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PREVALENCE OF MYTHS REGARDING ORAL AND PERIODONTAL HEALTH AMONG ADULT POPULATION IN BANGALORE – A CROSS-SECTIONAL SURVEY

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ABSTRACT

Background: Through the ages oral health professionals have faced many myths relating to oral health and hygiene which could not withstand the scrutiny of evidence based literature. However, even with the advancement of science, these myths have remained widely prevalent. The often neglected oral health diseases lead to early morbidity thereby affecting the individual's quality of life and general well-being. **Aim:** To determine the prevalence of myths regarding oral hygiene, dental caries, oral cancer, and periodontal health among adult population in Bangalore, India. **Settings and Methods:** Cross-sectional multi-centre survey was conducted in Bangalore. A structured closed-ended questionnaire (Cronbach's alpha = 0.81) was administered to 300 participants by guided interview. Demographic data such as age, sex and socio-economic status (SES) was collected. **Statistical Analysis:** Mean scores and prevalence of myths was calculated for all the domains. Results were analysed using ANOVA and unpaired 't' test. **Results:** The differences in total mean score and mean sub-scores was not significant with respect to age and sex. However when evaluated for SES the same was statistically significant with "Lower" class showing the least scores. The prevalence of myths was highest for the domain periodontal health (58.5%) and lowest for oral cancer domain (34.1%). **Conclusion:** High prevalence of myths reported in this study concurred with many others reported in literature, even those conducted in rural areas. Low SES was found to be a significant factor in most studies. Quality oral health education is the key to combat this scenario.

INTRODUCTION

The Oxford English dictionary defines a myth as a 'widely held but false belief or idea'. These are nothing but stories shared by a group of people, which are part of their cultural identity, having a strong influence in seeking treatment during illness (Rai and Kishore, 2009). Through the ages, health professionals have faced many myths and such anecdotal observations. However these myths could not withstand the scrutiny of evidence based literature. Dentistry today has evolved tremendously in diagnosis, treatment planning, treatment modalities but unfortunately, the understanding of general population regarding oral and periodontal health has not kept pace with it.

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Lack of education along with traditional beliefs and socio-cultural factors lead to development of false perceptions and myths. India being a developing country faces many challenges in dealing with oral health problems. The most neglected of the oral health diseases are the periodontal group of diseases. The most common etiology for periodontal diseases is the accumulation of plaque and calculus (Newman *et al*., 2012). Maintaining good oral hygiene is the key to prevent periodontal diseases effectively. However, the misconceptions that surround the use of different aids such as baking powder, brick powder, charcoal for oral hygiene is still a matter of concern. Periodontitis is mostly painless (Reddy *et al*., 2011), thus pain also ceases to be a motivation to seek treatment among patients with periodontal diseases. This neglect leads to increased morbidity due to early loss of teeth, which further affects the individual's quality of life.

(Brauchle *et al*., 2013) Myths regarding periodontal diseases lead people to believe that such loss of teeth cannot be prevented and it is the sequelae of ageing. It is important to determine the prevalence of such myths in order to enable oral health professionals to appreciate the magnitude of the present condition and initiate solutions. A literature search revealed that there was scant data on the prevalence of myths regarding oral health and hygiene in Bangalore, India. The tag of being an urban area has probably averted researchers from exploring this aspect, as it is falsely assumed that people living in cities have high level of awareness. Thus the aim of this cross-sectional survey was to determine the prevalence of myths regarding oral and periodontal health among adult population in Bangalore, India.

MATERIALS AND METHODS

A cross sectional questionnaire survey was conducted in the software hub of India i.e. Bangalore. Ethical approval to conduct the study was obtained from the institutional review board and informed consent was obtained from the participants. The sample size was calculated based on prevalence of dental myths reported in previous studies. (Vignesh and Priyadarshni, 2012). By keeping the prevalence as 0.76 and alpha at 5%, the sample size obtained was 280 for 95% confidence level. This was rounded off to 300. Only individuals above the age of 15 and those who were willing to participate in the study were included. Adults with debilitating disorders and conditions affecting mental health were excluded from the present study. The identity of the persons participating in the study was not revealed. This was a multi-center study and the source of study participants was from three satellite dental centers and the outpatient department of a Dental College and Hospital. Equal number of participants (seventy-five) was enrolled from each of the centers. A questionnaire consisting of 30 closed ended questions which dealt with myths regarding oral and periodontal diseases was administered to the study participants using guided interview method. The questionnaire was validated and pilot tested for assessment of feasibility and internal consistency and Cronbach's alpha was found to be 0.81. A single investigator, who was trained for this purpose administered all interviews. The responses to the questionnaire were dichotomized. A score of one was given for the right answer and score of zero for the wrong i.e. higher the score greater was the awareness regarding oral and periodontal health. Mean scores were calculated in this manner for the entire questionnaire and separately for the sub-divisions of tooth decay, oral hygiene habits, oral cancer, periodontal myths and general myths. The responses to individual question/statement within these sub divisions were presented as the percentage of individuals who agreed with it and this represented the prevalence of myths. In addition to the questionnaire demographic data was also obtained from the participant. Data regarding income, education and occupation was also collected in order to calculate the socioeconomic status (SES) of the study participants. This was done using Kuppuswamy's Socio-economic Scale, 2014 modification, (Gururaj, Maheshwaran, 2014) which is presently the most accepted measure for socio-economic status in India.

Statistical Analysis

The data collected was entered into Microsoft excel spreadsheet and analyzed using SPSS statistical package.

The responses to individual questions were reported as percentages and analyzed using chi-square test for comparisons across age groups, SES and gender. Differences in the mean myth scores across age groups and SES was determined using one way ANOVA and followed with Tukey's post-hoc test for multiple comparisons. The same was determined using unpaired 't' test in case of male to female comparison.

RESULTS

This cross sectional survey was conducted among 300 adults to determine the prevalence of myths regarding oral and periodontal health. The age and gender distribution of study participants is reported in Figure 1. It was seen that the maximum number of individuals belonged to the age group of 21 – 30 years and the mean age was 34 years. The number of males and females in the study was comparable at 44% and 56% respectively. The total mean score was 15.5 which is just 50% of the total score obtainable indicating high level of ignorance in the considered population. Sub score of periodontal health was very low at 4.53 out of a maximum of 10. The differences in total mean score and mean sub scores (tooth decay, oral hygiene habits, oral cancer, periodontal myths and general myths) was not significant with respect to age and sex (Figure 2, 3). Whereas the same was statistically significant with respect to SES with "Lower" class showing the least scores. Lower class also showed poor scores under the subdivisions general myths and periodontal health. The "Middle" class had the poorest scores in the subdivisions of tooth decay, oral hygiene habits and oral cancer (Table 1). The prevalence of myths (Table 2) was highest for the sub category periodontal health 54.7% (49.1, 60.3), followed by general myths 51.4% (45.7, 57.1), tooth decay 43.3% (37.7, 48.9), oral hygiene habits 38.7% (33.2, 44.2) and the lowest recorded was that in the oral cancer category i.e. 34.1% (28.7, 39.5).

DISCUSSION

The present survey was done amongst 300 adults to assess prevalence of myths in Bangalore city. There was no significant difference in the mean scores with respect to age and gender but statistically significant differences were noted with respect to SES. Greater prevalence of myths in lower socioeconomic group noted in the present study may be due to a multitude of factors. Oral health awareness in this segment of the society is poor due to deep seated cultural beliefs. In the age of technology, information is available at the click of a button; the lower socioeconomic groups however do not necessarily have access to it as it was revealed in a socio-economic and caste census report released by the Karnataka state government in 2015. A study conducted by Vignesh *et al*., 2012 also assessed the prevalence of myths and it was reported that prevalence of myths regarding dental caries was 65.68%, oral hygiene was 55.92% and oral cancer was 58.24% This was not in accordance with the present study wherein the corresponding values were 43.3%, 38.7% and 34.1% respectively. However, the prevalence of myths regarding general dental aspects was comparable in both the studies at 43.32% and 51.4% respectively. Differences in prevalence of myths with respect to age were not a significant factor in both the studies (Vignesh and Priyadarshni, 2012). Lin *et al*., 2001 reported that statistically significant difference in prevalence of myths with respect to education levels, this was in accordance with the present study wherein statistically

Table 1. Comparison of SES groups with respect to total myths and its sub scores

Variables SES	Total myths		Tooth decay		Oral hygiene habits		Oral cancer		Oral Hygiene & Periodontal health		General	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Upper	19.03	5.22	3.47	1.33	3.73	1.20	3.10	1.27	5.47	2.00	3.27	1.23
Upper Middle	15.87	4.88	2.91	1.36	3.12	1.26	2.67	1.20	4.66	1.83	2.52	1.24
Middle	13.75	6.25	2.17	1.70	2.42	1.00	2.33	1.15	4.42	2.07	2.42	1.24
Upper lower	14.06	5.67	2.60	1.40	2.90	1.44	2.33	1.36	4.09	2.13	2.14	1.14
Lower	13.57	4.39	2.86	1.77	2.57	1.40	2.71	0.76	4.29	0.95	1.14	1.21
Total	15.45	5.41	2.83	1.41	3.07	1.33	2.59	1.27	4.53	1.98	2.43	1.25
F-value	6.0551		3.0580		3.3891		2.6044		3.2080		7.2718	
P-value	0.0001*		0.0172*		0.0099*		0.0361*		0.0134*		0.00001*	

Table 2. Item wise prevalence of myths

| Items	n	%
Tooth Decay		
Chocolate is the only cause of cavities.	95	31.67
Decay in milk teeth need not be treated as they are going to fall anyways.	107	35.67
Any tooth pain due to decay, it's better to extract rather than saving it.	141	47
Once a tooth is treated, the decay stops in that tooth.	151	50.3
There is no pain after a Root Canal Treatment, so I don't need to place a crown.	156	52
Oral Hygiene Habits		
More you brush using hard bristles, whiter your teeth becomes.	45	15
Brushing your teeth using salt, whitens your teeth.	166	55.3
Brick powder & charcoal cleans your teeth better than a tooth paste.	97	32.3
When gums bleed, it's better not to brush and floss your teeth.	122	40.67
Poor brushing is the only cause of bad breath.	150	50
Oral Cancer		
Chewing tobacco helps to keep me active throughout the day.	50	16.67
Smokeless tobacco is less harmful and a safe alternative to smoking.	86	28.67
Taking a puff of smoke or a chew of smokeless tobacco every now and then, won't harm me	71	23.67
Any relative of mine with an oral cancer, then I am at higher risk of getting cancer.	219	73
A friend of mine drinks, smokes and chews tobacco more than what I do, but still he doesn't have oral cancer and neither will I.	85	28.33
Oral Hygiene and Periodontal Health		
Cavities are the number one cause of tooth loss.	208	69.33
Tooth loss is a natural part of ageing.	181	60.33
People who have gum disease are 'dirty' & don't brush their teeth.	124	41.33
Gum disease doesn't affect overall health.	95	31.67
Periodontal (gum) disease is a minor infection.	116	38.67
Bleeding gums are normal.	70	23.33
Because periodontal (gum) disease is a bacterial infection, antibiotics can be used to treat it.	216	72
Teeth cleaning will stop periodontal (gum) disease.	213	71
Periodontal (gum) disease treatment is painful.	185	61.67
Once teeth are lost due to periodontal disease, the only treatment options are bridges and dentures.	233	77.67
General		
I don't have pain in my teeth, so it's not required to visit a dentist.	93	31
It's better to avoid dental treatment during pregnancy.	197	65.67
Extracting any upper teeth leads to loss of vision.	168	56
Extracted teeth need no replacement with artificial teeth.	128	42.67
Professional scaling leads to sensitivity, mobility in teeth and also creates gap between them.	185	61.67
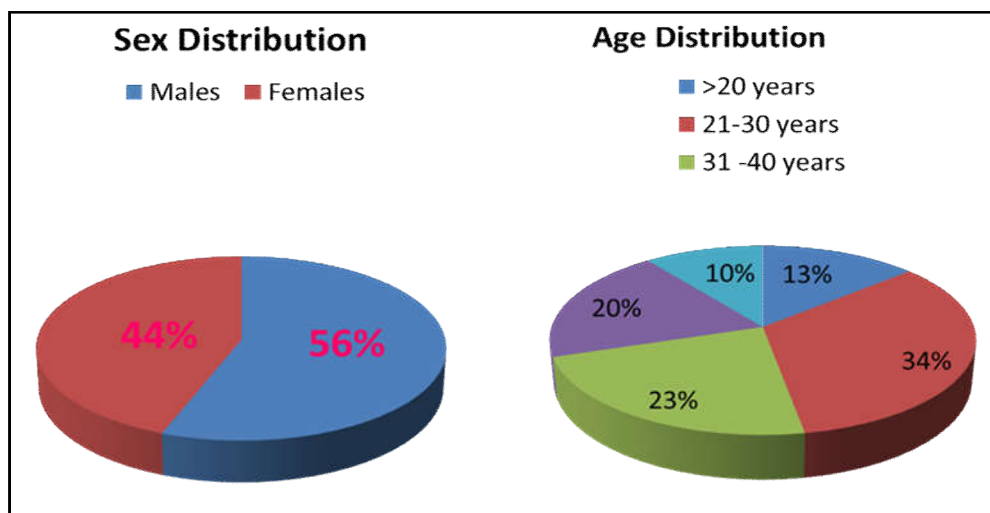
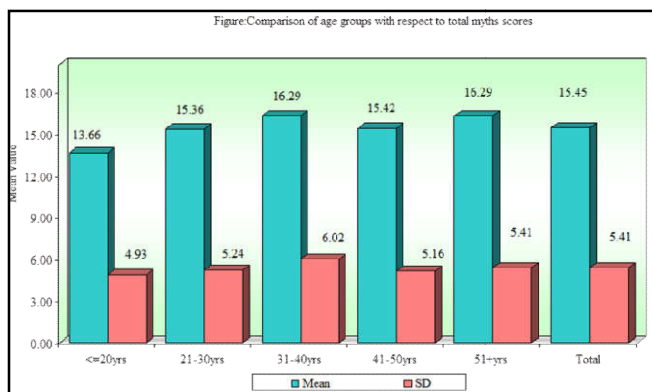**Figure 1 - Age and Sex distribution**
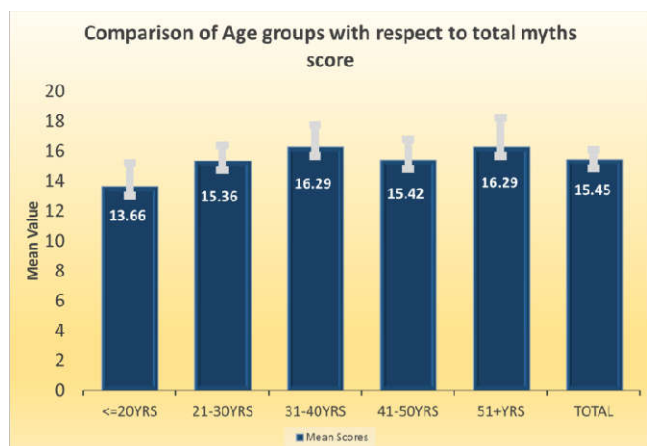
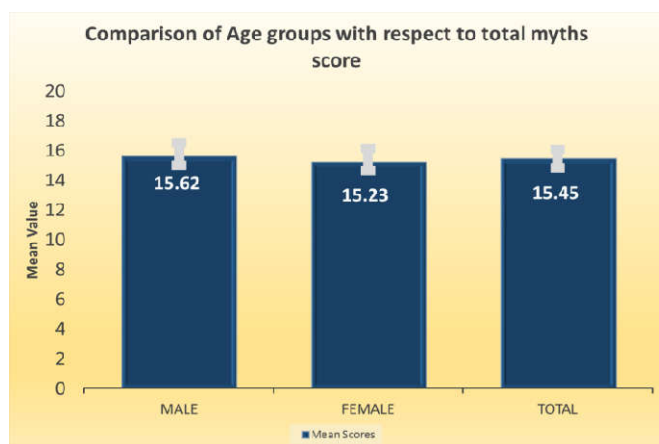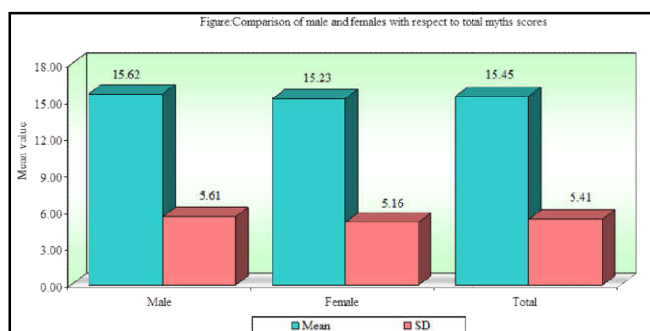**Figure 2. Age wise distribution of total mean scores with 95% confidence interval**

Figure 3. Gender wise distribution of total mean scores 95% confidence interval

significant differences were reported with respect to SES which is a reflection of education (Lin *et al*., 2001). Similar findings were reported by Singh *et al*., 2013 wherein the illiterate participants had higher levels of false perceptions regarding oral health (Singh *et al*., 2013). A study conducted by Singh SV *et al*., 2012 in 10 villages in Uttar Pradesh, India also reported higher prevalence of myths in the illiterate group which tapered down as the level of education increased Singh (SV *et al*., 2012). Thus 'people living in urban areas are better informed' may be a misconstrued owning to the fact that the present study has reported similar results. When speaking of myths related to tooth decay, it is very important to focus on those pertaining to primary dentition. Almost 36% (30.6, 41.4) of the subjects of the present study said that decay in milk teeth need not be treated as they are going to fall anyways. This was in accordance with the values reported by Kumar *et al*., 2013 (47%) (Kumar *et al*., 2013), Khan *et al*., 2012 (37.5%) (Khan *et al*., 2012) and Nazir *et al*., 2014 (43.6%) (Nazir *et al*., 2014). For permanent teeth 47% (41.4, 52.6) of respondents of the present study said that it is better to extract a decayed tooth rather than treat it, this was in accordance with the prevalence of 57% reported by Vignesh *et al*., 2012. (Vignesh and Priyadarshni, 2012). Misconceptions regarding oral hygiene practices are paramount in India. In the present study 55.3% (49.7, 60.9) believed that salt can make their teeth whiter, 32.3% (27, 37.6) said that brick powder and charcoal were better oral hygiene aids. 40.6% (35.1, 46.2) of the individuals said that it wasn't necessary to brush teeth when one suffers from bleeding gums.

These findings corroborated with the prevalence reported by Vignesh *et al*., 2012. (Vignesh and Priyadarshni, 2012) Tewari *et al*., 2014 also reported similar findings wherein 42% reported that it is better not to brush when gums are bleeding (Tewari *et al*., 2014). In the same study 70% believed that charcoal cleans teeth better than toothpaste and 83% believed that salt cleaned teeth better. However the prevalence for this myth as reported by Kumar *et al*., 2013 was lower than the present study at 24.47%. Also only 7.5% of the individuals in the study by Kumar *et al*., 2013 believed that one mustn't brush while suffering from bleeding gums (Kumar *et al*., 2013). The reason for lower prevalence of such myths in the aforementioned study could be that it was conducted in a dental institute only, where patients who can afford dental care come to seek treatment. The study population of that study could therefore be more aware of dental and oral health. The present study however has attempted to collect data from rural satellite centers as well where such myths are common place. In a discussion related to myths in a country like India it is mandatory to focus on tobacco which is a major public health problem in India. Tobacco is the only commercial product which holds the reputation of killing about half its users and its ill effects are well known to people, however many myths governing them are also prevalent amongst its users. In the present study a whopping 86% (82.1, 89.9) of the subjects reported that smokeless tobacco was a safer alternative to smoking. This was much higher than what was reported by Vignesh *et al*, 2012. (Vignesh and Priyadarshni, 2012) wherein 53% believed smokeless tobacco was safer than smoking. In a study by Tewari *et al*., 2014 73% of the subjects reported this finding. (Tewari *et al*., 2014). Loss of vision as a consequence of extraction of teeth is a very common myth. 56% (50.4, 61.6) of the present study subjects believed so. This prevalence was 89% in the study reported by Tewari *et al*., 2014 36.4% (Tewari *et al*., 2014), and 35.2% in studies reported by Vignesh *et al*., 2012 (Vignesh and Priyadarshni, 2012) and Kumar *et al*., 2013 respectively. (Kumar *et al*., 2013). Numerous studies regarding oral myths have focused on dental

caries; this study has made an attempt to assess the prevalence of myths with a greater focus on oral hygiene and periodontal disease. One of the most common of these myths is that teeth are destined to fall and it is a part of the aging process. 60% (54.5, 65.5) of the participants felt so in the present study. Lin *et al*., 2001 (Lin HC *et al*, 2001) reported the prevalence of this myth as 74% and that reported by Tewari *et al*., 2014 was 43% (Tewari *et al*., 2014),. It is noteworthy that in the present study as many as 78% (73.3, 82.7) of the subjects believed that denture is the only method of replacement of lost teeth. This indicates very poor awareness regarding the option of dental implants to replace a missing tooth. It is imperative to create awareness in this regard. Amongst many misconceptions regarding periodontal health, one of the common myths is that cleaning of teeth results in gap between the teeth. In the present study this was reported at 61.67% (56.2, 67.2) which was in accordance with other reported studies. (Vignesh and Priyadarshni, 2012; Tewari *et al*., 2014). The overall findings achieved in our study were substantiated by numerous other studies conducted in different geographical locations. This reveals the grim scenario we face today regarding oral hygiene and health literacy and awareness. This also highlights the need for an immediate, detailed, evidence based approach to oral health education to spread awareness. The present study had certain limitations; the data collected was self-reported, thus the social desirability element cannot be ruled out. The study was limited to Bangalore city only, a study involving multiple cities is recommended to obtain a greater insight into the myths surrounding oral health and hygiene in urban areas.

Conclusion

India has come a long way from being a land of snake charmers; however results such as those reported by the present study are a setback in the progress of the nation by being a barrier in achieving holistic health. The study revealed high prevalence of myths among individuals residing in urban areas. This was found to be comparable to certain rural areas also; highlighting the fact that place of residence is no indication of ignorance or awareness. This issue can be addressed by initiating widespread oral health education and awareness campaigns in order to improve the oral health and hygiene of the population.

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