

Prescription Patterns of Analgesics for Oral Conditions in India - Analysis of Large Medical Audit Data of Outpatients in India's Private Healthcare Sector

Abstract

Background: Analgesic use needs to be regulated due to its adverse effects. This study aimed to analyse the change in prescription rates and patterns of the analgesics prescribed for various oral conditions and to analyse their trends across different age groups and gender to promote rational prescription of drugs and eventually influence regulatory policies. **Methods:** Secondary analysis was conducted on medical audit data collected from the private health sector in India. The prescription rate per 1000 persons per year was calculated from May 2013 to April 2016 using the mean projected population (PP) of India. Cross-tabulations were conducted to analyse the prescription rate and their changes across different age groups, gender and oral conditions. **Findings:** The mean analgesic prescription rate was highest among the 20-40 age group, and the highest increase was noted in 'non-steroidal anti-inflammatory drug (NSAID) combinations' (3.56 per 1000 persons per year) from May 2013 to April 2016. The 'NSAID combinations' group was also the most prescribed medication across all the oral conditions, with 'diseases of hard tissues' having the highest prescription rate (41.4 and 45.6 per 1000 persons per year, respectively, for 2013–14 and 2015–16). **Interpretation:** The results indicate an overall increase in the analgesic prescription rate, especially 'NSAID combinations' for each dental disease and age group, a finding that is hard to explain. Due to the lack of prescription guidelines in India, it is difficult to assess whether these analgesics were prescribed rationally or not.

Keywords: Analgesic prescription, dental ailments, India, oral conditions, prescription rates

Introduction

Accessibility to healthcare resources remains a major challenge globally.^[1] The resources in this world are only limited, and there are costs involved in utilising any of them. Medicines are an essential component of health care that has been misused, especially in lower–middle-income countries, due to limited monitoring and evaluation practices. The cost of these medications has laid an enormous burden on the population and the health systems overall, thereby affecting the countries' economies.^[2] The potential adverse clinical effects of these drugs are also devastating.^[3]

Rational prescription of drugs is necessary to promote the efficient use of resources. The drugs should ideally be prescribed to treat or provide relief; they could have serious adverse effects if misused or abused. It is estimated that 50% of medicines

worldwide are prescribed, dispensed or sold inappropriately.^[2] Medication prescribing is a complex process that involves careful consideration of dose, route or drug formulations. Dentists prescribe medicines regularly, such as antibiotics for infections or analgesics for pain relief.^[4] The prescription of analgesics by dentists is common globally.

Diagnosis and treatment of the underlying cause should be considered before prescribing any analgesic in dentistry. Oral pain can have various origins such as pulpal, periodontal, a combination of pulpal and periodontal, trauma or idiopathic.^[5] The first line of drugs for dental pain is non-opioid analgesics, while opioid analgesics can be considered only for moderate-to-severe pain.^[6]

The global disease burden reports a high prevalence of pain and pain-related diseases.^[7] Similarly, the prevalence of oral

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pain has increased in various regions of the world.^[8] Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed by dentists for pain relief. However, long-term use of NSAIDs may increase the risk of Gastro-intestinal (GI) toxicity, cardiovascular events and nephrotoxicity.^[3]

Several areas of the world have reported varied patterns of drug practices without any standard regulations. Hence, it is crucial to examine the prescription rates and patterns to monitor the use of drugs and adapt the policy to the population's safety.^[2] Since no previous study has explored the prescription rates and patterns of analgesic drugs prescribed for oral conditions in India, this study addresses this gap in the literature by analysing the change in prescription rates and patterns of analgesics that are prescribed for various oral conditions in different age groups and gender among outpatients in India's private healthcare sector from May 2013 to April 2016. In addition, this study also analysed the trends of these analgesic prescriptions.

Methods

The prescription rates and patterns for the analgesics prescribed for dental conditions were examined based on the medical audit data (May 2013 to April 2016) collected by Quintiles Intercontinental Medical Statistics (now IQVIA). IQVIA is a profit organisation that collects medical audit data from different countries to empower and improve the healthcare systems.^[9] The medical audit data representing the stockist panels across India were examined. The panels included 4,600 clinical professionals exclusively from the private health sector through multistage stratified sampling. The data were collected

from 23 metropolitan areas (population >1 million), 50 class 1 towns (population >100,000 and <1 million) and 78 class 1A towns (population <100,000) spanning over 18 states of India. It was then extrapolated to 100% of the population using projection figures that consider the entire range of stockists as a base to reflect the private prescription practices across the whole country. This entire range of stockists is updated regularly to capture the real trend of the pharmaceutical industry.

The data set was panel data of outpatients utilising private healthcare services, and these were recorded at three different time points: May 2013–April 2014, May 2014–April 2015 and May 2015–April 2016, respectively. The data set was filtered for the prescriptions that were prescribed for dental conditions. The data were coded for 75 distinct oral diagnoses and 1,238 drugs along with their combinations as solids or liquids. These oral diseases were classified based on WHO's International Classification of Diseases^[10] (ICD-11), while the drugs were classified according to the WHO's Anatomical Therapeutic Classification^[11] (ATC) 2020—level 1. These categories were modified to broad and generic categories for easier interpretation and understanding, as shown in Table 1. The other modifications done are reported in Appendix Tables 1-3. The diagnosis and drugs not included in that classification or unidentified were coded as 'Not defined' and 'Others', respectively. The data were also reported by age and gender. There were no missing data in the data set. Drugs other than analgesics and age groups, which were unspecified, were dropped from the analyses. The conditions that could not be categorised into the World

Table 1: Recoded ICD-11 categories with detailed conditions and diagnosis

ICD-11 categories	Recoded categories	Dental conditions and diagnosis
DA01 + DA02 + DA03 + DA04	Disorders of oral mucosa and pre-malignant lesions	Leukoplakia cheek/face + oral submucous fibrosis + glossitis + tongue bite + parotitis/parotiditis
DA07	Developmental disorders of tooth	Eruption of tooth + loss of teeth + deciduous tooth + teething syndrome + impacted teeth + dental fluorosis
DA08 + DA0A	Diseases of hard tissues of teeth	Abrasion of teeth + caries pulpal exposure + caries teeth + dental calculus + dental caries + dental scaling + deposits [accretions] on teeth + discoloration tooth + erosion of teeth + excessive attrition of teeth + filling tooth + sensitive dentine + staining of teeth + tooth cavity + bridging of teeth + mobility tooth + retained dental root + root stump + tooth extraction + toothache
DA09	Diseases of pulp or periapical tissues	Abscess dental + abscess dentoalveolar + abscess pulpal + acute pulpitis + apical periodontitis + chronic apical periodontitis + chronic pulpitis + nonvital tooth + periapical abscess + periapical abscess with sinus + polyp pulpal + pulpitis + root canal surgery
DA0B + DA0C + DA0D	Gingival and Periodontal diseases	Acute gingivitis + chronic gingivitis + gingivitis + abscess periodontal + acute pericoronitis + acute periodontitis + chronic periodontitis + periodontitis + periodontosis + perio pocket + exposure root + gingival recession + polyp gum + ulcer gum/gingiva
DA0E	Dentofacial anomalies	Crowding of tooth + wisdom tooth
DA0F + LA30 + LA31 + NA02 + NA03 + Other	Other	Glossodynia + anodontia + microdontia + oligodontia + ankyloglossia + bleeding gum + fracture crown + fracture dentine + fracture of tooth + dislocation of tooth + halitosis

Health Organisation (WHO) ICD-11 classification were grouped as ‘Other’ and included in the analyses.

The following formula was used to calculate the prescription rate per 1000 persons per year (PRPY₁₀₀₀):

$$PRPY_{1000} = \left(\frac{n}{P}\right) * \frac{1000}{t}$$

Where

PRPY₁₀₀₀ = prescription rate per 1000 persons per year

n = number of prescriptions

P = PP for that year

t = number of years

However, the analysis in this research used the mean PP to calculate the PRPY₁₀₀₀ to avoid bias, as IQVIA/IMS (Intercontinental Medical Statistics) data were recorded from May 2013 to April 2016.

$$\text{Mean PP} = \frac{[PP(\text{Year 1}) + PP(\text{Year 2})]}{2}$$

The PP was taken from an official report issued by the National Commission on Population, which has PP figures for India and States from 2011 to 2036.^[12] All the statistical analyses were conducted using the STATA/MP 17 for Mac by StataCorp LLC, USA.

Results

Figure 1 shows the overall mean number of analgesic prescriptions for dental conditions. Analgesic prescriptions for dental conditions steadily increased in both males and females in different age groups and every year from May 2013 to April 2016 among outpatients in India’s private healthcare sector. The (mean) prescriptions in each age group were almost similar in both ‘males’ and ‘females’. However, the highest (mean) prescriptions were seen in the 20-49 age group followed by the 50-65 age group. A summary of distribution of prescriptions of different years 13-14, 14-15 and 15-16 is given in Appendix Table 4.

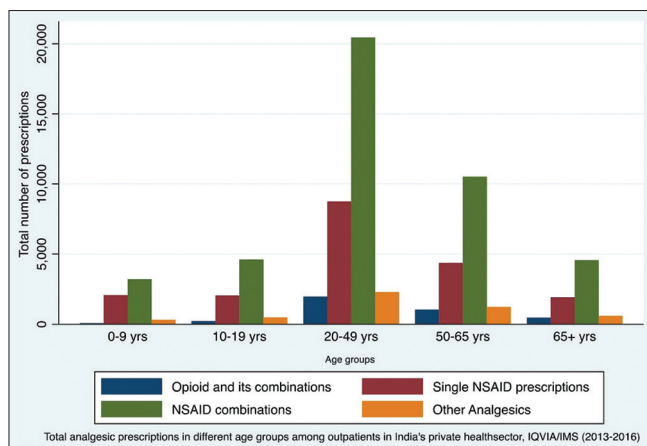


Figure 1: Distribution of Various Analgesic prescriptions in different age group

The prescriptions with ‘NSAID combinations’ were highest, followed by ‘single NSAID prescriptions’ in each age group and every ‘dental condition’ as shown in Figure 2. For the year 2015 - 2016, the distribution of NSAID combination is reported in Appendix Table 5. These (mean) ‘NSAID combinations’ prescriptions were highest in the 20-49 age group and ‘diseases of hard tissues of teeth’ from May 2013 to April 2016 [Figure 2].

On analysing these ‘NSAID combinations’ in detail, it was found that the ‘ibuprofen combination’ was the highest prescribed drug (18.51%), followed by the ‘aceclofenac–paracetamol combination’ (13.03%), as seen in Table 2. A major percentage of the combinations mentioned above were prescribed just for ‘diseases of hard tissues of teeth’ (58.47% and 54.83, respectively) [Table 2]. Similarly, ‘paracetamol–aceclofenac–serratiopeptidase’ (57.10%), ‘diclofenac combinations’ (58.53%) and ‘other aceclofenac combinations’ (59.98%) were the other drugs that were prescribed majorly for ‘diseases of hard tissues of teeth’.

The PRPP₁₀₀₀ was found to be highest in ‘diseases of hard tissues of teeth’ (41.4 and 45.6 per 1000 persons per year, respectively, for 2013–14 and 2015–16) as shown in Appendix Table 6. It is followed by ‘diseases of pulp and periapical tissues’, where PRPP₁₀₀₀ was 21.2 and 21.9 per 1000 persons per year, respectively, for the same time period. The absolute change in prescription rate was highest (4.17 per 1000 persons per year) for ‘diseases of hard tissues of teeth’, which is more than half of the total change of PRPP₁₀₀₀ of analgesics in total.

On cross-tabulating various analgesic groups with different dental conditions, the PRPP₁₀₀₀ was found to be highest for ‘diseases of hard tissues of teeth’ (41.4 per 1000 persons per year), followed by ‘diseases of pulp or periapical tissues’ (21.2 per 1000 persons per year) and ‘gingival or periodontal diseases’ (12.1 per 1000 persons per year) of which the considerable number of prescriptions is ‘NSAID combinations’ for each of those dental conditions for

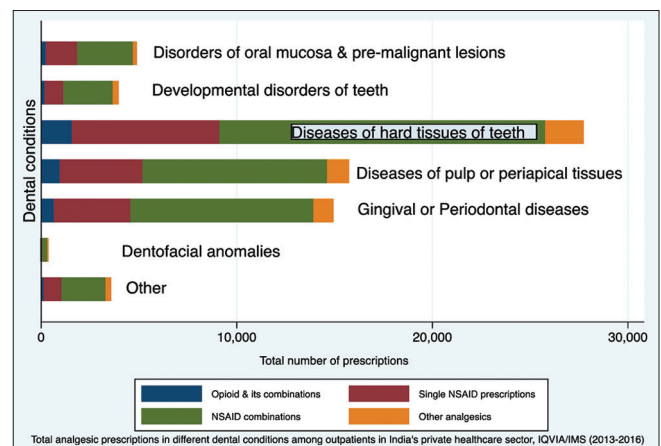


Figure 2: Distribution of Various Analgesic prescriptions in different dental conditions

Table 2: Distribution of 'NSAIDs combinations' in different dental conditions for 2015–2016

Dental diseases	Disorders of oral mucosa and pre-malignant lesions (%)	Developmental disorders of tooth (%)	Diseases of hard tissues of teeth (%)	Diseases of pulp or periapical tissues (%)	Gingival and periodontal diseases (%)	Dentofacial anomalies (%)	Other (%)	Total (%)	Proportion prescriptions (%)
Nimesulide + paracetamol	0.27	1.49	34.10	38.19	24.42	0.10	1.43	100	5.75
Paracetamol + aceclofenac + serratiopeptidase	0.92	3.31	57.10	21.14	15.32	0.11	2.10	100	8.18
Diclofenac combinations	1.51	2.67	58.53	20.09	14.54	0.33	2.33	100	4.55
Ibuprofen combinations	0.89	3.02	58.47	25.71	10.05	0.35	1.52	100	18.51
Diclofenac + paracetamol + serratiopeptidase	0.55	3.69	47.43	25.82	19.62	0.02	2.89	100	6.06
Tramadol and its combinations	1.39	3.88	48.07	28.15	16.18	0.06	2.27	100	1.17
Diclofenac + paracetamol	0.31	2.77	54.91	26.98	13.36	0.16	1.51	100	9.47
Aceclofenac + paracetamol	0.57	2.46	54.83	24.96	15.44	0.03	1.72	100	13.03
Nimesulide combinations	1.63	2.82	39.56	32.32	21.57	0.03	2.07	100	3.35
Other aceclofenac combinations	0.98	2.48	59.98	15.78	16.44	0.03	4.30	100	1.75
Chlorzoxazone + diclofenac	0.72	5.48	46.25	26.18	20.41	0	0.96	100	1.35

2013–2014 as seen in Table 3. For year 2015-16, refer to Appendix Table 7.

Discussion

In dentistry, rational prescribing of analgesics is a complex process that includes anticipating the pain intensity to relieve as per clinical indications while considering the appropriate dose, mode of administration and cost-effectiveness and risk–benefit analysis. Prescription rates and patterns are part of drug monitoring studies that act as a tool to assess and compare prescriptions with current recommendations or guidelines to ascertain their rationality. To the best of our knowledge, this is the first study that has analysed the prescription rates and patterns of analgesics prescribed for dental conditions among outpatients in India's private healthcare sector from a large nationally representative data set.

Our results have shown an overall increase in the PRPP₁₀₀₀ of analgesics for dental conditions among outpatients in India's private healthcare sector over the three years (May 2013–April 2016) with an absolute increase of 6.14 per 1000 persons per year. 'NSAID combinations' were the most common prescriptions and had an absolute increase of 3.56 per 1000 persons per year from May 2013 to April 2016. With the continuous rise in PRPP₁₀₀₀, checking the rational prescription of analgesics is essential.

There are no published guidelines on prescribing analgesics for dental diseases in India. Irrational prescription of drugs can lead to a waste of resources, thereby hampering the goal of universal health coverage and sustainability due to considerable cost implications.^[13] On comparing the results from this study to the various global prescription guidelines, it is evident that there has been a deviation from the recommendations suggested by the American Dental Association (ADA), Centers for disease control and prevention (CDC) and British National Formulary (BNF). According to these guidelines, 'NSAID combinations' are only recommended if the first-line drug 'single NSAID prescriptions' were ineffective. Moreover, they were only recommended for specific conditions or procedures. Apart from that, inappropriate use of various analgesics can lead to renal diseases, cardiac diseases and GI disorders.^[3]

Even though some evidence suggests using the NSAID combinations for treating acute pain after third molar extractions, there is no evidence suggesting the same for any other dental conditions. Furthermore, there are no plausible explanations to support the prescription of 'NSAID combinations' over 'single NSAID prescriptions' for mild-to-moderate dental pain. Even if pain intensity was the reason behind prescribing 'NSAID combinations', no published recommendations or guidelines support that these 'NSAID combinations' are to be given for each dental condition and each age group. They were prescribed in the highest proportion despite the knowledge that the intensity

Table 3: Prescription rate of analgesics cross-tabulating various dental conditions for 2013–2014

Dental diseases	Opioid and opioid combinations (millions)	Single NSAID Prescriptions (millions)	NSAID combinations (millions)	Other analgesics (millions)	Total (millions)	%	Prescription rate*
Disorders of oral mucosa and pre-malignant lesions	0.02	0.23	0.60	0.02	0.86	0.87	0.69
Developmental disorders of teeth	0.03	0.33	2.14	0.28	2.78	2.79	2.22
Diseases of hard tissues of teeth	0.49	7.80	38.81	4.74	51.84	52.07	41.46
Diseases of pulp or periapical tissues	0.38	2.92	20.10	3.22	26.62	26.74	21.29
Gingival and periodontal diseases	0.15	2.27	11.32	1.42	15.17	15.24	12.13
Dentofacial anomalies	0.0001	0.01	0.08	0.01	0.09	0.09	0.07
Other	0.02	0.46	1.47	0.25	2.20	2.21	1.76
Grand total (millions)	1.09	14.02	74.52	9.94	99.57	100	79.62
Projected population (millions)	2013		2014		Mean (2013-14)		
	1,242.61		1,258.48		1,250.55		

*Per 1000 persons per year

and nature of pain can be different for various dental ailments and differ from person to person and age.^[5] In addition, the prescribed combinations included drugs such as ‘serratiopeptidase’ (anti-inflammatory and fibrinolytic agent) in a high percentage of prescriptions (8.18%), as shown in Table 1. It was prescribed in various dental conditions such as ‘developmental disorders of teeth’, ‘disorders of hard tissues of teeth’ and ‘gingival or periodontal diseases’ for which again there are no guidelines or recommendations. Interestingly, ‘opioid and opioid combinations’ appear to be used cautiously as the use was limited in different age groups and dental conditions.

Prescription rates are good tools to assess the prescription patterns and rational use of drugs. The analyses from this study suggest that the analgesic prescription rates in India increased (79.62 to 85.7 per 1000 persons per year) from May 2013 to April 2016. Unfortunately, no previous research has analysed analgesic prescription rates in India at the national level. It is difficult to directly compare this with other studies as there are few studies that quantitatively assess analgesic prescriptions at the national level in India. However, some studies analysed the prescribing patterns for analgesics that reported a high number of drugs per prescription and showed a greater likelihood of prescribing additional medicines by doctors and dentists, particularly in the private sector.^[14] An Indian study reported using several drug combinations, including several ‘NSAIDs’ and ‘serratiopeptidase combinations’ available in the market, which were illegal as they were not approved by the Drugs Controller General, India.^[15] The proportion of sales of these unapproved NSAID combinations was 28% in India for 2011–2012.^[16] In comparison with studies from other countries, it can be noted that there was a 32% increase in the prescription of analgesics in Australia from 2001 to 2012.^[17] Overall, there was an increase in analgesic and antiphlogistic prescriptions in Germany by 10% from 2012 to 2016, but a decrease of 3.4% in dental analgesic and antiphlogistic prescriptions in that same time period.^[18]

There might be a lack of solid evidence to conclude the irrational prescription of analgesics for dental conditions among outpatients in India’s private health sector. However, it can be concluded there is insufficient evidence to support the ongoing prescription pattern of analgesics for various dental conditions among outpatients in India’s private healthcare sector. Considering that the government emphasises standard treatment guidelines, the lack of national or local recommendations or guidelines is a major limitation for implementing the ‘Ayushman Bharat’ (Universal Health Coverage) Scheme in India.^[19]

Since there are no national data available to provide an overview of trends and patterns of oral diseases or prescriptions, it should be a priority to establish common surveillance and monitoring systems to collect health data. A way to do that is to create a central record system that will capture the data from general and oral health, public and private health sectors and rural and urban areas. Moreover, these guidelines can be one of the steps to integrate the oral and general healthcare systems by providing them with critical knowledge to prescribe standard drugs for common dental ailments, thereby increasing the range of health services.^[13]

A standard treatment guideline can establish integrated care pathways for common dental ailments.^[20] Similarly, pain with different intensities for various common dental conditions can be drawn into different care pathways with the help of the best available evidence. This will eventually allow any health professional to address at least the common dental ailments in the best possible way. However, this will also require a change in governance so that various health professionals can utilise these common care pathways.

As this is the first research for analysing the prescription rates of analgesics from a large nationally representative data set, further research on the latest data will allow exploring the current trends of analgesic prescriptions in dental conditions in India. Moreover, the data should

be captured from both the public and private healthcare sectors, along with socioeconomic status and rural/urban status, to analyse any health inequalities. Future research can also explore the possible reasons behind the current prescription rates and patterns.

Conclusion

There has been an overall increase in the PRPY₁₀₀₀ of analgesics for dental conditions among outpatients in India's private healthcare sector from May 2013 to April 2016. Since there are barely any national guidelines or recommendations, it is difficult to say that these analgesics were prescribed judiciously. Moreover, combination analgesics were prescribed more for each dental disease and each age group, which is hard to explain. There is a need for standard treatment guidelines so that drugs can be prescribed rationally for various oral conditions through Ayushman Bharat Scheme (universal health coverage) and oral health can be integrated robustly as part of this universal coverage.

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Conflicts of interest

There are no conflicts of interest.

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Appendix

Table 1: Recoding of ATC Classified Drugs

ATC Drug Categories	Drugs	Recoded Analgesic Categories
N02A1+N02A2+N02BL+N02BN+N02A3+N02BK+N02BM+M01AP	Narcotic Prep (Opioid) + Tapentadol + Tramadol (Liquid) + Tramadol (Injectable) + [Tapentadol + Paracetamol]+[Paracetamol + Tramadol]+ Tramadol Comb. + [Aceclo + Para + Tramadol]	Opioid and Opioid combinations
N02B5+N0B6+N0B7+N0B8+M01A1+M01A3+M01A4+M01A5+M01AX+M01A6+M01A7+M01A9+M01AA+M01AI+M01AM+M01AY+M02A1	Paracetamol (Solid) + Paracetamol (Liquid) + Paracetamol (Injectable) + Paracetamol (Other) Diclofenac Oral + Diclofenac Injectables Ibuprofen Solids + Ibuprofen liquids Aceclofenac Piroxicam Nimesulide Indomethacin Naproxen Etodolac Lornoxicam Etoricoxib Nsaids	Single NSAID prescriptions
N02BA+N02C3+M01A8+M01AE+M01AF+M01AG+M01AH+M01AI+M01AJ+M01AK+M01AL+M01AN+M01AS+M01AT+M01AU+M01AV+M01AZ+M03B1+M03B3+M03B4+M03B5+M03B6 +	[Flupirtine + Paracetamol]+ [Domperidone + Naproxen]+ [Lornoxicam + Paracetamol]+ [Nime. + Paracet. Solids]+ [Nime. + Paracet. Liquids]+ [Para + Aceclo + Serrapeptidase]+ Diclo.Comb.Oral Solids + [Aceclofenac + Serrapeptase]+ [Ibupro.Comb. Oral Solids]+ [Ibupro.Comb. Oral Liquids]+ [Diclofenac + Paracetamol + Serrapeptidase]+ [Diclofenac + Paracetamol]+ [Paracetamol + Etodolac]+ [Aceclofenac + Paracetamol]+ [Nimesulide Comb. Oral Solids]+ Other Aceclofenac Comb. + [Diclofenac + Thiocolchicosi]+ [Paracetamol + Chlorzoxazone]+ [Chlorzoxazone + Ibuprofen]+ [Chlorzoxazone + Diclofenac]+ [Chlorzoxazone + Nimesulide]+ [Chlorzoxazone + Aceclofenac]+ [Thiocolchico. + Aceclofe.]+	NSAID combinations
M03B7+M03B8+M03B9+M03BB+M03BC+M03BD+M03BG+M03BL+M03BO+A03C3+A03C5+A03C8	[Paracetamol + Aceclofenac + Thiocolch]+ [Tizanidine + Ibuprofen Comb.] + [Tizanidine + Diclofenac]+ [Tizanidine + Nimesulide]+	

Contd...

Table 1: Contd...

ATC Drug Categories	Drugs	Recoded Analgesic_var Categories
N02BG+N02BP+N02 BR+N02C8+N02CD+ M01A2	[Tizanidine + Aceclofenac]+	Other analgesics (non-NSAID non-opioid)
	[Lornoxicam + Thiocolchicosi]+	
	[Metaxalone + Diclofenac]+	
	[Drotaverine + Aceclofenac]+	
	[Dicyclo + Paracetamol]+	
	[Dicyclo + Mefenamic Acid]	
	Flupirtine + Other Analgesics (Solid) +	
	Other Analgesics (Injectable) +	
	[Ergotamine + Combination]+	
	Otherantimigrane (Solid) + Diacerein	

Table 2: ICD - 11 Classification of Dental Problems

Code	Description of code
DA01	Disorders of oral mucosa
DA02	Miscellaneous specified disorders of lips or oral mucosa
DA03	Diseases of the tongue
DA04	Diseases of salivary glands
DA07	Disorders of tooth development or eruption
DA08	Diseases of hard tissues of teeth
DA09	Diseases of pulp or periapical tissues
DA0A	Certain specified disorders of teeth or supporting structures
DA0B	Gingival diseases
DA0C	Periodontal diseases
DA0D	Certain specified disorders of gingival or edentulous alveolar ridge
DA0E	Dentofacial anomalies
DA0F	Sensory disturbances affecting orofacial complex
LA30	Structural developmental anomalies of teeth and periodontal tissues
LA31	Structural developmental anomalies of mouth or tongue
MD80	Symptoms and signs of orofacial complex
NA02	Fracture of skull and facial bones
NA03	Dislocation or strain or sprain of joints or ligaments of head

Table 3: Recoded Age variable

Recoded age-groups	Original age-categories
0-9 years	0-4 yrs + 5-9yrs
10-19 years	10-19 yrs
20-49 years	20-29yrs + 30-39yrs + 40-49yrs
50-65 years	50-59yrs + 60-65yrs
65+ years	65+ yrs

Table 4: Summary table showing the proportion of prescriptions in different categories

Variable	Categories	May 2013 - April 2014 Prescriptions (in millions)	%	May 2014 - April 2015 Prescriptions (in millions)	%	May 2015 - April 2016 Prescriptions (in millions)	%
Drugs							
1	Opioid and Opioid combinations	1.09	1.10	1.53	1.48	1.31	1.19
2	Single NSAID prescriptions	14.02	14.08	14.14	13.63	15.55	14.14
3	NSAIDs combinations	74.52	74.85	77.05	74.24	80.98	73.64
4	Other analgesics	9.93	9.98	11.06	10.66	12.13	11.03
Dental diseases							
1	Disorders of oral mucosa and pre-malignant lesions	0.86	0.87	0.85	0.82	0.89	0.81
2	Developmental disorders of tooth	2.78	2.79	2.87	2.76	3.14	2.86
3	Diseases of hard tissues of teeth	51.84	52.07	54.52	52.53	58.51	53.20
4	Diseases of pulp or periapical tissues	26.62	26.74	27.28	26.29	28.14	25.59
5	Gingival and Periodontal diseases	15.17	15.23	15.92	15.34	16.72	15.20
6	Dentofacial anomalies	0.09	0.09	0.16	0.15	0.14	0.13
7	Other	2.20	2.21	2.19	2.11	2.43	2.21
Age-group							
1	0-9	5.31	5.33	5.23	5.04	5.27	4.79
2	10-19	7.31	7.34	7.37	7.10	7.58	6.90
3	20-49	59.69	59.95	62.06	59.80	64.58	58.73
4	50-65	20.43	20.51	21.63	20.85	24.02	21.83
5	65+	6.83	6.86	7.48	7.21	8.51	7.74
Gender							
1	Female	50.40	50.62	52.28	50.38	55.44	50.41
2	Male	49.17	49.38	51.50	49.62	54.53	49.59
Metro Class 1 or 1A							
1	Class1 and 1A	44.72	44.92	45.30	43.65	48.47	44.08
2	Metro	54.84	55.08	58.48	56.35	61.50	55.92
Zone							
1	East	10.11	10.15	9.77	9.41	9.95	9.05
2	West	27.79	27.91	30.24	29.14	32.35	29.41
3	North	30.34	30.47	32.84	31.65	35.45	32.24
4	South	31.33	31.47	30.93	29.80	32.22	29.30
Total (<i>n</i>) (millions)		99.57	100	103.78	100	109.97	100
Grand Total (<i>n</i>) (millions)				313.32			

Table 5: Distribution of 'NSAID combinations' in different age-groups 2015-2016

Drugs	0-9 years %	10-19 years %	20-49 years %	50-65 years %	65+ years %	Total %	Proportion prescriptions (%)
Nimesulide + Paracetamol	1.92	3.81	55.91	29.70	8.66	100	5.75
Paracetamol + Aceclofenac + Serratiopeptidase	0.71	5.42	63.67	22.98	7.22	100	8.18
Diclofenac Combinations	0.94	5.94	61.39	23.18	8.55	100	4.55
Ibuprofen Combinations	16.11	11.70	47.16	18.01	7.03	100	18.51
Diclofenac + Paracetamol + Serratiopeptidase	0.61	5.30	63.62	23.01	7.46	100	6.06
Tramadol and its Combinations	0.72	2.90	57.86	27.10	11.42	100	1.17
Diclofenac + Paracetamol	0.66	5.39	67.56	20.57	5.82	100	9.47
Aceclofenac + Paracetamol	1.08	5.96	60.90	23.16	8.90	100	13.03
Nimesulide Combinations	1.38	6.34	59.68	24.08	8.52	100	3.35
Other Aceclofenac Combinations	0.21	3.50	62.86	25.70	7.73	100	1.75
Chlorzoxazone + Diclofenac	0.46	4.03	73.98	17.68	3.86	100	1.35

Table 6: Change in prescription rates of analgesics for various dental conditions

Dental diseases	2013-2014			2015-2016			Absolute change in prescription rate*
	Total (millions)	%	Prescription Rate*	Total (millions)	%	Prescription Rate *	
Disorders of oral mucosa and pre-malignant lesions	0.86	0.87	0.69	0.89	0.81	0.70	0.01
Developmental disorders of tooth	2.78	2.79	2.22	3.14	2.86	2.45	0.23
Diseases of hard tissues of teeth	51.84	52.07	41.46	58.51	53.20	45.63	4.17
Diseases of pulp or periapical tissues	26.62	26.74	21.29	28.14	25.59	21.95	0.66
Gingival and Periodontal diseases	15.17	15.23	12.13	16.72	15.20	13.04	0.91
Dentofacial anomalies	0.09	0.09	0.07	0.14	0.13	0.11	0.04
Other	2.20	2.21	1.76	2.43	2.21	1.89	0.13
Grand Total (millions)	99.57	100	79.62	109.969	100	85.76	6.14
Projected Population (millions)	2013	2014	Mean (13-14)	2015	2016	Mean (15-16)	
	1,242.61	1,258.48	1,250.55	1,274.359	1,290.235	1,282.297	

*Per 1000 persons per year

Table 7: Prescription rate of analgesics cross tabulating with various dental conditions for the year 2015-2016

Dental diseases	Opioid and Opioid combinations	Single NSAID Prescriptions	NSAID combinations	Other analgesics	Total (millions)	%	Prescription Rate*
Disorders of oral mucosa and pre-malignant lesions	0.02	0.22	0.64	0.02	0.89	0.81	0.70
Developmental disorders of tooth	0.05	0.38	2.35	0.36	3.14	2.86	2.45
Diseases of hard tissues of teeth	0.63	8.64	43.11	6.12	58.51	53.20	45.63
Diseases of pulp or periapical tissues	0.37	3.39	20.88	3.50	28.14	25.59	21.95
Gingival and Periodontal diseases	0.21	2.46	12.31	1.74	16.72	15.20	13.04
Dentofacial anomalies	0.001	0.01	0.13	0.01	0.14	0.13	0.11
Other	0.03	0.44	1.56	0.40	2.43	2.21	1.89
Grand Total (millions)	1.31	15.55	80.98	12.13	109.97	100	85.76
Projected Population (millions)		2015		2016		Mean (15-16)	
		1,274.359		1,290.235		1,282.297	

*Per 1000 persons per year