Patient perceptions of healthy weight promotion in dental settings

T. Wijey, B. Blizard, C. Louca, A. Leung, J. Suvan

ABSTRACT

Introduction: Excess weight is a risk factor for systemic and oral diseases. Since dental professionals are already involved in imparting overall health messages when certain conditions impact oral health, it should make sense that they also deliver related health messages such as promoting the maintenance of healthy weight for patients. Objectives: This study evaluated the perceptions of adult patients attending private dental clinics on healthy weight promotion by dental professionals.

Methods: A cross-sectional multicenter survey was designed and set in four private dental clinics (London/Hampshire) between April and July 2015. All eligible patients (≥18 years) completed a questionnaire. Body Mass Index (BMI; kg/m²) was calculated from height and weight measurements. Questionnaire content was centred on patient perceptions of 6 domains with the primary domain as to whether patients would accept healthy weight promotion by dental professionals.

Results: 213 adults (aged 20–85 years) participated in this study and 58.2% were females. Although the overwhelming majority endorsed healthy weight promotion by the dental team, the overweight/obese were significantly more sensitive (BMI screening χ² trend = 6.840, p = 0.009; healthy weight information χ² trend = 6.231, p = 0.013). Awareness of risk of periodontitis, carcinoma and overall adverse health outcomes associated with overweight or obesity was low.

Conclusion: The study cohort was well primed for healthy weight advice. Routine healthy weight promotion and BMI screening should be considered in the private dental clinic settings.

Clinical significance: This is an opportunity to collaborate with other health care professionals to support overall health monitoring/advice; a common risk factor strategy as recommended by the WHO. Future research is merited for this new initiative particularly perceptions of: dental teams’ on healthy weight management, longitudinal interventions, NHS, children/parents and separate obese groups.

Introduction

Obesity has become an entrenched global epidemic very rapidly with rates continuing to soar [1–5]. In the UK alone, over half the adult population is either overweight (a BMI in excess of 24.9 kg/m²) or obese (a BMI in excess of 30.0 kg/m²) [6–8]. The World Health Organisation (WHO) has categorised obesity and oral diseases as non-communicable chronic diseases addressed through a common risk factor approach. Both obesity and oral diseases pose major public health concerns due to threats to an individual’s overall health, quality of life and resultant spiralling healthcare expenditures [9–11].

International consensus advocates a comprehensive range of strategies to curtail excess weight gain (Fig. 1) [6,12]. The common risk factor approach endorsed by the WHO aims to target both general and dental diseases simultaneously by tackling shared multiple (modifiable) unhealthy lifestyle risk determinants such as diet [9,13–15]. This strategy also highlights the dental professionals’ role in healthy weight promotion.

It is well recognized that obesity has a substantial adverse impact on systemic health, which compromises both physical and psychological health [16–18]. Diabetes mellitus Type II (DMT2, pre-diabetes), cardiovascular disease such as stroke and myocardial infarction, hypertension, hyperlipidaemia, osteoarthritis, oesophageal, endometrial, and breast carcinomas, lung, liver or gallbladder dysfunction are a few diseases potentially influenced by obesity. It is also known that obesity, unhealthy diet and insalubrious lifestyle are associated with increased risks to oral diseases. For example, a statistically significant small to moderate magnitude correlation exists with chronic periodontitis...
tions amongst obesity, oral diseases and sugary drinks with their pa-
increasing public awareness through not only discussing the correla-
Moynihan and Kelly
sages could be very helpful in raising patient awareness of the asso-
diseases and weight management, might present dental teams with an
Discussions on healthy beverages, highlighting their role in both dental
long term weight gain [18,47].
–
–
–
–
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
–
–
–
–
–
–
–
–
–
–
–
–
–
–

BMI (Kg/m$^2$) is an epidemiological tool that estimates disease re-
ated adiposity levels [4,8]. Although reliability in determining health
recommendations at an individual level has been questioned, based
upon epidemiological data, BMI classification remains valuable for
health care professionals when discussing health aspects with poten-
tially high risk individuals [8,19].

Excess sugary drinks intake increases the rate of dental caries as per
Moynihan and Kelly’s 2014 systematic review [37]. Carbonated bev-
erages and fruit juice acidity also facilitate extrinsic erosion of teeth
[38–44]. Equally, a large body of recent research substantiates weight
gain/obesity with increased intake of sugary drinks [16,17,45–53].
Even consuming low levels of sugar sweetened beverages could result in
long term weight gain [18,47].

It has been proposed that dental professionals should be proactive in
increasing public awareness through not only discussing the correla-
tions amongst obesity, oral diseases and sugary drinks with their pa-
tients but also the resultant adverse effects to overall health outcomes.
Discussions on healthy beverages, highlighting their role in both dental
diseases and weight management, might present dental teams with an
appropriate platform to project healthy weight messages. These mes-
gees could be very helpful in raising patient awareness of the asso-
ciation between adverse oral health and being overweight or obese.

Dental professionals have been effectively imparting overall health
messages with regard to the effect of smoking on oral health risks.
Premature smoking research in the 1990s identified an active role for
dental professionals in educating patients on the health risks of tobacco
use and successful protocols were implemented subsequently. Currently, dental professionals routinely impart messages of the ad-
verse effect smoking has on oral and general health or incorporate very
brief advice (VBA) when time pressured to facilitate patient referral to
specialist centres [54–57]. Research have also depicted the benefits of
diabetes screening demonstrated amongst over 45 year olds and the
over 30 year olds, incidences of 40.1%–30% (HbA1c measurements ≥
5.7%), respectively of early diagnosis (prediabetes state) [58,59].
Likewise, recent research cites dental settings as being well suited to
address healthy weight management [60,61]; since routine visits to
appropriately trained dental professionals could facilitate meaningful
and efficient health monitoring or counselling by using height and
weight measurements. This would thereby allow effective discussions
on common dietary considerations (such as calorie, sugar and acid in-
take), oral disease prevention and healthy weight recommendations.
The combination of these messages have the potential to result in
overall health benefits.
Realistically, making an impact and changing behaviour can be
challenging. To put it in context, successful interventions will also re-
quire consideration of wider behavioural and socioeconomic factors
modifying oral health, such as existing oral health knowledge/habits,
dental anxiety and access to care [62]. However, using a contemporary
behavioural change framework (Motivational Interviewing) empha-
sising a collaborative dentist/patient approach based on rapport build
up have succeeded in promoting BMI screening acceptance and healthy
dietary choices among paediatric populations [60,61]. Despite the
above, a knowledge gap still exists on adult patients’ views on the role
of dental professionals in this area, which this study sets out to in-
vestigate.
This study evaluated patients’ perceptions of healthy weight pro-
motion by dental professionals and preliminary information pertaining
to beverage habits. It also investigated adult patients’ comfort levels
when provided healthy weight advice by dental professionals in private
dental clinics.

Materials and methods
A cross sectional questionnaire survey was used for data collection.
It was administered to adult patients attending four private dental
clinics (three in London and one in Hampshire, UK) between April and
June 2015. The questionnaire included 27 questions based upon vali-
dated surveys or published research. It was first piloted amongst dental
professionals (n = 10) similar to those who would administer it to their
patients to obtain feedback on suitability for a private practice setting
as well as to confirm questions were understandable from an individual
perspective as if they were a patient. The study was approved by the
University College London Ethics Committee prior to commencement.
Informed written consent was obtained from all participants prior to

---

**Policy** | **Key recommendations**
---|---
WHO global strategy World Health Assembly (2004). | Individual responsibility:
- Limit fat/sugars/salt in diets.
- Increase fruits/vegetables.
- Nutritious choices.
- Exercise.
Communal/environmental support:
- Political commitment.
- Global/regional/local stakeholder collaborations.
- Responsible marketing.
- Affordable/available healthier choices.
2025 obesity levels to equal 2010.

**Fig. 1. Global Policies/Guidelines to Reduce Overweight/Obesity.**
their participation in this study.

As demonstrated in the flow diagram (Fig. 2) dental professionals (receptionists/nurses/dentists) were trained on participant enrolment, questionnaire administration, and height/weight measures. All eligible participants were approached. In order to minimise study selection bias, the study included and reported on patients who were diabetics, smokers, health care workers, those attending regular chronic medical reviews or formal weight watching programmes.

Based on previously published material, we anticipated that 50% of participants would find advice from the dental team acceptable. In order to estimate the proportion with 95% Confidence Interval (CI) $+\,/-\,7.5\%$, a minimum of 171 participants was calculated to be necessary [47,63,64]. The extent to which patients would endorse healthy weight advice by dental teams was evaluated against the corresponding a) body weight profile, b) lifestyle factors, c) personal BMI, d) general and oral health risk awareness related to being overweight or obese.

The cohort of anonymous mixed qualitative and quantitative data was collected and analysed. Data entry was achieved utilising Excel followed by SPSS 21. A range of descriptive statistics were used to help analyse and interpret the data.

**Results**

The participants included 213 individuals with an age range of 20–85 years; 58.2% were females, and 66.6% were Caucasian. The majority were nonsmokers with low health needs; for example, 16.0% self-reported diabetes status, 15.0% had more than three fillings, and 28.6% reported an unhealthy periodontal status over the previous 3 years. Most participants perceived high overall oral health values, with 83.5% who reported visiting the dentist at least once a year, 37.8% reporting low dental anxiety, and 14.1% being health workers.

Of the study sample, 40.8% were overweight or obese in accordance
Participants who were overweight or obese self-reported very few reporting low perceived oral and overall health importance. Distributed. Perceived oral and overall health values were skewed with WHO statistics, BMI and dental anxiety values were normally distributed. Perceptions of dental professional role in weight management

An overwhelming majority of participants endorsed receiving healthy weight information during a dental visit (63.2%–75.4%). They were very comfortable with BMI screening (57.5%–74.2%) and accepted such involvements from all healthcare professionals (64.4%–73%). However, although receptive, overweight/obese participants were significantly more sensitive to the same ideas (BMI screening χ² trend = 6.840, p = 0.009; healthy weight information χ² trend = 6.231; p = 0.013). For participants contemplating weight changes, they welcomed screening significantly (χ² trend = 6.231; p = 0.013) and readily approved receiving healthy weight information (70.8%; n = 97), and by dental professionals (73%; n = 100) (Table 2, Fig. 3).

Perceptions of body weight status

The overall majority of participants believed that they were currently at “the right weight” although they still contemplated weight loss. Most participants recognized either “upbringing and lifestyle” or “genetics and upbringing” as important contributory factors to being overweight. However, their knowledge on their individual BMI values was limited. Amongst the overweight or obese participants, 1 in 3 were in denial of their true (clinical) BMI. Weight loss attempts amongst these overweight or obese subjects were significantly (χ² = 26.52; p = 0.000). Self-weight profile associations were compelling (p < 0.000). Females were significantly more weight conscious (current weight loss attempts χ² = 5.132, p = 0.023; past attempts χ² = 4.003, p = 0.043) (Table 4).

Discussion

As far as the authors are aware, this study is the first in the literature investigating perceptions of adult patients on healthy weight promotion in dental settings in the UK.

An overwhelming majority of the participants endorsed the concept of healthy weight promotion by dental professionals. This is in agreement with preliminary BMI interventions among pediatric settings that supports healthy weight promotion in dental offices [60]. Overweight or obese participants in this study who were more sensitive to receiving these healthcare messages and advice, will require a knowledgeable, trained and considerate dental team approach for such advice to be most receptive by them. Some participants however, were unaware of potential benefits to personal weight management perhaps since BMI screening is a more recent initiative.

The limited self-awareness of BMI in this cohort of participants with WHO statistics, BMI and dental anxiety values were normally distributed. Perceived oral and overall health values were skewed with very few reporting low perceived oral and overall health importance. Participants who were overweight or obese self-reported significantly greater BMI as well as being diabetic, and received more care for chronic medical conditions (Table 1).

Table 1
Study Sample Characteristics.

<table>
<thead>
<tr>
<th>Variable (Categorical)</th>
<th>Overall</th>
<th>Underweight/Healthy weight</th>
<th>Overweight/Obese</th>
<th>BMI Groups Test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 213</td>
<td>n = 126 (59.2%)</td>
<td>n = 87 (40.8%)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>89 (41.8)</td>
<td>47 (37.3)</td>
<td>42 (48.3)</td>
<td>*2.54 (0.11)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>141 (66.2)</td>
<td>79 (62.7)</td>
<td>62 (71.3)</td>
<td>*1.67 (0.19)</td>
</tr>
<tr>
<td>Smoker</td>
<td>18 (8.5)</td>
<td>11 (8.7)</td>
<td>7 (8.0)</td>
<td>*0.36 (0.86)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>13 (6.1)</td>
<td>4 (3.2)</td>
<td>9 (10.3)</td>
<td>*4.62 (0.03)</td>
</tr>
<tr>
<td>Chronic care:</td>
<td>22 (10.2)</td>
<td>11 (8.7)</td>
<td>11 (12.6)</td>
<td>*0.85 (0.36)</td>
</tr>
<tr>
<td>Health job:</td>
<td>30 (14.1)</td>
<td>18 (14.3)</td>
<td>12 (13.8)</td>
<td>*0.01 (0.92)</td>
</tr>
<tr>
<td>Weight-watching programme</td>
<td>7 (3.3)</td>
<td>3 (2.4)</td>
<td>4 (4.6)</td>
<td>*0.890 (0.37)</td>
</tr>
</tbody>
</table>

Self - reported:

Dental attendance:

<table>
<thead>
<tr>
<th>Variable (Continuous)</th>
<th>Overall</th>
<th>Underweight/Healthy weight</th>
<th>Overweight/Obese</th>
<th>Test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 213</td>
<td>n = 126 (59.2%)</td>
<td>n = 87 (40.8%)</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>46.82 (15.85), 47.00</td>
<td>45.28 (15.81), 44.50</td>
<td>49.05 (15.74), 49.00</td>
<td>*2.934 (0.088)</td>
</tr>
<tr>
<td>BMI continuous value (Kg/m²)</td>
<td>24.61(3.81), 24.26</td>
<td>23.13 (3.24), 22.49</td>
<td>28.20 (3.26), 27.24</td>
<td>*338.84 (0.000)</td>
</tr>
<tr>
<td>Dental anxiety level (%)</td>
<td>37.83 (33.43), 30.00</td>
<td>35.51 (33.58), 24.50</td>
<td>41.20 (33.12), 42.00</td>
<td>*4870.00 (0.166)</td>
</tr>
<tr>
<td>Perceived overall health (%)</td>
<td>93.14 (9.86), 98.00</td>
<td>92.82 (9.93), 98.00</td>
<td>92.16 (10.48), 96.00</td>
<td>*5048.00 (0.310)</td>
</tr>
<tr>
<td>Perceived oral health (%)</td>
<td>92.51(11.82), 98.00</td>
<td>93.54 (10.12), 50.00</td>
<td>91.01 (15.85), 50.00</td>
<td>*4787.00 (0.101)</td>
</tr>
</tbody>
</table>

Notes: Median, Mean (SD), Mann - Whitney

Perceptions of health risk awareness

Only a minority of participants identified risks to periodontal disease (49.8%), carcinoma (66.2%) and the risks to both of the above to oral and general health (41.8%). Overweight or obese participants recognized these risk factors slightly more, with carcinoma (χ² = 3.566; p = 0.059) and hypertension (χ² = 3.382; p = 0.066) showing statistical significance (Table 3, Fig. 4).
conflicted however, with a long-term epidemiological survey that identified greater BMI awareness. In the same survey, Johnson and co-workers identified three quarters of the population to have “heard of” BMI, although substantial self under estimation existed between the true BMI measured clinically, and the perceived normalised BMI for the very overweight or obese participants, and is in line with other studies [65]. The majority of participants’ awareness of overweight related health risks of periodontitis, carcinoma and overall diseases, was low. This highlights the importance of the provision of additional public health education to improve patients’ understanding of oral and general health risks in respect of BMI thresholds.

A majority of the participating cohort also displayed generally high awareness of personal body weight profiles, contemplated changing current weight status and appreciated lifestyle factors contributing to weight gain. These findings indicate the presence of the right attitude necessary to affect positive healthy lifestyle changes. Contrastingly, other research reported low lifestyle factor recognition particularly with carcinoma [66]. Other leading diseases such as cardiovascular disease and diabetes, have benefited from wide media exposure and similar media scrutiny geared towards overweight or obese individuals. This will also benefit the wider public by elevating their awareness of the consequences of unhealthy diet or lifestyle.

Table 2

<table>
<thead>
<tr>
<th>Summary Outcomes</th>
<th>Overall n (%)</th>
<th>Male n (%)</th>
<th>Female n (%)</th>
<th>Under/Healthy weight n (%)</th>
<th>Overweight/Obese n (%)</th>
<th>Status of Change n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diet/OH advice history:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>113 (53.1)</td>
<td>46 (51.7)</td>
<td>67 (54.0)</td>
<td>68 (54.0)</td>
<td>45 (51.7)</td>
<td>72 (52.6)</td>
</tr>
<tr>
<td>Can’t remember</td>
<td>25 (10.8)</td>
<td>8 (9.0)</td>
<td>15 (12.1)</td>
<td>15 (11.9)</td>
<td>8 (9.2)</td>
<td>13 (9.5)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>77 (36.2)</td>
<td>35 (39.3)</td>
<td>42 (33.9)</td>
<td>43 (34.1)</td>
<td>34 (39.1)</td>
<td>52 (38.0)</td>
</tr>
<tr>
<td>Test Score (P - Value)</td>
<td>0.37 (0.580)</td>
<td></td>
<td></td>
<td></td>
<td>0.31 (0.63)</td>
<td>0.23 (0.63)</td>
</tr>
<tr>
<td>χ² Trend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Weight information:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>12 (5.6)</td>
<td>5 (5.6)</td>
<td>7 (5.6)</td>
<td>8 (6.3)</td>
<td>4 (4.6)</td>
<td>7 (5.1)</td>
</tr>
<tr>
<td>Not mind the least</td>
<td>150 (70.4)</td>
<td>64 (71.9)</td>
<td>86 (69.4)</td>
<td>95 (75.4)</td>
<td>55 (63.2)</td>
<td>97 (70.8)</td>
</tr>
<tr>
<td>Slight uneasy</td>
<td>27 (12.7)</td>
<td>12 (13.5)</td>
<td>15 (12.1)</td>
<td>14 (11.1)</td>
<td>13 (14.9)</td>
<td>19 (13.9)</td>
</tr>
<tr>
<td>Prefer if not offered</td>
<td>24 (11.3)</td>
<td>8 (9.0)</td>
<td>16 (12.9)</td>
<td>9 (7.1)</td>
<td>15 (17.2)</td>
<td>14 (10.2)</td>
</tr>
<tr>
<td>Test Score (P - Value)</td>
<td>0.39 (0.55)</td>
<td></td>
<td></td>
<td></td>
<td>6.23 (0.01)</td>
<td>0.01 (0.92)</td>
</tr>
<tr>
<td>χ² Trend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Body mass assessment:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very comfortable</td>
<td>140 (65.7)</td>
<td>66 (74.2)</td>
<td>74 (59.7)</td>
<td>90 (71.4)</td>
<td>50 (57.5)</td>
<td>83 (60.6)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>12 (5.6)</td>
<td>0 (0.0)</td>
<td>12 (9.7)</td>
<td>7 (5.6)</td>
<td>5 (5.7)</td>
<td>7 (5.1)</td>
</tr>
<tr>
<td>Slight discomfort</td>
<td>50 (23.5)</td>
<td>21 (23.6)</td>
<td>29 (23.4)</td>
<td>27 (21.4)</td>
<td>23 (26.4)</td>
<td>38 (27.7)</td>
</tr>
<tr>
<td>Very uncomfortable</td>
<td>11 (5.2)</td>
<td>2 (2.2)</td>
<td>9 (7.3)</td>
<td>2 (1.6)</td>
<td>9 (10.3)</td>
<td>9 (6.6)</td>
</tr>
<tr>
<td>Test Score (P - Value)</td>
<td>3.05 (0.08)</td>
<td></td>
<td></td>
<td></td>
<td>6.84 (0.01)</td>
<td>5.72 (0.02)</td>
</tr>
<tr>
<td>χ² Trend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. BMI screening impact:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>43 (20.2)</td>
<td>15 (16.9)</td>
<td>28 (22.6)</td>
<td>25 (19.8)</td>
<td>18 (20.7)</td>
<td>29 (21.2)</td>
</tr>
<tr>
<td>Agree</td>
<td>72 (33.8)</td>
<td>29 (32.6)</td>
<td>43 (34.7)</td>
<td>45 (35.7)</td>
<td>27 (31.1)</td>
<td>48 (35.0)</td>
</tr>
<tr>
<td>Neither</td>
<td>73 (34.3)</td>
<td>36 (40.4)</td>
<td>37 (29.8)</td>
<td>43 (34.1)</td>
<td>30 (34.5)</td>
<td>45 (32.8)</td>
</tr>
<tr>
<td>Disagree</td>
<td>21 (9.9)</td>
<td>8 (9.0)</td>
<td>13 (10.5)</td>
<td>11 (8.7)</td>
<td>10 (11.5)</td>
<td>13 (9.5)</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>4 (1.9)</td>
<td>1 (1.1)</td>
<td>3 (2.4)</td>
<td>2 (1.6)</td>
<td>2 (2.3)</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Test Score (P - Value)</td>
<td>0.49 (0.49)</td>
<td></td>
<td></td>
<td></td>
<td>0.28 (0.60)</td>
<td>0.78 (0.38)</td>
</tr>
<tr>
<td>χ² Trend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. All health professionals advice:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>69 (32.4)</td>
<td>29 (32.6)</td>
<td>40 (32.3)</td>
<td>41 (32.5)</td>
<td>28 (32.2)</td>
<td>49 (35.8)</td>
</tr>
<tr>
<td>Agree</td>
<td>79 (37.1)</td>
<td>32 (36.0)</td>
<td>47 (37.9)</td>
<td>51 (40.5)</td>
<td>28 (32.2)</td>
<td>51 (37.2)</td>
</tr>
<tr>
<td>Neither/don’t know</td>
<td>46 (21.5)</td>
<td>21 (23.5)</td>
<td>25 (20.1)</td>
<td>25 (19.9)</td>
<td>21 (24.1)</td>
<td>23 (16.8)</td>
</tr>
<tr>
<td>Disagree</td>
<td>17 (8.0)</td>
<td>0 (0.0)</td>
<td>2 (1.6)</td>
<td>1 (0.8)</td>
<td>1 (1.1)</td>
<td>12 (8.8)</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2 (0.9)</td>
<td>7 (7.9)</td>
<td>10 (8.1)</td>
<td>8 (6.3)</td>
<td>9 (10.3)</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Test Score (P - Value)</td>
<td>0.00 (0.96)</td>
<td></td>
<td></td>
<td></td>
<td>1.21 (0.27)</td>
<td>0.69 (0.41)</td>
</tr>
<tr>
<td>χ² Trend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 3. Under/Healthy Weight vs. Overweight/Obese Positive Perceptions of Dentists’ Role in Dispensing Health Messages.
In addition, this study cohort portrayed healthy patient – dental team rapport since the majority of them displayed high perceived importance of overall and oral health values, a history of dental dietary advice, frequent attendance and low dental anxiety. Congruent dental team and patient relations are beneficial when sensitive topics such as body weight are presented. Any expansion of overlapping dietary preventative roles between oral health and excess weight (for example sugars, acids, healthy alternatives), can facilitate patient understanding and positively influence healthy lifestyle choices. Sugar sweetened beverage discussions is another potential avenue to harness when attempting to engage patients and make them realise the relevance of an active dental professional role, although it is beyond the scope of this study.

The concept of dental screening of medical conditions is not novel, and has been shown to be effective in smoking counselling, oral carcinoma, cardiovascular disease and dysglycæmia screenings to name but a few. Prior to rolling out screening programmes in dental clinics, smokers were similarly significantly unaware of the oral health effects of passive smoking, resisting behaviour change versus status-of-change individuals [55]. A recent impetus for diabetes screening has identified patients with high-risk of moderate to severe periodontitis [58,67]. Integration with health care professionals can optimise overall disease prevention, accelerate diagnosis and limit pathogenesis [59]. Interdisciplinary collaborations also enhance a consistent team approach that benefits long-term behavioural or lifestyle changes that are necessary for healthy weight management to succeed. However, in one study dental professionals perceived significant discomfort in measuring BMI [68]. Other barriers such as current knowledge, training, client resistance and time, are also relevant factors to be considered when introducing healthy weight promotion in a dental environment [69]. As with the development of tobacco use cessation advice suitable for various dental settings, the cost-effectiveness of different approaches pertaining to advice on other lifestyle factors including healthy weight management is merited as interventions are developed and efficacy has been demonstrated.

Limitations to this study might be that the results do not fully reflect the public since the overweight or obese population in the study cohort was lower than the national average of 61%. Participants also attended private clinics which only constitutes 27% of the general population [6,10]. Sample dental visits were also more regular when compared with available public figures (83.5% bi-annual or annual attendance versus 71% among the population) [35]. It is clear that regular dental visits created opportunities to build up patient rapport as well as to monitor or to give advice on BMI status. The health values among the study cohort were greater than the general population (81% general health and 70% oral health) and dental anxiety relatively low. Similarly, sample population levels of extreme anxiety were low (10%). Overweight or obese individuals however, were anxious and frequented less. Literature also connects obesity with dental anxiety and avoidance but together with low perceived general health values [27,29].

Furthermore, this study did not consider the perceptions of obese participants as a single entity. The participant mean BMI was overweight rather than obese and overweight and obese results were combined into a single category during data analysis. The sixteen participants who declined BMI screening and instead chose to self-report BMI, might have affected study results. Considering the substantially greater health needs of the population, greater obesity incidence, lower body weight profiles/lifestyle factor awareness and slightly lower health values, might render the public less health conscious and more resistant when being approached by dental practitioners [10,70,71]. Future research is indicated to understand these aspects. Interpretation of the study results might have been impacted by the cross-sectional design, potential response bias with more favourable responses to please participant dental teams and self-reporting of medical and dental histories. This study did not consider perception changes that might occur over time and the duration of the patient - dentist relationship.

Conclusions

Patients with low health needs, high health values, regular dental visits, healthy dental team rapport and appreciation of lifestyle contributors, were most receptive to healthy weight advice. Irrespective of their current health needs, being aware of and receptive to evidence based health advice would be beneficial to the general health and the continuing well-being of the individuals. However, even amongst the above cohort, general awareness of oral and overall disease risks related to excess weight (defined by BMI thresholds), was lacking. There is room for improvement in this aspect of public health delivery. Healthy weight messages have been shown to be practicable in private dental settings and dental professionals should consider becoming actively involved in routine healthy weight promotion, including BMI screening.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Perceptions of Overweight/Obese Related Health Risks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risks</td>
<td>Overall</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Diabetes</td>
<td>198 (93.95)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>194 (91.68)</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>190 (89.20)</td>
</tr>
<tr>
<td>Periodontitis</td>
<td>106 (49.77)</td>
</tr>
<tr>
<td>All</td>
<td>194 (93.95)</td>
</tr>
<tr>
<td>Don't know</td>
<td>7 (3.3)</td>
</tr>
</tbody>
</table>

Fig. 4. Comparative Awareness of Diseases Associated with Excess Weight.
to maximize the benefits to the population at large.

Dental settings present an excellent opportunity for dental professionals to collaborate with other health care professionals and act as part of a global health initiative - to better support overall health monitoring and advice; a common risk factor strategy endorsed by the WHO, to extract maximum overall health benefits to the population at large.

Conflicts of interest

There was no conflict of interest at any stage during the study associated with any of the authors.

Acknowledgements

This work was undertaken at the University College London Hospital (UCLH) at UCL University College London (UCL) who received a portion of funding from the Department of Health National Institute for Health Research Biomedical Research Centre funding scheme. The study was carried out in collaboration with UCL Eastman Dental Institute, Eastman Clinical Investigation Centre and four private dental clinics.

References

T. Wijey, et al.  

A.S. Anderson, Sugars and health  


