

# Curtailing of Myths and Misconceptions Regarding Oral Health among Indian Adult Population through Health Education and Promotion - Cross Sectional Survey

## SUMMARY

**Background/Aim:** Myths related to oral diseases and oral health-related practices are very common among the population. Inadequate knowledge along with the persisting myths regarding the etiology, course and outcome of oral diseases makes it difficult to initiate health behavioural changes. Present study scrutinizes various myths and misconceptions regarding oral health among the outpatients. The aim of this study was to assess myths and misconceptions about oral health and imparting education regarding the same. **Material and Methods:** The calculated sample size was 200. A pre-tested closed ended questionnaire was prepared in both English and local language (Kannada). It comprised of four sections with 24 questions. The Content validity index value of 0.9 suggested a good validity. A Chi square test was applied and significance level was fixed at  $p < 0.05$ . **Results:** We had 100% response rate. In our study half of the participants visited dental hospital for the very first time (57.5%). About 45.2% of subjects believed 3<sup>rd</sup> molar eruption is the sign of intelligence, while 64.8% had a notion that all dental procedures are painful. **Conclusions:** Myths and misconceptions related to oral health are still prevalent among the population. However, small steps like compulsory education about oral health in the school curriculum, available and affordable oral care also effective use of mass media could be the steps to reduce oral health burden to the society.

**Key words:** Awareness, Education, Healthy lifestyle, Misconceptions, Myths, Dentistry

Apoorva Basavaraj Badiger<sup>1</sup>, Triveni Mavinakote Gowda<sup>1</sup>, Usha Govindaroy Venkatesh<sup>2</sup>, Rucha Shah<sup>1</sup>, Gayathri Gunjiganuru Vemanaradhya<sup>1</sup>, Mallanagouda Basanagouda Patil<sup>3</sup>

<sup>1</sup> Department of Periodontics, Bapuji Dental college and Hospital, Rajiv Gandhi University of Health Sciences, Davangere, Karnataka, India

<sup>2</sup> Department of Public Health Dentistry, Bapuji Dental college and Hospital Rajiv Gandhi University of Health Sciences, Davangere, Karnataka, India

<sup>3</sup> Department of Periodontics, College of Dental Sciences, Rajiv Gandhi University of Health Sciences, Davangere, Karnataka, India

ORIGINAL PAPER (OP)

Balk J Dent Med, 2021;34-40

## Introduction

Myths related to oral diseases and oral health-related practices are very common among Indian population<sup>1</sup>. These myths have an unscientific base and hence, can prove to be harmful to health, may act as barriers toward seeking treatment, and at times be life-threatening. Inadequate knowledge along with the persisting myths regarding the etiology, course and outcome of oral diseases makes it difficult to initiate health behavioural changes.

The high prevalence of these myths prevents people from attaining proper dental care even when available<sup>2</sup>.

Despite remarkable worldwide progress in the field of oral health care, there are still persisting oral health related myths are passed on to many generations by word of mouth without any scientific support. These myths that are deeply rooted in our culture that challenges to render satisfactory dental care among population. These misconceptions need to be tackled at the budding stage to facilitate the affordable and acceptable preventive oral health care<sup>3</sup>.

Exploration of available literature related to oral myths and misconceptions revealed limited data in the state of Karnataka. With this rationale, the present questionnaire based survey was designed to assess the myths about oral health among the out patients Department of Periodontology and to impart education regarding the same. Research question of our survey was to find out the prevalence of myths and misconceptions about oral health among out patients of our dental institution.

## Material and Methods

The study was observational, descriptive, cross sectional questionnaire based survey. Study was conducted at Department of Periodontology at tertiary care hospital. The study population included all the patients visiting Department of Periodontics. Those who were willing to participate in the study were included. Subjects who were mentally incompetent to answer the questions were excluded from the study. A total of 200 participants of age group 20-70 years were classified into early adulthood (17-45 years), 109 subjects in middle adulthood (45-60 years), and 71 subjects in late adulthood (>60 years)<sup>4</sup>. Sample size was calculated scientifically using below mentioned formula

$$N = \frac{4pq}{L^2}$$

P- prevalence (obtained from key article)<sup>15</sup>

q= 1-p

L= Allowable error fixed at 0.05

The calculated sample was 176, and it was rounded off to 200. Finally, a total of 200 subjects were included based on the inclusion and exclusion criteria.

The Ethical clearance (BDC Exam/291/2018-19) was obtained from the institutional review board prior to the commencement of the study. Nature and purpose of the study was explained to the participants in a clear, simple and comprehensible language. The written signed consent was obtained. The questionnaire used to assess the myths and misconceptions was modified from previous similar studies<sup>5-9</sup>. The structured questionnaire consisted of 24 questions prepared in both English and local language (Kannada) and had both close and open ended questions. The study proforma comprised of four sections.

The first Section (I) consisted of six questions regarding the socio-demographic details of the participants. The second section (II) contained 14 questions to assess the myths and misconceptions regarding oral health among out-patients. The third section (III) involved one question regarding the subject's interest in getting oral health education. The final section

(IV) was administered only to the subjects whoever were interested to participate as per section III after they filled out the previous three sections. In final section, the subjects were inquired three questions regarding the delivered education and whether it benefited them in stamping out their myths and misconceptions.

The validation of the questionnaire was performed by means of face validation and content validation<sup>10</sup>. Five subject experts were selected, and the content validation was executed who appraised the questions by scoring relevance, clarity, simplicity and ambiguity on four point rating scale for each item in the questionnaire in order to calculate content validity index (CVI). A satisfactory level of agreement was found as reflected by every score for each item among the four panellists. The average CVI value was 0.9 suggesting that the scale had a good content validity. Same questionnaires were distributed among ten patients. Satisfactory level of agreement was also found among them regarding the clarity, understandability and readability of the language of the questionnaires.

All the participants were given enough time to fill all the questions in a quiet place. For interested subjects, primary investigator conducted oral health education session with relevant pictures using power point presentation following which section IV should be filled.

## Statistical methods

The data obtained was compiled systematically in Microsoft Excel sheet and subjected to statistical analyses using Statistical package for social sciences (SPSS 20) software. Descriptive statistics were generated in terms of frequencies and percentages. Chi square test was used to understand the association between oral health related myths and demographic profile of the participants. The significance level was set at  $p < 0.05$

## Results

Our study participants were randomly selected from outpatients of Department of Periodontology. Among them, 105 were males, 95 were females (Figure 1). Amongst the study population, it was the first dental visit for 115 subjects with the mean age of 45.77+/-14.11 whereas 85 had past dental experience (Figure 1). Also based on education, subjects were categorized as school (117 subjects), intermediate/diploma (68 subjects) and graduates 15 subjects (Figure 1). According to modified Kuppaswamy occupation scale<sup>11</sup>, 77 subjects were classified under skilled and remaining 123 were categorized under unskilled (Figure 1). Second section consisted of 14 questions to assess the myths and misconceptions regarding oral health among the public. Among them, questions which showed statistical non significant results are depicted in Figure 2.

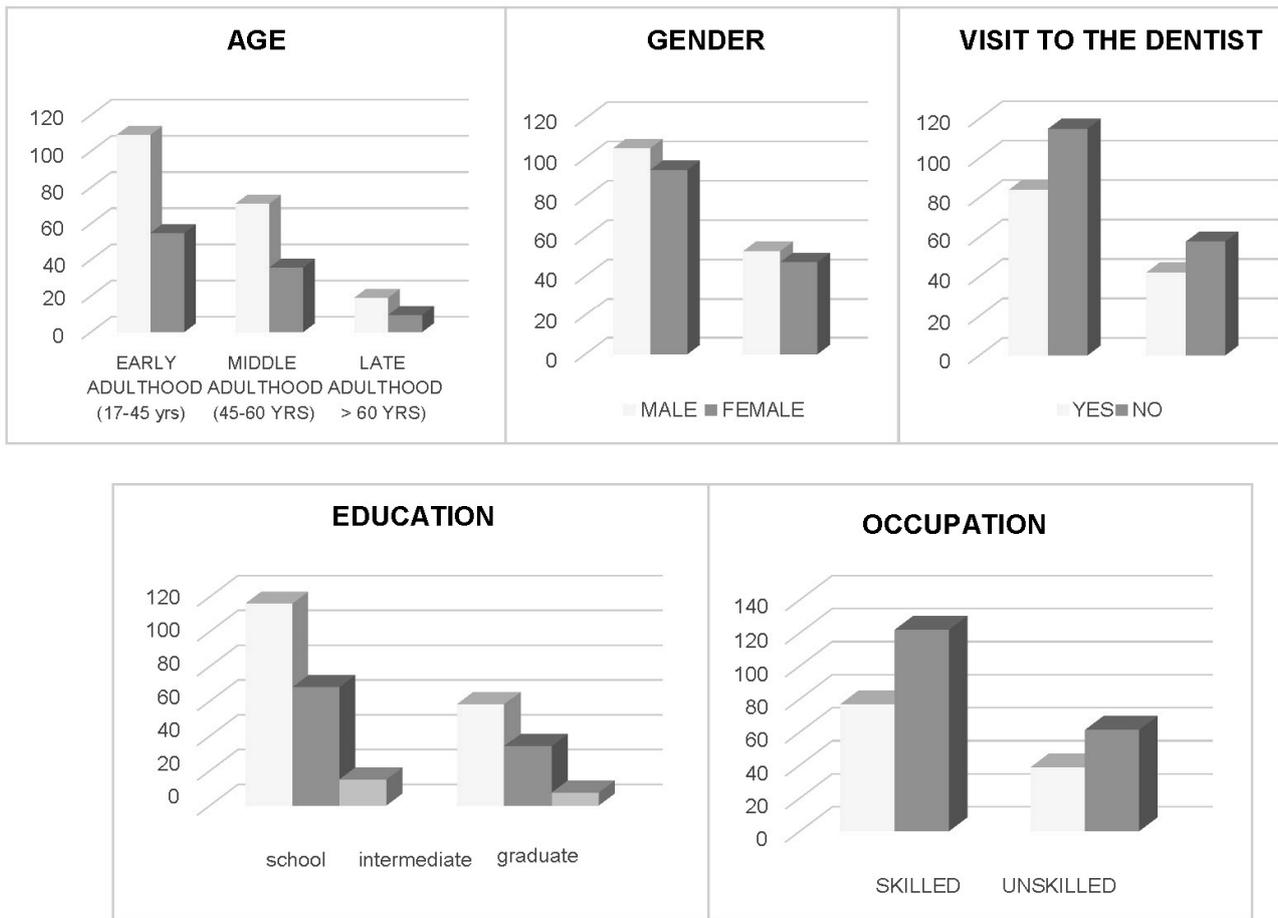


Figure 1. Bargraphs depicting the demographic details

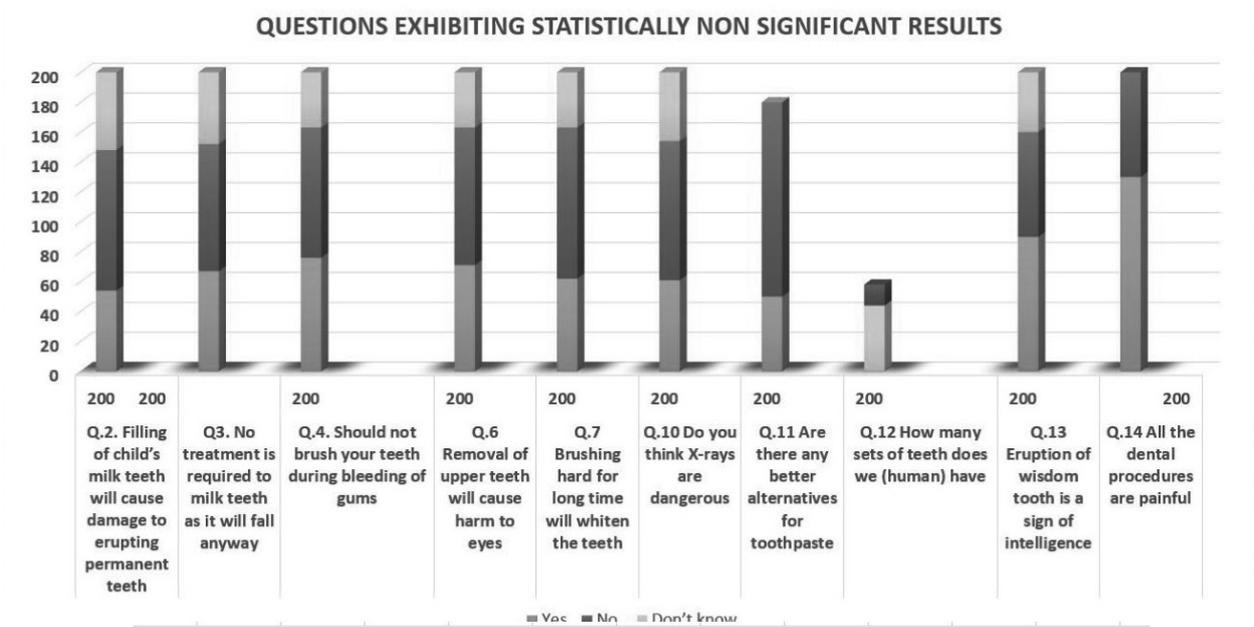


Figure 2. Questions exhibiting statistically non-significant association

Almost half of the subjects (45.2%, n= 90) inaccurately suspected that eruption of wisdom tooth is a sign of intelligence. It is interesting to note that more than half of our study participants (64.8%, n= 130) presumed that all the dental procedures are painful. In the present study, an association was found between the occupation, education and various myths that are existent which were found to be statistically significant ( $p < 0.05$ ) (Figure 3)

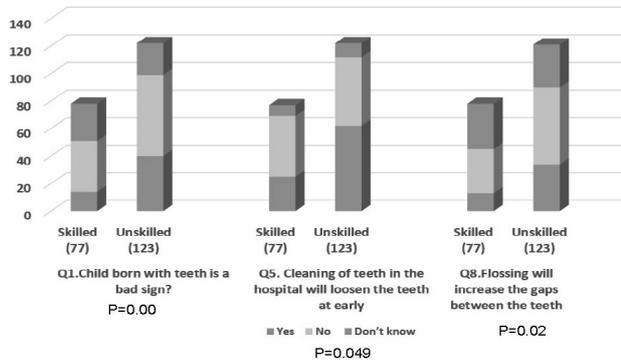


Figure 3. Questions exhibiting significant association between oral myths based on occupation

Questions which showed statistically significant results are depicted in (Figure 3) About 20.1% of subjects who were categorized under unskilled occupation considered child born with natal teeth is a bad sign ( $p = 0.009$ ). As there is lack of awareness about oral hygiene among public, majority of them 43.8% (both skilled and unskilled) strongly presumed that cleaning of teeth in the hospital will loosen the teeth at early ( $p = 0.049$ ) and 23.3% of them had opinion that flossing increases the gap between the teeth ( $p = 0.021$ ). Our study also exhibited that 25.1% of subjects whose education was at school level, 22.1% diplomats and 11.1% of graduates speculate that oral health has no relationship with systemic health.

Third section consisted of single question enquiring whether the participants are interested in getting oral health education so that these myths and misconceptions can be eradicated. Around 153 subjects (76.9%) were interested in knowing the reality. These subjects were educated with the help of power point presentations by the same investigator and some time was given to the subjects to elucidate the queries. Fourth section was delineated to analyse whether the spouted education helped the participants in eliminating their myths and misconceptions and which type of media they preferred to improve their oral health awareness further (Figure 4). Maximum number of subjects (90.8%) accepted that education assisted them in putting an end to their myths and misconceptions and interpret the scientific rationale behind them. Around 75% of public preferred combination of media (television, radio, newspapers, advertisements and dentists) to create further awareness about oral health.

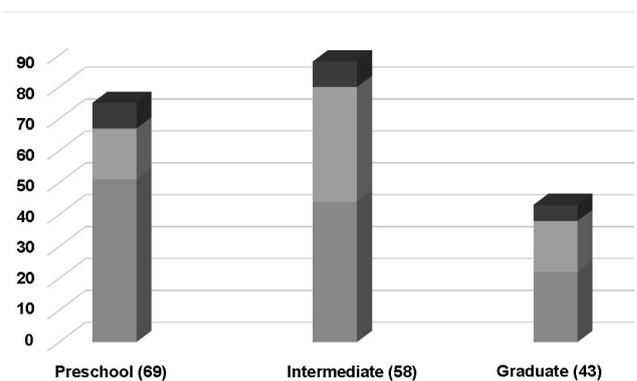


Figure 4. Question exhibiting significant association between oral myths based on education

## Discussion

Myths exist due to a variety of reasons such as lack of knowledge, awareness, cultural beliefs and social delusion<sup>1</sup> which are usually passed on from one generation to the next. It is challenging to interrupt such chain as it is profoundly rooted in the society. Change has to be made in the thinking, attitude, and behavior of the people to eradicate the myths. This is possible only after people are provided with a scientific understanding of these myths and misconceptions by promoting quality health education to the people at both the individual and at community level<sup>12</sup>.

Present study was mainly aspired at assessing the existent myths and misconceptions regarding oral health. It also contemplated at educating the participants by scientifically clarifying the fact of myths through power point presentations and assessing the usefulness of our education. The myths and misconceptions that exhibited significant correlation with occupation were that cleaning of teeth in the hospital will loosen the teeth early, children born with teeth is a bad sign and flossing increases the gaps between the teeth. In the present study more than half of the subjects (58.5%) had education till school level. About 40% were unskilled workers believed that neonatal teeth considered as bad sign for newborn baby.

More than half of the subjects (58%) had misconception that oral health is not related to general health. Approximately 43.8% of subjects strongly perceived that undergoing professional scaling will loosen their teeth. Our observations were in accordance with the previous literature by Ain *et al.*<sup>13</sup>, where it was depicted that calculus fills the gap between teeth masking mobility hence after scaling, the patients have a spurious feeling of loose teeth. Basically, scaling is a non-surgical procedure where supra and sub gingival deposits

are removed to inhibit the progression of periodontal disease<sup>14</sup>.

The myth stating that children born with teeth are a bad sign is propagated as misrepresentation which is passed over generation. Scientifically, it is a genetic variation, completely innocuous and has no association to the overall wellbeing of the child. However overall incidence of natal teeth is about 1:3000 live births<sup>15-17</sup>. The misconception that flossing causes gap between teeth stems from the fact that flossing expels interproximal deposits which otherwise masks the pre-existing gaps. Flossing significantly decreases the abundance of microbial species associated with periodontal disease. It is an intangible benefit that cannot be perceived by the patient's mind<sup>18,19</sup>.

The misconception that oral health has no relationship with the general/systemic health was positively correlated with low educational status. A compelling observation in our study was that about 42% of people had knowledge on systemic disease and its relation with oral disease. Around 58% of public speculate that oral health doesn't have any impact on systemic health. This may be due to poor oral health awareness. In fact, it has been scientifically proven that poor oral health is a risk factor to many systemic diseases including diabetes, hypertension and adverse pregnancy outcomes<sup>20-22</sup>. Our findings were in accordance with the literature study by Anup *et al.*<sup>5</sup>. The high prevalence of these myths in unskilled or low educated population can be attributed to the fact that unskilled people are usually of rural background where they lack adequate health care education and facilities as well.

It is interesting to note that myths and misconceptions prevailed in our participants irrespective of their socio-economic background and educational status. This included the misconception that filling of child's milk teeth will cause damage to erupting permanent teeth. They also presumed that no treatment is required for milk teeth as they exfoliate. In fact, poor health of deciduous/milk teeth has a very serious effect on developing permanent tooth and may lead to delayed eruption, abnormal morphology, eruption in incorrect position which may eventually lead to crowding or malocclusion<sup>23</sup>. A high percentage of participants posited that brushing has to be desisted during gum bleeding. This misconception could be due to deficient knowledge on oral hygiene and proper brushing technique. However, if there is no adequate oral hygiene, it leads to a vicious cycle of events intensifying the inflammation. In reality, patients with bleeding gums need to undergo periodontal therapy following which the periodontal health can be restored.

Another prevalent myth is that removal of upper teeth causes harm to eyes. This may be imputed to the fact that pain and swelling in the upper posterior teeth may extend and radiate toward the lower eyelid and

underlying bone. Sometimes, the onset of various age related eye conditions and tooth extraction may simply be spuriously associated. It is hypothesized that there is very low prevalence rate of ocular complications triggered due to tooth extraction<sup>24</sup>. Many patients surmise that brushing hard for long time will whiten the teeth. This myth emanates from the perceived cosmetic value where, whiter the teeth, more elegant is considered. In fact, the natural hue of the teeth is slight yellowish and no mechanical cleaning can modify it.

Although chemical treatments are feasible to whiten the teeth they are associated with adverse effects such as hypersensitivity, root caries and so on. Many suppose that X-rays taken routinely for dental procedures has ill effects on their overall health. Literature that various radiographic techniques like conventional, panoramic, cone beam computed tomography has different effective radiation dose, most of these imaging procedures have a relatively low risk. Hospitals and imaging centers apply the principles of ALARA (As Low As Reasonably Achievable)<sup>25</sup>. This decreases radiation risk when taken under absolute precautions.

Even though a majority of the participants deduce that toothpaste is the best medium to clean teeth, few inferred that salt, charcoal of tree barks were better alternatives. This misconception portray to ancient practices when toothpastes were unavailable and these were frequently adopted<sup>26</sup>. However, now, with scientific progress it is substantiated that salt and charcoal are extremely abrasive, strip the protective enamel layer that may lead to tooth abrasion and sensitivity.

To our astonishment, around 48% of the population considered human has either one or three or four sets of teeth in their lifetime. In fact humans have only 2 sets. This perception could be again due to lack of wisdom. Also, sometimes the late eruption of 3<sup>rd</sup> molar is misconstrued as eruption of new teeth and was considered a sign of intelligence by 45% of the population<sup>27</sup>. Recent online source divulge that age of eruption of 3<sup>rd</sup> molars is around 18-24 years and individuals tend to finish puberty and gain physical & mental maturity at this age. The eruption or non-eruption of wisdom tooth has no propinquity with the actual wisdom of a person<sup>28</sup>. Around 65% of participants apperceived that all the dental procedures are painful. This can be ascribed to the anxiety passed from the previous generations who had painful experiences while availing routine dental therapy in the absence of good anaesthetic techniques. Also, public conceive that dental problems are non-emergency and not life threatening. So they tend to ignore the minor symptoms by few home remedies which temporarily relieve pain, and disdain their oral health till the disease and pain severity worsens. As dentistry advanced, most of the dental procedures are carried out under local anaesthesia and hence, are completely painless.

In the third section, participants were inquired about their willingness in knowing the facts about myths and misconceptions. About 76.9% of public were eager in getting educated so that existing myths can be eradicated from their minds. These subjects were presented with a detailed power point presentations and videos explaining the scientific rationale and facts behind these myths. Till date the various existing literature studies were only directed only at appraising the myths and misconceptions among the population<sup>5-9,15</sup>. However, the current study also focused on eliminating these by providing a scientific explanation regarding the same. Once the session was completed, participants were questioned regarding the usefulness of power point presentation. Strength of our study was pre-tested questionnaire for its face and content validation with excellent response rate. Maximum numbers of participants were willing to avail the truth if the opportunities were provided to them. The major limitation was the sample size as it was not population based sample.

Another limitation was some of the myths considered in the questionnaire were commonly practiced in our geographical area and these were not reported in the literature. Hence the findings of our study could be generalizable to certain geographic locality. These myths demonstrate a poor oral health education & awareness among the population. This situation should be managed by government through initiating various schemes to constitute awareness about oral health among public by health talks, camps, educational advertisements in various media like newspapers, radios, television, also it has to initiate reinforcement of the knowledge regarding oral health to children in their school curriculum. This will help to inculcate good oral hygiene practice's right from the formative years of a person's life.

## Conclusions

The myths and misconceptions related to oral health are still prevalent among the population. Our attempt to incorporate informal education system was advantageous and it was at district level but depicts overall oral health awareness in the country. In comparison, at a global level we still lag behind several developed nations where there are mandatory oral health practices. For a developing country like India, it is a huge task. However, small steps like compulsory education about oral health in the curriculum, easy availability of oral care and optimal use of mass media are the steps to reduce oral health burden to the society.

## References

1. Myths and miconceptions. Retrieved September 28, 2019, from Available from <https://www.dailywritingtips.com/myth-and-misconception/>, [Accessed 28 September 2020]
2. Vreeman RC, Carroll AE. Medical myths. *Br Med J*, 2007;335:1288-1289.
3. Singh SV, Akbar Z, Tripathi A, Chandra S, Tripathi A. Dental myths, oral hygiene methods and nicotine habits in an ageing rural population: An Indian study. *Indian J Dent Res*, 2013;24:242-244.
4. Adulthood - Domains and Stages of Development. Available from: [www.brainkart.com/article/Adulthood Domains and Stages of Development](http://www.brainkart.com/article/Adulthood-Domains-and-Stages-of-Development), [Accessed 13 June 2020]
5. Nagaraj A, Ganta S, Yousuf A, Pareek S. Enculturation, myths and misconceptions regarding oral health care practices among rural female folk of Rajasthan. *Stud Ethno-Med*, 2014;8:157-8164.
6. Sharma R, Mallaiah P, Margabandhu S, Umashankar GK, Verma S. Dental myth, fallacies and misconceptions and its association with socio-dental impact locus of control scale. *Int J Prev Public Health Sci*, 2015;1:14-10.
7. Vignesh R, Priyadarshni I. Assessment of the prevalence of myths regarding oral health among general population in Maduravoyal, Chennai. *J Educ Ethics Dent*, 2012;2:85-91.
8. Chaudhary S, Gowda TM, Kumar TA, Mehta DS. Knowledge and attitudes of dental interns in Karnataka state, India, regarding implants. *J Dent Educ*, 2013;77:1365-1370.
9. Damodar ST, Shah R, Thomas R, Gowda TM, Mehta DS. Knowledge and perceived adequacy of information regarding the applications of lasers in dentistry among dental interns in India. *J Dent Lasers*, 2019;13:6-11.
10. Yaghmaie F. Content validity and its estimation. *J Med Educ*, 2003;3:25-27.
11. Saleem SM. Modified Kuppuswamy socioeconomic scale updated for the year 2019. *IJFMP*, 2019;6:1-3.
12. Eisenberger R, Cameron J. Detrimental effects of reward: Reality or myth? *Amer J Psychol*, 1996;51:1153-116.
13. Ain TS, Gowhar O, Sultan S. Prevalence of Perceived Myths Regarding Oral Health and Oral Cancer-causing Habits in Kashmir, India. *IJSS*. 2016;4:45-49.
14. Newman MG, Takei H, Klokkevold PR, Carranza, Carranza FA. *Periodontia Clínica*. Elsevier Brasil, 2016.
15. Tewari D, Nagesh L, Kumar M. Myths related to dentistry in the rural population of Bareilly district: A cross-sectional survey. *J Dent Sci Oral Rehab*. 2014;5:58-64.
16. Pelsmaekers B, Loos R, Carels C, Derom C, Vlietinck R. The genetic contribution to dental maturation. *J Dent Res*, 1997;76:1337-1340.
17. Leung AK, Robson WL. Natal teeth: a review. *J Natl Med Assoc*, 2006;98:226.
18. Terry BW, Daly S. Does flossing improve oral health? *J Evid Based Dent Prac*, 2018;21:54-55.
19. Berchier CE, Slot DE, Haps S, Van der Weijden GA. The efficacy of dental floss In addition to a toothbrush on plaque and parameters of gingival inflammation: a systematic review. *Int J Dent Hyg*. 2008;6:265-279.
20. Minkle Gulati VA, Jain N, Anand B, Bahuguna R, Govila V, Rastogi P. Essentials of periodontal medicine in preventive medicine. *Int J Prev Med*, 2013:988-994.

21. Vanderlei JM, Messora MR, Fernandes PG, Novaes Jr AB, Palioto DB, Grisi MF et al. Arterial hypertension perpetuates alveolar bone loss. *Clin Exp Hypertens*, 2013;35:1-5.
22. Badiger AB, Gowda TM, Chandra K, Mehta DS. Bilateral Interrelationship of Diabetes and Periodontium. *Curr Diabetes Rev*, 2019;15:357-362.
23. Plater WR. Caries control: its influence and effects on malocclusion. *Am J Orthod Dentofacial Orthop*, 1949;35:790-796.
24. Hunsigi P, Kumar V, Pradeep MR, Kumar BA. Knowledge and attitude of dental surgeons about ocular complications due to dental infection. *J Pharm Bioallied Sci*, 2017;9:S147-153.
25. Effective radiation dose. Available from: [www.radiologyinfo.org/en/info.cfm?pg=safety-xray](http://www.radiologyinfo.org/en/info.cfm?pg=safety-xray), [Accessed 28 September 2020]
26. Charcoal associated abrasion of teeth. Available from: [www.marketwatch.com/story/charcoal-toothpastes-are-dangerous-dont-whiten](http://www.marketwatch.com/story/charcoal-toothpastes-are-dangerous-dont-whiten), [Accessed 28 September 2020]
27. Miloro M. Peterson's principles of oral and maxillofacial surgery. Decker Inc., Hamilton London UK, 2004.
28. Wisdom teeth-myth and realities. Available from: [www.orthodontisteonline.com/en/wisdom-teeth-myths-and-realities/](http://www.orthodontisteonline.com/en/wisdom-teeth-myths-and-realities/), [Accessed 28 September 2020]

**Conflict of Interests:** Nothing to declare.

**Financial Disclosure Statement:** Nothing to declare.

**Human Rights Statement:** All the procedures on humans were conducted in accordance with the Helsinki Declaration of 1975, as revised 2000. Consent was obtained from the patient/s and approved for the current study by national ethical committee.

**Animal Rights Statement:** None required.

**Received on June 3, 2020.**

**Revised on August 26, 2020.**

**Accepted on September 18, 2020.**

---

Correspondence:

Usha Govindaroy Venkatesh  
Department of Public Health Dentistry  
Bapuji Dental College and Hospital  
Rajiv Gandhi University of Health Sciences  
Davangere, Karnataka, India  
e-mail: drushe8@yahoo.co.in