno? SE SIM, PROBE: QUEM?
   a. sim, a mãe
   b. sim, o pai
   c. sim, ambos
   d. sim, outros (especifique): _______________________________
   e. não
   f. não sei/não me lembro

25. Quando ____ começou a escovar os dentes sozinho, vamos dizer, lá pelos 6-7 anos, precisava que alguém o/a lembrasse de escovar os seus dentes? SE AFIRMATIVO, quem? (Marcenes,1991)
   a. sim, a mãe
   b. sim, o pai
   c. sim, ambos
   d. sim, outros (especifique): _______________________________
   e. não
   f. não sei/não me lembro

USO DE FLUORETOS

26. Comprimidos ou gotas de flúor são medicamentos recomendados pelos médicos e dentistas para prevenir cárie na criança. ____ tomou comprimidos ou gotas de flúor quando era mais novo?
   a. sim
   b. não (VÁ PARA A QUESTÃO 29)
   c. não sei/não me lembro

SE AFIRMATIVO,

27. Com que idade ele(ela) começou a tomar o medicamento? ____ anos ____ meses
   ( ) não sei/não me lembro
28. Com que idade ele(ela) parou de tomar o medicamento? ____ anos ____ meses  
( ) não sei/não me lembro

USO DE SELANTES
29. Selante é uma substância aplicada pelos dentistas sobre a superfície dos dentes de trás para prevenir cárie. _____ já recebeu aplicação de selante nos dentes permanentes?
   a. sim  
   b. não  
   c. não sei/não me lembro

ATENDIMENTO ODONTOLÓGICO
As próximas perguntas que eu gostaria de fazer serão ainda a respeito de ____ ir ao dentista.

30. Primeiro, eu gostaria de saber se ____ já foi ao dentista  
   a. sim  
   b. não. (VÁ PARA A QUESTÃO 35)  
   c. não sei

SE AFIRMATIVO,

31. A decisão sobre quando uma criança deve ir ao dentista pode variar bastante de uma família para outra. Enquanto que em algumas a própria criança pede para ir, em outras o dentista envia um lembrete. E na sua família? Quem decide quando ____ deve ir ao dentista?
   a. ele(ela) mesmo(a)  
   b. a mãe  
   c. o pai  
   d. ambos  
   e. outro (especifique) ________________________________  
   f. ninguém  
   g. não sei

AGORA EU GOSTARIA DE FAZER ALGUMAS PERGUNTAS A RESPEITO DE QUANDO ____ ERA MAIS NOVO(A).

32. Que idade tinha ____ na primeira que ele(a) foi ao dentista? ________  
( ) não sei/não me lembro

33. Teve algum motivo especial que você se lembre pelo qual ____ precisou ir?
   a. sim. (especifique) ________________________________  
   b. não  
   c. não sei/não me lembro

34. Quem achou que seria uma boa ideia levá-lo(a) ao dentista nesta idade?
   a. a mãe  
   b. o pai  
   c. ambos  
   d. outro. (especifique) ________________________________  
   e. não sei/não me lembro
AVALIACAO DO ESTADO DE SAUDE BUCAL DA CRIANCA PELA MAE

35. _____ ja teve dentes cariados?
   a. sim
   b. nao
   c. nao sei/ nao me lembro

36. Voce acha que os dentes de _____ estao cariados atualmente?
   a. sim
   b. nao
   c. nao sei

MUITO OBRIGADA PELA SUA COLABORACAO!
APPENDIX B

Main study

B.1-List of schools selected and number of students

B.2- Official and media communications used before data collection

B.3- Research instruments
APPENDIX B.1- List of schools selected and number of students

<table>
<thead>
<tr>
<th>Schools</th>
<th>Number of 15-year-olds participating in the study</th>
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<td>Instituto de Educação de Campinas</td>
<td>99</td>
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<td>Escola Estadual Dom Abel - Universitário</td>
<td>19</td>
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<td>Colégio Estadual Prof. Venerando F. Borges</td>
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<td>Colégio Estadual Dom Abel - SPL</td>
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<td>Colégio Hugo de Carvalho Ramos</td>
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<td>Colégio Estadual Cultura e Cooperativismo</td>
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<td>Colégio Estadual Edmundo Rocha</td>
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<td>Colégio Estadual São Cristóvão</td>
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<td>Colégio Lyceu de Goiânia</td>
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<td><strong>Private Schools</strong></td>
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<td>Colégio Agostiniano Nossa Sra de Fátima</td>
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<td>Colégio Ateneu</td>
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</table>
APPENDIX B.2

Official and media communications used before data collection

B.2.1- Letter from the dental school Dean to the education authorities

B.2.2- Article published in the private schools trade union newsletter

B.2.3- Letter from the dental school Dean to the private schools Deans

B.2.4- Letters from the local education authorities to the public school Deans

B.2.5- Letter from the researcher to the parents asking consent
UNIVERSIDADE FEDERAL DE GOIÁS
FACULDADE DE ODONTOLOGIA

Of. Nr. 003/97-DIR

Goiânia, 10 de janeiro de 1997.

Vimos através desta comunicar a V.Sa., que a Faculdade de Odontologia da Universidade Federal de Goiás estará realizando no corrente ano uma pesquisa sobre a saúde bucal na adolescência, buscando conhecer a prevalência da cárie e o estado de higiene oral da população escolar na idade de 15 anos em Goiânia, bem com os fatores associados à doença nesta faixa etária.

Salientamos que esta pesquisa será de extrema importância, pois trata-se do primeiro levantamento de saúde bucal a realizar-se nesta faixa etária em nossa Capital, cujos resultados poderão subsidiar o planejamento das ações educativas, preventivas e curativas voltadas para a nossa população.

Desta forma, solicitamos de V.Sa. autorização para a coleta de dados em uma amostra das escolas municipais, com início previsto para o mês de fevereiro. A pesquisa será realizada pela Profa. Maria do Carmo Matias Freire, responsável pelo referido projeto.

Sem mais para o momento, esperamos contar com a sua colaboração, para que possamos trabalhar de forma integrada na busca de uma melhor saúde para a população escolar goianiense.

Atenciosamente,

[Assinatura]
Profa. Terezinha Vasconcelos Campos
Diretora da Faculdade de Odontologia da UFG

ILMO SR.
PROF. JONATHAS SILVA
MD. SECRETÁRIO MUNICIPAL DE EDUCAÇÃO DE GOIÂNIA
APPENDIX B.2.2- Article published in the private schools trade union newsletter

Pesquisa importante

No ano de 1997, a Faculdade de Odontologia da Universidade Federal de Goiás (UFG) estará realizando um levantamento, buscando conhecer a prevalência de caries e o estado de higiene oral da população escolar adolescente de Goiânia, sob responsabilidade da profa. Maria do Carmo Matias Freire (foto).

Esta pesquisa será de extrema importância, pois trata-se do primeiro levantamento nesta faixa etária em nossa capital, cujos resultados poderão subsidiar o planejamento das ações educativas, preventivas e curativas em saúde bucal. A coleta de dados na rede particular de ensino será realizada em 10 escolas selecionadas através de sorteio. COLABORE!

* Dra. Maria do Carmo

* A cirurgiã-dentista Maria do Carmo Matias Freire é professora da Faculdade de Odontologia da UFG.
APPENDIX B.2.3- Letter from the dental school Dean to the private schools Deans

UNIVERSIDADE FEDERAL DE GOIÁS
FACULDADE DE ODONTOLOGIA

Of. Nr. 008/97-DIR

Goiânia, 17 de janeiro de 1997.

Vimos através desta comunicar a V.Sa., que a Faculdade de Odontologia da Universidade Federal de Goiás estará realizando no corrente ano uma pesquisa sobre a saúde bucal na adolescência, buscando conhecer a prevalência da cárie e o estado de higiene oral da população escolar na idade de 15 anos em Goiânia, bem com os fatores associados à doença nesta faixa etária.

Salientamos que esta pesquisa será de extrema importância, pois trata-se do primeiro levantamento de saúde bucal a realizar-se nesta faixa etária em nossa Capital, cujos resultados poderão subsidiar o planejamento das ações educativas, preventivas e curativas voltadas para a nossa população.

Desta forma, solicitamos de V.Sa autorização para a coleta de dados em uma amostra de escolares matriculados na escola sob sua direção, com início previsto para o mês de fevereiro. A pesquisa será realizada pela Profa. Maria do Carmo Matias Freire, responsável pelo referido projeto.

Sem mais para o momento, esperamos contar com a sua colaboração, para que possamos trabalhar de forma integrada na busca de uma melhor saúde para a população escolar goianiense.

Atenciosamente,

[Assinatura]

Profa. Terezinha Vascâncelos Campos
Diretora da Faculdade de Odontologia da UFG
PREFEITURA DE GOIANIA
SECRETARIA MUNICIPAL DE EDUCAÇÃO

AUTORIZAÇÃO

Autorizo a Professora MARIA DO CARMO MATIAS FREIRE, pesquisadora da Faculdade de Odontologia da Universidade Federal de Goiás, a realizar junto às escolas da Rede Municipal de Ensino de Goiânia, durante o período de fevereiro a agosto/97, nos turnos matutino e vespertino, uma pesquisa sobre cárie e doenças da gengiva na adolescência, em alunos de 5ª a 8ª séries.

Diante do exposto, solicito a colaboração dos senhores diretores, para o bom desempenho dos trabalhos junto aos alunos.
APPENDIX B.2.4b- Letter from the State education authority to the public school Deans

ESTADO DE GOIÁS
SECRETARIA DA EDUCAÇÃO E CULTURA
GABINETE


Senhor(a) Diretor(a),

Apresentamos a V. Sra. a Profª Maria do Carmo Matias Freire, responsável pelo projeto de pesquisa sobre a saúde bucal na adolescência, e que deverá iniciar a coleta de dados nessa Unidade Escolar a partir do mês de fevereiro.

Esclarecemos a V. Sra. tratar-se de uma pesquisa, que a Faculdade de Odontologia da Universidade Federal de Goiás estará realizando no corrente ano, sobre a prevalência de cárie e o estado de higiene oral da população escolar na idade de 15 anos em Goiânia, bem como os fatores associados à doença nesta faixa etária. Além de ser uma pesquisa de extrema importância, trata-se do primeiro levantamento de saúde bucal a realizar-se nesta faixa etária em nossa Capital, cujos resultados poderão subsidiar o planejamento de ações educativas, preventivas e curativas voltadas para a nossa população.

Solicitamos, assim, a valiosa colaboração de V. Sra. para que a coleta de dados, nessa Escola, transcorra a contento.

Atenciosamente, com as expressões de nossa estima e consideração.

Profª Terezinha Vieira dos Santos
SECRETÁRIA DA EDUCAÇÃO E CULTURA
DEAR PARENTS,

I would like to inform you that the school where your child attends was selected to participate in a research study about dental caries, carried out by one of the lecturers of the Faculty of Dentistry of the Federal University of Goiás. The results of this research will bring great benefits to the oral health of our population, because although caries is a very common disease, there is no study about its characteristics among teenagers in Goiânia.

The research will consist of a clinical examination and a questionnaire for the child at school and a questionnaire for the parents to be answered at home. All teenagers who participate in the research and who return the questionnaire answered by their mothers will have the chance to have a gift (01 sound machine) to be drawn in December this year.

Your collaboration will be vital to the success of this research and for the improvement of oral health of your family, as well as of the whole population of Goiânia. However, if you do not consent to your child’s participation, please write a letter to me and send it to the school.

Thanking you in anticipation

Yours sincerely,

Prof. Maria do Carmo Matias Freire
Faculty of Dentistry of the Federal University of Goiás
APPENDIX B.2.5- Letter from the researcher to the parents asking consent (in Portuguese)

SENHORES PAIS,

Gostaria de comunicá-los que a escola onde seu(sua) filho(a) estuda foi selecionada para participar de uma pesquisa sobre cárie, realizada por uma das professoras da Faculdade de Odontologia/UFG. Os resultados desta pesquisa trarão grandes benefícios à saúde bucal da nossa população, pois apesar da cárie ser uma doença bastante comum, até o momento nenhum estudo foi realizado sobre as suas características na população adolescente de Goiânia.

A pesquisa vai ser feita na própria escola, através de exame clínico e entrevista com os alunos. Será também enviado às mães um questionário para ser respondido em casa.

Todos os alunos que participarem da pesquisa e devolverem à escola o questionário respondido pelas mães concorrerão a um brinde (01 aparelho de som) a ser sorteado no final de agosto do corrente ano.

Sua colaboração será fundamental para o êxito desta pesquisa e melhoria das condições de saúde bucal de sua família, assim como de toda a população de Goiânia. Entretanto, se o Sr(a) não concordarem que seu filho(a) participe da pesquisa, por favor escrevam uma carta e enviem a escola.

Desde já agradecemos a sua valiosa colaboração.

Atenciosamente,

Prof. Maria da Carmo Matias Freire
Disciplina de Odontologia Social/FO/UFG
APPENDIX B.3

Main study research instruments

B.3.1- Clinical form and criteria
B.3.2- Questionnaires in English
B.3.3- Questionnaires in Portuguese
APPENDIX B.3.1- Clinical form and criteria

Name__________________________ Sex: F( ) M( ) Birth date__/__/__
School___ Public ( ) Private ( ) Class_______ Date of examination__/__/__

Currently using orthodontic appliances?  Yes ( )  No ( )

**DENTAL CARIES**

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CRITERIA FOR DIAGNOSIS AND CODING

DENTAL CARIES

Surface codes
Sound.................................................0
Decayed............................................1
Decayed (pulpal involvement)........2
Filled and decayed.........................3
Filled (no decay).............................4
Sealed surface................................5
Traumatized surface.........................6
Crown/advanced restoration..............7

Tooth codes
Unerupted..........................................8
Extracted (caries)...............................9
Extracted (other reasons).................10
Decayed (extraction indicated)..........11

Teeth will be examined in the following order:
Upper left - upper right - lower right - lower left

A tooth is considered to be present if any part of it is visible.
If a tooth is present, each surface will be examined and coded in the following order:
Distal - occlusal - mesial - buccal - lingual.

Individuals using orthodontic appliances will be examined.

When categorisation is doubtful, the less severe category should always be used.

Surface codes and criteria

Code 0 - Sound
A surface is recorded as sound if it shows no evidence of treated or untreated clinical caries up to the "caries into dentine" diagnostic threshold. The stages of caries that precede cavitation, as well as other conditions similar to the early stages of caries, are excluded because they cannot be reliably diagnosed. Thus, teeth with the following defects, in the absence of other positive criteria, should be coded as sound:
  - white or chalky spots;
  - discoloured or rough spots;
  - stained pits or fissures in the enamel that catch the probe but do not have a detectably softened floor, undermined enamel, or softening of the walls;
  - dark, shiny, hard, pitted areas of enamel in a tooth showing signs of moderate to severe fluorosis.
  - all other questionable lesions
In the case of partly-erupted teeth, where some surfaces may not be visible, these will be considered as sound and recorded under this category.
**Code 1 - Decayed**
Surfaces are recorded as decayed if, in the opinion of the examiner, after visual inspection, there is a carious lesion into dentine. (Hard "arrested" caries into dentine is included in this category). Lesions or cavities with a temporary filling, or cavities from which a restoration has been lost should also be included in this category. Where any doubt exists, caries should not be recorded as present.

**Code 2 - Decayed (pulpal involvement)**
This code is used to indicate a tooth that probably needs pulp care prior to restoration with a filling or crown because of deep and extensive caries.

**Code 3 - Filled and decayed**
A surface is scored as filled with decay when it contains one or more permanent restorations and one or more areas that are decayed. No distinction is made between primary and secondary caries (i.e., whether or not the carious lesions are in physical contact with the restoration(s). If the lesion is so extensive as to be classified as "decay with pulpal involvement", the filling will be ignored and the surface classified Code 2.

**Code 4 - Filled (no decay)**
Surface are considered filled without decay when one or more permanent restorations are present and there is no secondary (recurrent) caries. A tooth with a crown placed because of previous decay is coded 7. A tooth that has been crowned for reasons other than decay, e.g., trauma or as a bridge abutment, is recorded as sound and coded 0.

**Code 5 - Sealed**
The probe will be used to assist in the detection of sealants. Care should be taken to differentiate sealed surfaces from those restored with tooth coloured filling materials used in prepared cavities which have defined margins. These are regarded as fillings and are coded 3 or 4. Code 5 should only be used if the surface containing evidence of sealant (including cases with partial loss of sealant), is otherwise sound and does not also contain an amalgam or other filling.

**Code 6 - Traumatized surface**
Surfaces affected by trauma, including those that are restored, will be coded in this category.

**Code 7 - Crown/advanced restorations**
This code is used for all surfaces which have been permanently crowned or which have received permanent items of advanced restorative care due to caries.

**Tooth codes and criteria**

**Code 8 - Unerupted**
This classification is restricted to permanent teeth and used only for a tooth space with an unerupted permanent tooth but without a primary tooth.

**Code 9 - Extracted (caries)**
This code is used for permanent teeth that have been extracted because of caries. In most
cases the reason for the absence of a permanent tooth will be obvious. Sometimes questioning the child will be necessary, for example - "Did you have those teeth taken out to make room for the others?" or "Was that front tooth knocked out?".

**Code 10- Extracted (other reasons)**
This code is used for permanent teeth extracted for orthodontic reasons or because of trauma, etc. This score is also used for permanent teeth that are judged to have been extracted because of periodontal disease.

**Code 11 - Decayed (extraction indicated)**
A tooth is recorded as "indicated for extraction", depending on the treatment possibilities available, when caries has so destroyed the crown that it cannot be restored; or caries has progressed to such an extent that there is an obvious and open exposure of the pulp and restoration of the tooth is not possible; or only the roots remain.

**DENTAL PLAQUE**

0 - gingival area of tooth free of plaque. The surface is tested by running a probe across the tooth surface. If no soft material adheres then the area is considered plaque free.

1 - no plaque observed in situ by the unaided eye, but plaque is made visible on the point of the probe after it has been moved over the tooth surface at the entrance of the gingival crevice.

2 - gingival area covered by a thin to moderately thick layer of plaque visible to the naked eye.

3 - heavy accumulation of soft matter, the thickness of which fills the crevice produced by the gingival margin and the tooth surface.

**BLEEDING AFTER PROBING**

0 - no bleeding
1 - bleeding

Individuals using orthodontic appliances will not be examined.

Only totally erupted teeth will be examined.

If an index teeth is missing, unerupted or partially erupted, the adjacent one will be examined. First molars will be replaced by second molars, central incisors by the ones on the other side, and second premolars by first premolars.
APPENDIX B.3.2- QUESTIONNAIRE FOR THE ADOLESCENTS (in English)

School number ___ Date of the interview: __/__/___
Student’s name: ___________________________________ Number: ______
City and State where you were born: ______________________________
Address: ________________________________________________________
___________________________________________ Phone: ______________

PART 1- YOU AND YOUR HABITS

1. Have you ever lived in another city apart from Goiânia?
( )no
( )yes, I have lived in ______________________, from ___ to ___ years
in ______________________, from ___ to ___ years
in ______________________, from ___ to ___ years
in ______________________, from ___ to ___ years
( )do not know

DAILY ROUTINE AND PARTICIPATION IN SOCIETY

2. Are you the first born child?
( )yes
( )no. I am the ___ child. (Specify if you are the 2nd, 3rd, 4th, etc)
( )I am the only child in the family

3. Do you have any activity outside home when you are not at school? eg sports, courses, job, religious group, etc)
( )yes
( )no (GO TO QUESTION 5)

4. Which activities do you have and how many days a week? (you can tick more than one)
( )Sports ___ days a week
( )Language courses ___ days a week
( )Job ___ days a week
( )Others ___ days a week. (Specify)

5. Are you now or have you been a member of any association? (eg sports club, cultural groups, scouts, students’ union, political parties, association of local residents, religious groups, etc) (Hamp and Nilsson, 1982)
( )yes. Which one?
( )no (GO TO QUESTION 7)

6. Do you now hold or have you held a position of trust, eg in an association, students’ council, etc? (eg chairman, treasurer, etc) (Hamp and Nilsson, 1982)
( )yes
( )no
7. How often do you attend religious services? (apart from weddings and funerals)
   ( ) almost daily
   ( ) about once/week
   ( ) about once/month
   ( ) once every few months
   ( ) never/almost never

8. Do you watch the news programmes on TV? (Hamp and Nilsson, 1982)
   ( ) yes, regularly (every day)
   ( ) yes, frequently (not daily)
   ( ) yes, seldom
   ( ) no, never

9. Do you read daily newspapers? (Hamp and Nilsson, 1982)
   ( ) yes, regularly (every day)
   ( ) yes, frequently (not daily)
   ( ) yes, seldom
   ( ) no, never

FOOD HABITS

10. What did you eat and drink at your main meals yesterday? (If you drank juice, milk and other drinks, say if you have added sugar, other sweeteners, honey, or if it was unsweetened) (Adapted from Marcenes, 1991)

   BREAKFAST:
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

   LUNCH:
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

   DINNER:
   ___________________________________________________________
   ___________________________________________________________
11. What did you eat and drink in between your main meals yesterday? (Marcenes, 1991)

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12. Now read the list below and check if there is any food or drink you forgot to mention. If yes, tick it and write it in questions 10 and 11. (Adapted from Marcenes, 1991)

- Sweets
- Bubble gum
- Candies
- Chocolates
- Salted/sugared biscuits
- Cake
- Salted/sugared pie
- Ice cream
- Salted/sugared bread
- Fresh fruit
- Cheese
- Milk with/without sugar or chocolate
- Lollies
- Yogurt
- "Rapadura"
- "Skinys"
- Salted/sugared popcorn
- Raisins
- Tea with/without sugar
- Coffee with/without sugar
- Juice with/without sugar
- Salted/sugared cookies
- Regular/diet soft drink

13. Do you add sugar to milk? (Adapted from Watt, 1995)

- yes. I put ___ spoon(s). (Specify what kind of spoon, eg soup, tea, coffee spoon)_____
- no. I use other sweeteners. Which one? _______________________
- no. I don’t drink milk

14. Do you ever drink "diet" versions of soft drinks? (Adapted from Hornett, 1989)

- yes
- no. I have only regular soft drinks. (GO TO QUESTION 16)
- no. I never have soft drinks. (GO TO QUESTION 16)
- do not know. (GO TO QUESTION 16)
15. How often do you drink "diet" soft drinks compared with regular versions? (Adapted from Hornett, 1989)
( )less often
( )more often
( )same frequency
( )I drink only "diet" versions
( )don't know

16. Do you eat "diet" confectionary?
( )yes
( )no, I eat only regular ones. (GO TO QUESTION 18)
( )no, I never eat confectionary. (GO TO QUESTION 18)
( )do not know. (GO TO QUESTION 18)

17. How often do you eat "diet" versions of confectionary compared with regular ones?
(Adapted from Hornett, 1989)
( )less often
( )more often
( )same frequency
( )I eat only "diet" versions
( )do not know

18. Do you have snacks at school? (Adapted from Tubert-Jeannin et al, 1994)
( )yes, always
( )yes, almost always
( )yes, sometimes
( )no, never. (GO TO QUESTION 22)

19. What do you usually have for snacks at school? (Adapted from Tubert-Jeannin et al, 1994)

20. Where do you get the snack? (you can tick more than one)
( )Purchased in the school canteen
( )Purchased in the shops around the school
( )Purchased from the salesman at the school gate
( )Free school snack
( )packed snack from home

21. When do you usually have the snacks?
( )During the break
( )During the class
( )Both during the class and break

22. How many hours a day do you usually spend watching television? (Honkala, 1985)
( )Less than one hour a day
( )One to two hours a day
( )Two to four hours a day
( )Four to six hours a day
( )More than six hours a day
( )Never watch TV. (GO TO QUESTION 24)

23. Do you usually have snacks when watching TV?
   ( )yes. What do you usually have? ________________________________
   ( )no

24. How much money do you spend each week on snacks?
   ( )I spend about R$ __________
   ( )nothing

25. Are you trying to lose weight?
   ( )yes
   ( )no

26. Are you trying to put on weight?
   ( )yes
   ( )no

27. Does anybody in your home control the amount of sugary food you eat? (Adapted from Marcenes, 1991)
   ( )yes
   ( )no. (GO TO QUESTION 29)
   ( )do not know. (GO TO QUESTION 29)

28. Who controls it? (you can tick more than one)
   ( )my father
   ( )my mother
   ( )my mother and my father
   ( )others. (Specify) ________________________________
   ( )do not know

29. In the last six months have you changed the amount of sugary foods and drinks (eg biscuits, sweets, chocolates, soft drinks) you eat and drink? (Watt, 1995)
   ( )no. (GO TO QUESTION 31)
   ( )no. I already have a low sugar diet
   ( )yes. I now eat less sugary food/drink
   ( )yes. I now eat more sugary food/drink. (GO TO QUESTION 31)

30. Why did you try to reduce your consumption of sugary food/drink?

ORAL HYGIENE

31. Do you clean your teeth? (Abegg, 1996)
   ( )yes
   ( )no. (GO TO QUESTION 39)
32. What are your reasons for cleaning your teeth? (Marcenes, 1991)

33. How often do you usually clean your teeth? (Marcenes, 1991)

34. At what times of the day do you usually clean your teeth? (you can tick more than one) (Marcenes, 1991)
- before breakfast
- after breakfast
- after lunch
- after dinner
- before going to bed
- other (Specify)

35. Who was the person who first talked to you about cleaning your teeth? (Adapted from Abegg, 1996)
- my mother
- my father
- my mother and my father
- my teacher
- my dentist
- other
- do not know/cannot remember
- nobody

36. Does anyone remind you to brush your teeth? (Marcenes, 1991)
- yes, my mother
- yes, my father
- yes, my mother and my father
- other (Specify)
- no, nobody
- do not know

37. What items do you use to clean your teeth? (you can tick more than one) (Abegg, 1996)
- toothbrush
- toothpaste
- dental floss
- wood stick
- mouthwash
- other (Specify)

38. Do your gums bleed when you brush your teeth? (Tubert-Jeannin et al, 1994)
- no
- yes, sometimes
- yes, frequently
- yes, always
USE OF FLUORIDE

Fluoride is a substance recommended by dentists in order to prevent caries.

39. Fluoride gels are usually applied by dentists or hygienists using dental trays or cotton rolls. Have you ever received any topical fluoride application (gels)? (Adapted from Tubert-Jeannin et al, 1994)
  ( ) yes, in the past  
  ( ) yes, I am having it at the moment  
  ( ) no, never. (GO TO QUESTION 42)  
  ( ) do not know/cannot remember. (GO TO QUESTION 42)

40. Where have you received this application?
  ( ) at the dentist  
  ( ) at school  
  ( ) other. (Specify) ________________________________________________
  ( ) do not know/cannot remember

41. How often have you received this application?
  ( ) more often than every six months  
  ( ) every 6 months  
  ( ) once a year  
  ( ) once every 2 years  
  ( ) less often (more than 2 years)  
  ( ) do not know/cannot remember

42. Another type of fluoride application is fluoride solutions, which usually have to be mouthrinsed for 1 minute. Have you ever had a mouthrinse with fluoride?
  ( ) yes, in the past  
  ( ) yes, I am having it at the moment  
  ( ) no. (GO TO QUESTION 45)  
  ( ) do not know/cannot remember. (GO TO QUESTION 45)

43. Where do (did) you usually mouthrinse?
  ( ) at school  
  ( ) at home  
  ( ) other. (Specify) ________________________________________________
  ( ) do not know/cannot remember

44. How often do (did) you usually mouthrinse?
  ( ) daily  
  ( ) more than once a week  
  ( ) once a week  
  ( ) fortnightly  
  ( ) less often (more than 15 days)  
  ( ) do not know/cannot remember
45. What is the source of the drinking water you have at home?
( ) clean water supply
( ) well
( ) mineral water
( ) river/lake
( ) do not know

PATTERN OF DENTAL ATTENDANCE

46. Have you ever been to the dentist? (Marcenes, 1991)
( ) yes
( ) no. (GO TO QUESTION 54)

47. What kind of service do you usually use? (Adapted from Marcenes, 1991)
( ) private
( ) public (in the health centre)
( ) public (school dental service)
( ) public (Dental School)
( ) health insurance
( ) Discount (‘convenio’)
( ) Do not know

48. Sealant is a substance applied by dentists on the surface of the back teeth in order to prevent dental caries. Have you ever had sealant applied to your permanent teeth?
( ) yes
( ) no
( ) do not know/cannot remember

49. Do you always go to the same dentist?
( ) yes
( ) no, I have changed once
( ) no, I have changed sometimes
( ) no, I always change

50. When did you last go to the dentist? (Marcenes, 1991)
( ) under treatment at present
( ) within 6 months
( ) within 7-12 months
( ) within 13-24 months
( ) over 24 months
( ) do not know/cannot remember

51. What was the reason for your last visit to the dentist? (Marcenes, 1991)
( ) pain
( ) tooth extraction
( ) for treatment (fillings)
( ) for check up
( ) for preventive procedures: polishing, fluoride, etc
( ) other. (specify) ___________________________________________________
52. In general, do you go to the dentist for: (Do not include any visits because of having an orthodontic appliance) (O'Brien, 1994)
( )check ups mainly
( )in trouble mainly (GO TO QUESTION 54)
( )do not know/cannot remember (GO TO QUESTION 54)

53. IF CHECK UPS, how often do you usually go? (Marcenes, 1991)
( )more often than every six months
( )every 6 months
( )once a year
( )once every 2 years
( )less often
( )do not know/cannot remember

ATTITUDES REGARDING ORAL HEALTH

54. Has anyone ever told you what can be done to prevent tooth decay? (you can tick more than one) (Adapted from Freeman et al, 1993)
( )yes, my mother
( )yes, my father
( )yes, both my mother and my father
( )yes, my dentist
( )yes, my teacher
( )yes, other. (Specify) ______________________
( )no

55. How would you rate the state of your teeth at the moment? (Freeman et al, 1993)
( )very good
( )good
( )not so good
( )poor
( )Do not know

56. How would you rate the state of your gums at the moment? (Freeman et al, 1993)
( )very good
( )good
( )not so good
( )poor
( )do not know

57. How satisfied are you with the appearance of your teeth? (Freeman et al, 1993)
( )very satisfied
( )fairly satisfied
( )mixed feelings
( )not very satisfied
( )dissatisfied
( )do not know
58. Would you say that your teeth are: (Freeman et al, 1993)
( ) one of your best features
( ) quite a good feature
( ) no opinion either way
( ) not a very good feature
( ) do not know

59. How much care would you say you’ve taken over your teeth in the last 12 months? (Freeman et al, 1993)
( ) a lot
( ) a fair amount
( ) a little amount
( ) none at all
( ) do not know

60. How important is it for you to take care of your teeth? (Freeman et al, 1993)
( ) very important
( ) fairly important
( ) not very important
( ) not at all important
( ) do not know

61. Do you smoke?
( ) yes
( ) no, I smoked in the past
( ) no, never

62. Have you ever failed an examination at school?
( ) yes, once
( ) yes, more than once
( ) no, never

63. Have you had any health problem nowadays?
( ) yes. (Specify) ______________________________________________
( ) no

64. And when you were a child?
( ) yes. Specify _______________________________________________
( ) no
( ) cannot remember

PARENTS’ HABITS AND ORAL HEALTH

65. Does your mother smoke?
( ) yes
( ) no, she smoked in the past
( ) no, never
66. Does your father smoke?
( ) yes
( ) no, he smoked in the past
( ) no, never

67. What are your parents’ occupations? (Specify if they are employees or self employed)
Father: ______________________________________________________________
Mother: ______________________________________________________________

68. Does your mother use dentures?
( ) yes, upper total denture only
( ) yes, lower total denture only
( ) yes, both upper and lower total denture
( ) yes, upper partial denture only
( ) yes, lower partial denture only
( ) yes, both upper and lower partial denture
( ) yes, total and partial dentures
( ) no
( ) do not know

69. Does your father use dentures?
( ) yes, upper total denture only
( ) yes, lower total denture only
( ) yes, both upper and lower total denture
( ) yes, upper partial denture only
( ) yes, lower partial denture only
( ) yes, both upper and lower partial denture
( ) yes, total and partial dentures
( ) no
( ) do not know
PART 2- SENSE OF COHERENCE SCALE (Antonovsky, 1987)

1 - Do you have the feeling that you don’t really care about what goes on around you?

1  2  3  4  5  6  7
Very seldom or never

2 - Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?

1  2  3  4  5  6  7
Never happened

3 - Has it happened that people whom you counted on disappointed you?

1  2  3  4  5  6  7
Never happened

4 - Until now your life has had:

1  2  3  4  5  6  7
No clear goals and purpose

5 - Do you have the feeling that you’re being treated unfairly?

1  2  3  4  5  6  7
Very often

6 - Do you have the feeling that you are in an unfamiliar situation and don’t know what to do?

1  2  3  4  5  6  7
Very often

7 - Doing things you do every day is:

1  2  3  4  5  6  7
A source of pleasure and satisfaction

Very often or never
8 - Do you have very mixed-up feelings and ideas?
   1  2  3  4  5  6  7
   Very often

9 - Does it happen that you have feelings inside you would rather not feel?
   1  2  3  4  5  6  7
   Very often

10 - Many people - even those with a strong character - sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?
   1  2  3  4  5  6  7
   Never

11 - When something happened, have you generally found that:
   1  2  3  4  5  6  7
   You overestimated or underestimated its importance

12 - How often do you have the feeling that there’s little meaning in the things you do in your daily life?
   1  2  3  4  5  6  7
   Very often

13 - How often do you have feelings that you’re not sure you can keep under control?
   1  2  3  4  5  6  7
   Very often

THANK YOU VERY MUCH!

* Before calculating the total score, the items marked should be reversed
DEAR MOTHER,

It is a pleasure to have you and your child participating in the research about dental caries, which is being carried out in the schools of Goiânia. As part of the research we are sending you this questionnaire to be answered and returned to the school as soon as possible. The questions are simple and can be answered quickly, and the majority already have the alternative answers listed. All you have to do is to tick the alternative you chose. It is not a test, and, therefore, there is no right or wrong answer. Please, answer all the questions with sincerity. **ALL QUESTIONS ARE ABOUT YOUR 15 YEAR-OLD CHILD WHO IS PARTICIPATING IN THE STUDY.**

The objective of this research is to know the factors related to dental caries from early childhood. Therefore, the questionnaire has questions about life condition of the family, as well as habits, attitudes and opinion about life. All this information will be used only for the statistical analyses of the results.

**We would like to emphasize that all answers are STRICTLY CONFIDENTIAL and will not be available to other persons.** In order to do that, please use the envelope which is enclosed.

We would also like to remind you that the teenagers who return this questionnaire answered will have the chance to have a gift to be drawn at the end of the year. If you have any doubt or if you need help to answer this questionnaire, please send a message through your child or speak to me by phone (223-8543).

Thanking you in anticipation

Yours sincerely

Prof. Maria do Carmo Matias Freire

Faculty of Dentistry of the Federal University of Goiás
QUESTIONNAIRE FOR THE MOTHERS

Student number __________

PART 1: SOCIOECONOMIC CONDITION OF THE FAMILY

(TO BE ANSWERED BY THE MOTHER OR FATHER OF THE TEENAGER)

1. How many people live in your household? (Including your child who is participating in the study)
   ( ) Father: ( ) Natural ( ) Step-father
   ( ) Mother: ( ) Natural ( ) Step-mother
   ( ) Children. How many? _____
   ( ) Servants who live in the house. How many? _____
   ( ) Others. How many? _____
   TOTAL = _____

2. What is the father’s educational level?
   ( ) none (cannot read or write)
   ( ) primary school not completed. How many years of study? _____
   ( ) primary school completed
   ( ) secondary school not completed. How many years of study? _____
   ( ) secondary school completed
   ( ) university not completed
   ( ) university completed
   ( ) post-graduate
   ( ) do not know

3. What is the mother’s educational level?
   ( ) none (cannot read or write)
   ( ) primary school not completed. How many years of study? _____
   ( ) primary school completed
   ( ) secondary school not completed. How many years of study? _____
   ( ) secondary school completed
   ( ) university not completed
   ( ) university completed
   ( ) post-graduate
   ( ) do not know


4. Are you working at the moment?
   ( ) yes
   ( ) yes, and also retired
   ( ) no, unemployed
   ( ) no, retired
   ( ) no, other situation. Specify __________________ (GO TO QUESTION 11)
5. What do (did) you do in your main job? (Describe in detail your main tasks in your job)


6. What is (was) the activity of the establishment where you work (worked)?


7. In your main job you are (were):
   ( ) employed with social welfare
   ( ) employed without social welfare
   ( ) family employee without salary
   ( ) self-employed with an establishment
   ( ) self-employed without an establishment
   ( ) employer. How many fixed employees in your company? ___
   ( ) do not know

8. How much was your salary from this job last month?
   Salary after tax: R$ ______,00

9. Apart from this job do you have another paid job?
   ( ) no
   ( ) yes. How much did you get last month? R$ ______,00
   ( ) do not know

10. Do you have any other income or retirement salary?
    ( ) no
    ( ) yes. How much? R$ _________,00
    ( ) do not know

11. How much did people living in your house and who work, earn last month? (Do not include the head of the family)
    1st person: R$ _________,00
    2nd person: R$ _________,00
    3rd person: R$ _________,00
    4th person: R$ _________,00
    5th person: R$ _________,00
    6th person: R$ _________,00

THANK YOU VERY MUCH FOR YOUR HELP! NOW, PLEASE ANSWER PART 2.
PART 2: YOUR CHILD'S GENERAL AND DENTAL HEALTH

CHILD’S BIRTH AND EARLY INFANCY

1. How old were you when your child was born? _____ years old

2. Do you remember what was his/her weight at birth?
   ( )yes. It was _____ kilos _____grams
   ( )do not know/cannot remember

3. Do you remember how you fed him/her?
   ( )yes. Breast only
   ( )yes. Breast and bottle
   ( )yes. Bottle only (GO TO QUESTION 6)
   ( )do not know/cannot remember

4. Do you remember at which age was breastfeeding stopped?
   ( )yes. He/she was __________
   ( )do not know/cannot remember

5. Do you remember at which age was bottlefeeding introduced?
   ( )yes. He/she was __________
   ( )no. He/she was breastfed only
   ( )do not know/cannot remember

6. Do you remember at which age was bottlefeeding stopped?
   ( )yes. He/she was __________
   ( )no. He/she was breastfed only
   ( )do not know/cannot remember

7. Did you usually add sugar to the bottle?
   ( )yes
   ( )no
   ( )no. He/she was breastfed only
   ( )do not know/cannot remember

8. With whom did he/she spend most of the day time when he/she was younger?
   ( )with mother
   ( )with father
   ( )with both of them
   ( )with the grandmother
   ( )with a maid or nanny
   ( )at a day care centre
   ( )with others. (Specify) ____________________________________________
   ( )do not know/cannot remember
9. Has he/she ever had any serious disease when he/she was younger?
( )yes. (Specify) ______________________________________________________
( )no
( )do not know/cannot remember

10. Has your child’s doctor ever said that she/he was below normal weight and height (Undernourished)?
( )yes
( )no
( )do not know/cannot remember

11. Has he/she ever taken liquid antibiotics?
( )yes, for a short time
( )yes, for a long time
( )no
( )cannot remember

CHILD’S SUGAR CONSUMPTION

12. Children tend to start eating sweet tasting food at different ages. Could you tell me how old was your child when she/he first tasted sugary food or drink? (Marcenes, 1991)
( )yes. He/she was ____________________________
( )do not know/cannot remember

13. Some parents try to control the amount of sweet food their children eat, while others do not control it. What about your family? Do you control (controlled) your child’s sugar consumption? (Adapted from Marcenes, 1991)
( )yes
( )no (GO TO QUESTION 17)
( )do not know (GO TO QUESTION 17)

14. When did this control exist?
( )it was always controlled
( )it has started recently
( )only in the past. When did it started and stopped? _____________
( )do not know

15. What is (was) controlled?
( )quantity
( )frequency (number of times a day, week, month, etc)
( )quantity and frequency
( )other (specify) ____________________________

16. Who controls (controlled) it? (Marcenes, 1991)
( )the mother
( )the father
( )both parents
( )other (specify) ____________________________
CHILD’S ORAL HYGIENE

17. Children tend to start having their teeth brushed at different ages. Some parents start cleaning their children’s mouth before the teeth come out, others may wait until the child is older. What about your child? Do you remember at what age did she/he start having the teeth cleaned? (Marcenes,1991)

( )yes. He/she was ___________ old
How was the cleaning done?
( )Do not know/cannot remember

18. Did anyone brush your child’s teeth when he/she was a child?

( )yes, the mother
( )yes, the father
( )yes, both parents
( )yes, other (specify) _____________________
( )no
( )do not know/cannot remember

19. Some children have to be reminded to brush their teeth while others do not. What about your child? Does anyone have to remind her/him to brush the teeth nowadays?

(Marcenes,1991)

( )yes, mother
( )yes, father
( )yes, both parents
( )yes, other (specify) _____________________
( )no, does not need to be reminded
( )do not know/cannot remember

CHILD’S USE OF FLUORIDE

20. Fluoride tablets or drops are medicines prescribed by doctors or dentists to the young child to prevent dental caries. Did your child take fluoride tablets or drops when he/she was younger? (O’Brien,1993)

( )yes
( )no. (GO TO QUESTION 23)
( )do not know/cannot remember

21. Do you remember at which age did he/she start taking them?

( )yes. He/she was ______
( ) do not know/cannot remember

22. Do you remember at which age did he/she stop taking them?

( )yes. He/she was ______
( )do not know/cannot remember
CHILD'S DENTAL ATTENDANCE

23. Has he/she ever been to the dentist?
   ( )yes
   ( )no. (GO TO QUESTION 27)
   ( )do not know. (GO TO QUESTION 27)

24. Deciding when a child should go to the dentist varies between families. While in some families the child may ask to go, in others the dentist may send a reminder. And in your family? Who decides when your child should go to dentist? (Marcenes, 1991)
   ( )she herself / he himself
   ( )the mother
   ( )the father
   ( )both parents
   ( )other (specify) ________________________________
   ( )do not know

25. Do you remember at what age did he/she first go to the dentist? (Marcenes, 1991)
   ( )yes. He/she was _____ old
   ( )cannot remember

26. Do you remember what was the reason for that first visit to the dentist? (Adapted from Marcenes, 1991)
   ( )yes. (specify)_____________________________________
   ( )cannot remember

27. Have you ever received any advice on the care of your child’s teeth when he/she was younger?
   ( )yes
   ( )no. (GO TO QUESTION 29)
   ( )do not know/cannot remember

28. Who gave this advice?
   ( )dentist
   ( )doctor
   ( )other (specify)_____________________________________
   ( )do not know/cannot remember

MOTHER'S DENTAL HEALTH

29. Do you use dentures?
   ( )yes, upper denture only
   ( )yes, lower denture only
   ( )yes, upper and lower
   ( )no

30. How many natural teeth do you have at the moment? (Please count the ones which are not part of partial or total dentures).
   I have _____ natural teeth.

THANK YOU VERY MUCH FOR YOUR COLLABORATION! NOW PLEASE ANSWER PART 3.
PART 3: SENSE OF COHERENCE SCALE (Antonovsky, 1987)

Here is a series of questions relating to various aspects of our lives. Each question has seven possible answers. Please circle the number which expresses your answer, with numbers 1 and 7 being the extreme answers. If the words under 1 are right for you, circle 1; if the words under 7 are right for you, circle 7. If you feel differently, circle the number which best expresses you feeling.

Please give only one answer to each question.

*1 - Do you have the feeling that you don’t really care about what goes on around you?

1 2 3 4 5 6 7
Very seldom or never

*2 - Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?

1 2 3 4 5 6 7
Never happened Always happened

*3 - Has it happened that people whom you counted on disappointed you?

1 2 3 4 5 6 7
Never happened Always happened

4 - Until now your life has had:

1 2 3 4 5 6 7
No clear goals and purpose Very clear goals and purpose

5 - Do you have the feeling that you’re being treated unfairly?

1 2 3 4 5 6 7
Very often Very seldom or never
6- Do you have the feeling that you are in an unfamiliar situation and don’t know what to do?

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<td>Very often</td>
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7 - Doing things you do every day is:

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<tr>
<td>A source of pleasure and satisfaction</td>
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<td>A source of pain and boredom</td>
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8 - Do you have very mixed-up feelings and ideas?

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9 - Does it happen that you have feelings inside you would rather not feel?

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10 - Many people - even those with a strong character - sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?

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<td>Very often</td>
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11 - When something happened, have you generally found that:

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<td>You overestimated or underestimated its importance</td>
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<td>You saw things in the right proportion</td>
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12 - How often do you have the feeling that there’s little meaning in the things you do in your daily life?

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13 - How often do you have feelings that you’re not sure you can keep under control?

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THANK YOU VERY MUCH!

* Before calculating the total score, the items marked should be reversed
QUESTIONÁRIO SOBRE SAÚDE BUCAL - Para os adolescentes

Escola No. ______ Data da entrevista: ___/___/___
Nome do aluno______________________________ No. ______
Cidade e Estado onde nasceu: ____________________
Endereço:________________________________________ Fone________

PARTE 1- VOCÊ E SEUS HÁBITOS

1. Você já morou em outra cidade além de Goiânia?
   ( ) não
   ( ) sim, morou em ____________________________, dos __ aos __ anos de idade
   ___________________________________________, dos __ aos __ anos de idade
   ___________________________________________, dos __ aos __ anos de idade
   ___________________________________________, dos __ aos __ anos de idade
   ( ) não sei

2. Na sua casa você é o(a) filho(a) mais velho(a)?
   ( ) sim
   ( ) não. Eu sou o (a) filho(a). (Dizer se você é o 2º, 3º, etc)
   ( ) sou filho(a) único(a)

3. Você participa de alguma atividade fora de casa quando você não está na escola?
   (Exemplo: esportes, cursos, trabalho, grupo de igreja, etc)
   ( ) sim
   ( ) não (PULE PARA A PERGUNTA 5)

4. Que atividades você pratica e quantas vezes por semana? (Pode marcar mais de uma resposta)
   ( ) esportes, ___ dias por semana
   ( ) curso de língua estrangeira, ___ dias por semana
   ( ) trabalho, ___ dias por semana
   ( ) outros, ___ dias por semana. Qual atividade? _____________________

5. Você é ou já foi membro de alguma associação? (clube esportivo, grupo cultural, escoteiros, união dos estudantes, partido político, associação de bairro, grupo religioso, etc.)
   ( ) sim. Qual? ____________________________________________
   ( ) não (PULE PARA A PERGUNTA 7)

6. Você faz ou já fez parte da diretoria destas associações? (Exemplo: Diretor(a), secretário(a), tesoureiro(a), etc)
   ( ) sim
   ( ) não
7. Com que frequência você participa de atividades religiosas?
( ) quase todos os dias
( ) mais ou menos uma vez por semana
( ) mais ou menos uma vez por mês
( ) uma vez a cada três ou quatro meses
( ) nunca ou quase nunca

8. Você assiste os noticiários na TV?
( ) sim, todos os dias
( ) sim, frequentemente, mas nem todo dia
( ) sim, raramente
( ) não, nunca

9. Você lê jornais?
( ) sim, todos os dias
( ) sim, frequentemente, mas nem todo dia
( ) sim, raramente
( ) não, nunca

ALIMENTAÇÃO

10. O que você comeu e bebeu ontem NAS PRINCIPAIS REFEIÇÕES? (Se você tomou suco, leite e outros líquidos, dizer se colocou açúcar, adoçante ou não colocou nada).

CAFÉ DA MANHÃ: ____________________________

ALMOÇO: ________________________________________

JANTA: _________________________________________

11. Você comeu ou bebeu algum alimento ontem ENTRE AS REFEIÇÕES?

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<th>O QUE VOCÊ COMEU OU BEBEU</th>
<th>QUANTAS VEZES</th>
<th>ONDE? (Casa, escola)</th>
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<td>À TARDE (entre o almoço e o jantar)</td>
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<tr>
<td>À NOITE (após o jantar)</td>
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12. Agora leia a lista abaixo e veja se tem algum alimento que você se esqueceu de anotar. Se tiver algum, marque um X e anote na pergunta 10 ou 11.

( ) Doce
( ) Chicletes
( ) Balas/drops
( ) Chocolate/bombom
( ) Biscoito de sal/doce
( ) Bolo
( ) Torta de sal/doce
( ) Sorvete/picolé
( ) Pão de sal/doce
( ) Fruta fresca
( ) Queijo
( ) Leite com/sem açúcar
ou chocolate

13. Você coloca açúcar no leite?

( ) sim, eu coloco ____ colheres de_______ (Dizer se é colher de sopa, chá, etc)
( ) não
( ) não, eu uso adoçantes. Qual? __________________________
( ) não, eu não tomo leite.

14. Você bebe refrigerantes "diet"?

( ) sim
( ) não, só bebo os refrigerantes comuns (PULE PARA A PERGUNTA 16)
( ) não, nunca bebo refrigerantes (PULE PARA A PERGUNTA 16)
( ) não sei (PULE PARA A PERGUNTA 16)

15. Com que frequência você toma refrigerantes "diet", comparando com os refrigerantes comuns?

( ) menos frequentemente
( ) mais frequentemente
( ) mesma frequência
( ) somente refrigerantes "diet"
( ) não sei
16. Você come doces (balas, chocolates, chicletes) "diet"?
   ( ) sim
   ( ) não, só como doces comuns (PULSE PARA A PERGUNTA 18)
   ( ) não, nunca como doces (PULSE PARA A PERGUNTA 18)
   ( ) não sei (PULSE PARA A PERGUNTA 18)

17. Com que frequência você come doces "diet", comparando com os doces comuns?
   ( ) menos frequentemente
   ( ) mais frequentemente
   ( ) mesma frequência
   ( ) somente doces "diet"
   ( ) não sei

18. Você come alguma coisa na escola?
   ( ) sim, sempre
   ( ) sim, quase sempre
   ( ) sim, algumas vezes
   ( ) não, nunca (PULSE PARA A PERGUNTA 22)

19. O que você geralmente come na escola? (Se for a merenda escolar, dizer o que você mais gosta de comer).

20. De onde vem o lanche que você come na escola? (Pode marcar mais de uma resposta)
   ( ) comprado na cantina da escola
   ( ) comprado nas lanchonetes perto da escola
   ( ) comprado do vendedor na porta da escola
   ( ) merenda escolar
   ( ) trazido de casa

21. Quando é que você come o lanche?
   ( ) durante o recreio
   ( ) durante as aulas
   ( ) durante as aulas e no recreio

22. Quantas horas por dia você geralmente assiste televisão?
   ( ) menos que uma hora por dia
   ( ) uma a duas horas por dia
   ( ) duas a quatro horas por dia
   ( ) quatro a seis horas por dia
   ( ) mais de seis horas por dia
   ( ) nunca assisto TV (PULSE PARA A PERGUNTA 24)

23. Você costuma comer ou beber alguma coisa enquanto assiste TV?
   ( ) sim. O que?
   ( ) não
24. Quantos reais você costuma gastar por semana em lanches?
( )eu gasto mais ou menos R$____________________
( )nada

25. Você está tentando perder peso (emagrecer)?
( )sim
( )não

26. Você está tentando aumentar seu peso (engordar)?
( )sim
( )não

27. Na sua casa alguém controla a frequência (número de vezes) e/ou quantidade de alimentos açucarados que você come?
( )sim
( )não (PULE PARA A PERGUNTA 29)
( )não sei (PULE PARA A PERGUNTA 29)

28. Quem controla? (Pode marcar mais de uma resposta)
( )minha mãe
( )meu pai
( )minha mãe e meu pai
( )outra pessoa. Quem?_______________
( )não sei

29. Nos últimos anos você mudou a quantidade de alimentos e líquidos açucarados que você costuma comer ou beber?
( )não (PULE PARA A PERGUNTA 31)
( )não, eu já evitava açúcar ou alimentos açucarados
( )sim, agora eu como menos açúcar ou alimentos açucarados
( )sim, agora eu como mais açúcar ou alimentos açucarados (PULE PARA A PERGUNTA 31)

30. Por que razão você tentou diminuir o seu consumo de açúcar?

HIGIENE ORAL

31. Você limpa seus dentes?
( )sim
( )não (PULE PARA A PERGUNTA 39)

32. Por que razão você limpa seus dentes?

33. Com que frequência você geralmente limpa seus dentes?
34. A que horas do dia você normalmente limpa seus dentes? (Pode marcar mais de uma resposta)
   ( ) ao acordar
   ( ) após o café da manhã
   ( ) após o almoço
   ( ) após o jantar
   ( ) ao se deitar
   ( ) outro. Qual? ______________________

35. Quem foi a pessoa que lhe deu as primeiras instruções sobre a necessidade de limpar seus dentes?
   ( ) minha mãe
   ( ) meu pai
   ( ) minha mãe e meu pai
   ( ) minha professora
   ( ) meu dentista
   ( ) outros. Quem? ______________________
   ( ) não sei/não me lembro
   ( ) ninguém

36. Alguém tem que te lembrar para escovar os dentes? (Pode marcar mais de uma resposta)
   ( ) sim, minha mãe
   ( ) sim, meu pai
   ( ) sim, minha mãe e meu pai
   ( ) sim, outra pessoa. Quem? ________________
   ( ) não, ninguém
   ( ) não sei

37. O que você usa para limpar os dentes? (Pode marcar mais de uma resposta)
   ( ) escova dental
   ( ) pasta dental
   ( ) fio dental
   ( ) palito dental
   ( ) líquido para fazer bochechos
   ( ) outro. O que? ______________________

38. Sua gengiva sangra quando você escova?
   ( ) não
   ( ) sim, algumas vezes
   ( ) sim, frequentemente
   ( ) sim, sempre

**USO DE FLÚOR**

O flúor é um produto que os dentistas aplicam para prevenir cárie.
39. Você já recebeu alguma aplicação de **flúor gel**?(aquele que parece gelatina colorida e com sabor, aplicado com moldeiras ou algodão)
- ( ) sim, no passado
- ( ) sim, estou recebendo no momento
- ( ) não, nunca (PULE PARA A PERGUNTA 42)
- ( ) não sei/não me lembro (PULE PARA A PERGUNTA 42)

40. Onde você recebe/recebeu esta aplicação?
- ( ) no dentista
- ( ) na escola
- ( ) outro: ______________________________________
- ( ) não sei/não me lembro

41. Com que frequência você recebe/recebeu esta aplicação?
- ( ) num intervalo menor do que seis meses
- ( ) de seis em seis meses
- ( ) uma vez por ano
- ( ) uma vez a cada 2 anos
- ( ) menos frequentemente (intervalo maior que 2 anos)
- ( ) não sei/não me lembro

42. Você já fez **bochecho com flúor**? (aquele líquido incolor que é colocado num copinho e que tem que ser bochechado por 1 minuto)
- ( ) sim, no passado
- ( ) sim, estou fazendo no momento
- ( ) não (PULE PARA A PERGUNTA 45)
- ( ) não sei/não me lembro (PULE PARA A PERGUNTA 45)

43. Onde você costuma/costumava fazer os bochechos?
- ( ) na escola
- ( ) em casa
- ( ) outro: ______________________________________
- ( ) não sei/não me lembro

44. Com que frequência você costuma/costumava bochechar?
- ( ) todos os dias
- ( ) mais de uma vez por semana
- ( ) uma vez por semana
- ( ) de 15 em 15 dias
- ( ) menos frequentemente (intervalo maior que 15 dias)
- ( ) não sei/não me lembro

45. Na sua casa, de onde vem a água usada para beber?
- ( ) água tratada (SANEAGO)
- ( ) poço (cisterna)
- ( ) água mineral
- ( ) rio/riacho/lagoa
- ( ) não sei
ATENDIMENTO ODONTOLÓGICO
46. Você já foi ao dentista?
( )sim
( )não (PULE PARA A PERGUNTA 54)

47. Qual o tipo de serviço que você normalmente vai?
( )particular
( )público (no posto de saúde)
( )público (na escola)
( )público (na Faculdade de Odontologia)
( )plano de saúde
( )convênio
( )não sei

48. Você já recebeu aplicação de selante nos dentes permanentes? (Selante é um produto que parece esmalte incolor, que o dentista aplica nos dentes de trás para proteger contra cárie)
( )sim
( )não
( )não sei/não me lembro

49. Você sempre vai ao mesmo dentista?
( )sim
( )não, eu já mudei uma vez
( )não, eu mudo de vez em quando
( )não, eu sempre mudo de dentista

50. Qual foi a última vez que você foi ao dentista?
( )em tratamento no momento
( )há menos de 6 meses
( )há 7-12 meses
( )há 13-24 meses
( )há mais de 24 meses
( )não sei/não me lembro

51. Qual foi o motivo para você procurar o seu dentista desta última vez que você esteve lá?
( )dor
( )extrair o dente
( )para tratar os dentes (obturações)
( )para revisão
( )fazer limpeza, aplicar flúor, etc.
( )outro motivo. Qual?________________________________________________________

52. Qual é o motivo mais frequente pelo qual você vai ao dentista? (Sem contar as idas por causa do aparelho ortodôntico)
( )na maioria das vezes, para revisões
( )na maioria das vezes, para tratamento (PULE PARA PERGUNTA 54)
( )não sei/não me lembro (PULE PARA A PERGUNTA 54)
53. SE REVISÕES, com que frequência você vai?
( ) num intervalo menor que seis meses
( ) de seis em seis meses
( ) uma vez por ano
( ) uma vez a cada dois anos
( ) num intervalo maior que dois anos
( ) não sei/não me lembro

ATITUDES EM RELAÇÃO À SAÚDE BUCAL

54. Alguém já te disse o que pode ser feito para prevenir cárie? (Pode marcar mais de uma resposta)
( ) sim, minha mãe
( ) sim, meu pai
( ) sim, minha mãe e meu pai
( ) sim, meu dentista
( ) sim, meu professor(a)
( ) sim, outra pessoa. Quem?______________________________
( ) não

55. Como você acha que estão os seus dentes atualmente?
( ) muito bons
( ) bons
( ) não muito bons
( ) ruins
( ) não sei

56. Como você acha que está a sua gengiva atualmente?
( ) muito boa
( ) boa
( ) não muito boa
( ) ruim
( ) não sei

57. Você está satisfeito(a) com a aparência dos seus dentes?
( ) estou muito satisfeito
( ) estou satisfeito
( ) estou não muito satisfeito
( ) estou insatisfeito
( ) não sei

58. Você acha que seus dentes são:
( ) uma das suas melhores características
( ) uma característica muito boa
( ) uma característica não muito boa
( ) uma característica ruim
( ) não sei
59. Como você acha que tem cuidado dos seus dentes nos últimos 12 meses?
( )bastante
( )razoavelmente
( )um pouco
( )não tenho cuidado
( )não sei

60. Para você qual é a importância de cuidar dos seus dentes?
( )é muito importante
( )é importante
( )não é muito importante
( )não tem nenhuma importância
( )não sei

61. Você fuma?
( )sim.
( )não, fui no passado
( )não, nunca fumei

62. Você já foi reprovado na escola?
( )sim, uma vez
( )sim, mais de uma vez
( )não, nunca

63. Você tem alguma problema de saúde (doença) atualmente?
( )sim. Qual?________________________________________________________
( )não

64. E quando você era criança?
( )sim. Qual? _____________________________________________________
( )não
( )não me lembro

HÁBITOS E SAÚDE BUCAL DOS PAIS

65. Sua mãe fuma?
( )sim
( )não, ela fumou no passado
( )não, nunca

66. Seu pai fuma?
( )sim
( )não, ele fumou no passado
( )não, nunca

67. Qual é a profissão dos seus pais? (Dizer o que eles fazem e se são empregados ou trabalham por conta própria)
Pai: _____________________________________________________________
Mãe: _____________________________________________________________
68. Sua mãe usa dentadura e/ou ponte?
( ) sim, dentadura superior (de cima) somente
( ) sim, dentadura inferior (de baixo) somente
( ) sim, dentadura superior e inferior
( ) sim, ponte superior somente
( ) sim, ponte inferior somente
( ) sim, ponte superior e inferior
( ) sim, dentadura e ponte
( ) não
( ) não sei

69. Seu pai usa dentadura e/ou ponte?
( ) sim, dentadura superior (de cima) somente
( ) sim, dentadura inferior (de baixo) somente
( ) sim, dentadura superior e inferior
( ) sim, ponte superior somente
( ) sim, ponte inferior somente
( ) sim, ponte superior e inferior
( ) sim, dentadura e ponte
( ) não
( ) não sei

MUITO BEM, VOCÊ TERMINOU DE RESPONDER A PRIMEIRA PARTE DO QUESTIONÁRIO. AGORA RESPONDA A SEGUNDA PARTE, QUE ESTÁ NA PRÓXIMA PÁGINA.
PARTE 2- QUESTIONÁRIO DE OPINIÃO SOBRE A VIDA - Para os adolescentes

1 - Você tem a sensação de que você NÃO se interessa realmente pelo que se passa ao seu redor?
   1 2 3 4 5 6 7
   Muito raramente
ou nunca Muito
ter  mente

2 - Já lhe aconteceu no passado você ter ficado surpreendido pelo comportamento de pessoas que você achava que conhecia bem?
   1 2 3 4 5 6 7
   Nunca Sempre
aconteceu aconteceu

3 - Já lhe aconteceu ter ficado desapontado com pessoas em quem você confiava?
   1 2 3 4 5 6 7
   Nunca Sempre
aconteceu aconteceu

4 - Até hoje a sua vida tem sido:
   1 2 3 4 5 6 7
   Sem nenhum objetivo ou metas
   Com objetivos e metas muito claras

5 - Você tem a impressão de que você tem sido tratado com injustiça?
   1 2 3 4 5 6 7
   Muito frequentemente
ou nunca Muito
raramente
ou nunca

6 - Você tem a sensação de que você está numa situação pouco comum, e sem saber o que fazer?
   1 2 3 4 5 6 7
   Muito frequentemente
ou nunca Muito
raramente
ou nunca
7 - Aquilo que você faz diariamente é:

1  2  3  4  5  6  7
Uma fonte de profundo sofrimento e aborrecimento

8 - Você tem ideias e sentimentos muito confusos?

1  2  3  4  5  6  7
Muito frequentemente

9 - Você costuma ter sentimentos que gostaria de não ter?

1  2  3  4  5  6  7
Muito frequentemente

10 - Muitas pessoas (mesmo as que têm caráter forte) algumas vezes sentem-se fracassadas em certas situações. Com que frequência você já se sentiu fracassado no passado?

1  2  3  4  5  6  7
Nunca

11 - Quando alguma coisa acontece na sua vida, você geralmente acaba achando que:

1  2  3  4  5  6  7
Você deu maior ou menor importância ao que aconteceu, do que deveria ter dado

12 - Com que frequência você tem a impressão de que existe pouco sentido nas coisas que você faz na sua vida diária?

1  2  3  4  5  6  7
Muito frequentemente

13 - Com que frequência você tem sentimentos que você não tem certeza que pode controlar?

1  2  3  4  5  6  7
Muito frequentemente
APPENDIX B.3.3- QUESTIONNAIRE FOR THE MOTHERS (in Portuguese)

PREZADA MÃE,

É um prazer ter você e seu filho(a) participando da pesquisa sobre cárie, que está sendo realizada nas escolas de Goiânia. Como parte desta pesquisa estamos lhe enviando um questionário para ser respondido por você e devolvido à escola o mais rápido possível. As perguntas são simples e rápidas de responder e a maioria já tem as respostas, bastando apenas marcar um X na que você escolher. Este questionário não é um teste, e, portanto, não existe resposta certa ou errada. Por favor, responda a todas as perguntas com sinceridade. TODAS AS PERGUNTAS SOBRE O SEU(SUA) FILHO(A) REFEREM-SE SOMENTE ÀQUELE(A) DE 15 ANOS QUE ESTÁ PARTICIPANDO DA PESQUISA.

O objetivo da pesquisa é conhecer os fatores relacionados à cárie desde a infância. Por isso, o questionário contém perguntas sobre as condições de vida da família, hábitos, atitudes e maneira de pensar sobre a vida. Todas estas informações serão utilizadas somente para a análise estatística dos resultados.

Gostaria de ressaltar que todas as respostas são de caráter estritamente CONFIDENCIAL e não serão fornecidas à escola ou qualquer outra pessoa em hipótese alguma. Para isso, por favor devolva o questionário respondido dentro de um envelope fechado, que está sendo enviado junto com esta carta.

Gostaria também de lembrar que os alunos que devolverem o questionário respondido concorrerão a um aparelho de som no final do ano. Se você tiver alguma dúvida ou precisar de ajuda para responder este questionário mande um bilhete pelo seu filho(a) ou fale comigo pelo telefone 223-8543.

Agradeço desde já a sua participação!

Atenciosamente,

Prof. Maria do Carmo Matias Freire
1a PARTE: CONDIÇÃO SÓCIO-ECONÔMICA DA FAMÍLIA

(DEVE SER RESPONDIDA PELA MÃE OU PELO PAI DO ADOLESCENTE)

1. MARQUE COM UM X AS PESSOAS QUE MORAM NA CASA E RESPONDA QUANTOS SÃO (INCLUINDO SEU FILHO(A) QUE ESTÁ PARTICIPANDO DA PESQUISA):
   ( ) Pai: ( )Natural ( )Padrasto
   ( ) Mãe: ( )Natural ( )Madrasta
   ( ) Filhos. Quantos? _____
   ( ) Empregados que dormem no emprego. Quantos? ___
   ( ) Outras pessoas. Quantas? _____
   TOTAL = ____

2. ATÉ QUE SÉRIE DA ESCOLA O PAI DA CRIANÇA ESTUDOU?
   ( ) não sabe ler nem escrever
   ( ) 1° grau incompleto. Qual foi a última série completada?_____
   ( ) 1° grau completo
   ( ) 2° grau incompleto. Qual foi a última série completada?_____
   ( ) 2° grau completo
   ( ) curso universitário incompleto
   ( ) curso universitário completo
   ( ) pós-graduação
   ( ) não sei

3. ATÉ QUE SÉRIE DA ESCOLA A MÃE ESTUDOU?
   ( ) não sabe ler nem escrever
   ( ) 1° grau incompleto. Qual foi a última série completada?_____
   ( ) 1° grau completo
   ( ) 2° grau incompleto. Qual foi a última série completada?_____
   ( ) 2° grau completo
   ( ) curso universitário incompleto
   ( ) curso universitário completo
   ( ) pós-graduação
   ( ) não sei

AS PRÓXIMAS PERGUNTAS DEVEM SER RESPONDIDAS SOMENTE PELO CHEFE DA FAMÍLIA. CONSIDERE CHEFE DA FAMÍLIA AQUELE QUE POSSUIR MAIOR RENDA EM CASA.
4. ATUALMENTE O SR(A) ESTÁ TRABALHANDO?
( ) sim, em atividade
( ) sim, e também aposentado
( ) não, desempregado
( ) não, aposentado
( ) não, outra situação. Qual?__________ (PULE PARA A PERGUNTA 11)
( ) não sei (PULE PARA A PERGUNTA 11)

5. O QUE O SR(A) FAZ/FAZIA EM SEU TRABALHO PRINCIPAL? (Descreva detalhadamente as tarefas mais frequentes que desenvolve em seu trabalho).


6. QUAL É(OU ERA) A ATIVIDADE DO ESTABELECIMENTO EM QUE O SR(A) TRABALHA(TRABALHOU)? (Exemplo: comércio, indústria, hospital, etc)


7. NO SEU TRABALHO PRINCIPAL O SR(A) É(OU ERA):
( ) empregado assalariado com carteira profissional assinada
( ) empregado assalariado sem carteira profissional assinada
( ) trabalho não remunerado na firma da própria família
( ) conta própria ou autônomo com estabelecimento
( ) conta própria ou autônomo sem estabelecimento
( ) empregador. Quantos funcionários fixos?____
( ) não sei

8. QUANTO O SR(A) GANHOU COM ESSE TRABALHO NO MÊS PASSADO?
Salário líquido: R$ ____________ ,00

9. ALÉM DESTE TRABALHO O SR(A) TEM ALGUM OUTRO TIPO DE TRABALHO REMUNERADO?
( ) não
( ) sim. Quanto ganhou no mês passado? R$ ____________ ,00
( ) não sei

10. O SR(A) TEM ALGUM OUTRO RENDIMENTO OU APOSENTADORIA?
( ) não
( ) sim. Quanto? R$ ____________ ,00
( ) não sei

11. NO MÊS PASSADO, QUANTO GANHARAM AS OUTRAS PESSOAS QUE MORAM NA CASA? (SEM CONTAR O CHEFE DA FAMÍLIA)
1ª pessoa: R$ ____________ ,00
2ª pessoa: R$ ____________ ,00
3ª pessoa: R$ ____________ ,00

MUITO OBRIGADA! AGORA, POR FAVOR, RESPONDA A 2a. PARTE
1. Quantos anos você tinha quando seu filho(a) nasceu? ____ anos.

2. Você se lembra qual era o peso dele(a) ao nascer?
   ( )sim. Era _____ quilos e ____ gramas
   ( )não sei/não me lembro

3. Você se lembra como ele(a) foi amamentado(a)?
   ( )sim. Só no peito.
   ( )sim. No peito e na mamadeira
   ( )sim. Só na mamadeira (PULSE PARA A PERGUNTA 6)
   ( )não sei/não me lembro

4. Você se lembra que idade ele(a) tinha quando deixou de mamar no peito?
   ( )sim. Ele(a) tinha _______________
   ( )não sei/não me lembro

5. Você se lembra que idade ele(a) tinha quando iniciou a mamadeira?
   ( )sim. Ele(a) tinha _______________
   ( )não. Ele(a) só mamou no peito
   ( )não sei/não me lembro

6. Você se lembra que idade ele(a) tinha quando deixou a mamadeira?
   ( )sim. Ele(a) tinha _______________
   ( )não. Ele(a) só mamou no peito
   ( )não sei/não me lembro

7. Você costumava colocar açúcar na mamadeira?
   ( )sim
   ( )não
   ( )não. Ele(a) só mamou no peito
   ( )não sei/não me lembro

8. Com quem ele(a) ficava a maior parte do dia quando era mais novo(a)?
   ( )com a mãe
   ( )com o pai
   ( )com a mãe e o pai
   ( )com a babá ou empregada
   ( )na creche ou berçário
   ( )com outros. Quem? ________________________________
   ( )não sei/não me lembro
9. Seu filho(a) teve alguma doença séria quando era mais jovem?
( )sim. Qual?
( )não
( )não sei/não me lembro

10. Alguma vez o médico do seu filho(a) disse que ele(a) estava desnutrido(a) (com o peso e a altura abaixo do normal)?
( )sim
( )não
( )não sei/não me lembro

11. Seu filho(a) tomou antibióticos líquidos (xarope) quando era mais novo(a)?
( )sim, durante pouco tempo
( )sim, durante muito tempo
( )não
( )não sei/não me lembro

CONSUMO DE ALIMENTOS AÇUCARADOS

12. Você se lembra com que idade seu filho(a) comeu ou bebeu pela primeira vez algum alimento que tivesse açúcar (Por exemplo, mamadeira adoçada, chá adoçado, iogurte, bolacha de doce, mel, etc)?
( )sim. Ele(a) tinha _______________
( )não sei/não me lembro

13. Alguns pais se preocupam com a quantidade e a frequência de alimentos doces que seus filhos estão comendo, outros não. E na sua família? Vocês controlam a ingestão de alimentos açucarados pelo seu filho(a)?
( )sim
( )não (PULE PARA A PERGUNTA 17)
( )não sei (PULE PARA A PERGUNTA 17)

14. Desde quando existe este controle?
( )sempre foi controlado
( )começou a pouco tempo
( )controlava só antigamente. Quando começou e quando parou? _______________
( )não sei

15. O que é (ou era) controlado?
( )a quantidade
( )a frequência (número de vezes por dia, por semana, por mês, etc)
( )a quantidade e a frequência
( )outro. O que? __________________________

16. Quem controla (ou controlava)?
( )a mãe
( )o pai
( )a mãe e o pai
( )outra pessoa. Quem? __________________________
HIGIENE BUCAL

17. Alguns pais começam a limpar a boca de seus filhos antes mesmo dos dentes nascerem. Outros esperam até que a criança esteja um pouco maior. E na sua casa? Você se lembra com que idade os dentes do seu filho começaram a ser limpos?
   ( ) sim. Ele(a) tinha ______________.
   Como era feita a limpeza? ____________________________________________
   ( ) não sei/ não me lembro

18. Alguém costumava escovar os dentes do seu filho(a) quando ele era pequeno?
   ( ) sim, a mãe
   ( ) sim, o pai
   ( ) sim, a mãe e o pai
   ( ) sim, outra pessoa. Quem? _______________________________
   ( ) não
   ( ) não sei/ não me lembro

19. Alguns adolescentes precisam ser lembrados que devem escovar os dentes, outros já não precisam. E seu filho(a)? Ele(a) precisa ser lembrado(a) de escovar os dentes hoje em dia?
   ( ) sim, a mãe tem que lembrar
   ( ) sim, o pai tem que lembrar
   ( ) sim, o pai e a mãe tem que lembrar
   ( ) sim, outra pessoa tem que lembrar. Quem? ___________________________
   ( ) não precisa ser lembrado(a)
   ( ) não sei

USO DE FLÚOR

20. Comprimidos ou gotas de flúor são medicamentos recomendados pelos médicos e dentistas para prevenir cárie na criança. Seu filho(a) tomou comprimidos ou gotas de flúor quando era mais novo?
   ( ) sim
   ( ) não (PULE PARA A PERGUNTA 23)
   ( ) não sei/ não me lembro (PULE PARA A PERGUNTA 23)

21. Você se lembra com que idade ele(ela) começou a tomar o flúor?
   ( ) sim. Ele(a) tinha ______________
   ( ) não sei/ não me lembro

22. Você se lembra com que idade ele(ela) parou de tomar o flúor?
   ( ) sim. Ele(a) tinha ______________
   ( ) não sei/ não me lembro

ATENDIMENTO ODONTOLÓGICO

23. Seu filho(a) já foi ao dentista?
   ( ) sim
   ( ) não. (PULE PARA A PERGUNTA 27)
   ( ) não sei. (PULE PARA A PERGUNTA 27)
24. A decisão sobre quando uma criança deve ir ao dentista pode variar bastante de uma família para outra. E na sua família? Quem decide quando seu filho(a) deve ir ao dentista?
( ) ele(a) mesmo(a)
( ) a mãe
( ) o pai
( ) a mãe e o pai
( ) outro. Quem? ______________________________
( ) ninguém
( ) não sei

25. Você se lembra com que idade seu filho(a) foi ao dentista pela primeira vez?
( ) sim. Ele(a) tinha _______________
( ) não me lembro

26. Você se lembra por que motivo ele(a) precisou ir?
( ) sim. Qual? ______________________________________________________
( ) não me lembro

27. Você recebeu alguma orientação sobre como cuidar dos dentes do seu filho(a) quando ele(a) era criança?
( ) sim
( ) não (PULE PARA A PERGUNTA 29)
( ) não sei/não me lembro

28. Quem deu a orientação?
( ) o dentista
( ) o médico
( ) outra pessoa. Quem? ______________________________
( ) não sei/não me lembro

A SAÚDE BUCAL DA MÃE

29. Você usa dentadura?
( ) sim, só superior (de cima)
( ) sim, só inferior (de baixo)
( ) sim, superior e inferior
( ) não

30. Quantos dentes naturais você tem atualmente? Por favor conte seus dentes que não são prótese (ponte móvel ou fixa) e nem dentadura.
Eu tenho _____ dentes naturais.

AGORA, POR FAVOR, RESPONDA A 3a PARTE.
3a PARTE: SUA OPINIÃO SOBRE A VIDA

Aqui estão 13 perguntas sobre vários aspectos da sua vida. Cada pergunta tem sete respostas possíveis. Marque, por favor, o número que expresse a sua resposta, sendo o 1 e o 7 as respostas extremas. Se para você a resposta correta for a 1, faça um círculo em 1; se for a 7 faça um círculo em 7. Se nenhuma destas respostas for a sua, faça o círculo no número que melhor expresse a sua maneira de pensar e sentir em relação à pergunta.

Dê apenas uma única resposta em cada pergunta, por favor.

1 - Você tem a sensação de que você NÃO se interessa realmente pelo que se passa ao seu redor?
   1  2  3  4  5  6  7
   Muito raramente ou nunca     Muito frequentemente

2 - Já lhe aconteceu no passado você ter ficado surpreendida pelo comportamento de pessoas que você achava que conhecia bem?
   1  2  3  4  5  6  7
   Nunca aconteceu     Sempre aconteceu

3 - Já lhe aconteceu ter ficado desapontada com pessoas em quem você confiava?
   1  2  3  4  5  6  7
   Nunca aconteceu     Sempre aconteceu

4 - Até hoje a sua vida tem sido:
   1  2  3  4  5  6  7
   Sem nenhum objetivo ou meta clara     Com objetivos e metas muito claros

5 - Você tem a impressão de que você tem sido tratada com injustiça?
   1  2  3  4  5  6  7
   Muito frequentemente     Muito raramente ou nunca
6 - Você tem a sensação de que está numa situação pouco comum, e sem saber o que fazer?

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7 - Aquilo que você faz diariamente é:

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8 - Você tem idéias e sentimentos muito confusos?

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9 - Você costuma ter sentimentos que gostaria de não ter?

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10 - Muitas pessoas (mesmo as que têm caráter forte) algumas vezes sentem-se fracassadas em certas situações. Com que frequência você já se sentiu fracassada no passado?

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11 - Quando alguma coisa acontece na sua vida, você geralmente acaba achando que:

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12 - Com que frequência você tem a impressão de que existe pouco sentido nas coisas que você faz na sua vida diária?

Muito frequentemente

13 - Com que frequência você tem sentimentos que você não tem certeza que pode controlar?

Muito frequentemente

MUITO OBRIGADA PELA SUA COLABORAÇÃO!