RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND AWARENESS OF ENGINEERING, MEDICAL UNDERGRADUATE STUDENTS IN DAKSHINA KARNATAKA POPULATION TOWARDS ORTHODONTIC TREATMENT

*Dr. Sarvani VL Nukaraju, Dr. Sharath Kumar Shetty, Dr. Mahesh Kumar, Y. and Dr. Brigit Alphonsa Gervasis

Department of Orthodontics and Dentofacial Orthopaedics, K.V.G.Dental College, Sullia, Dakshina, Karnataka

ABSTRACT

Objective: To evaluate knowledge, attitude, awareness towards orthodontic treatment among Engineering and Medical undergraduate students in Dakshina Karnataka.
Method: A questionnaire was made of 22 closed ended questions to assess the awareness, knowledge and attitude of students towards orthodontic treatment.
Two groups were made, group 1: engineering students, group 2: medical students, sample size was 600 in each group (rounded from n = 555). Colleges were selected randomly and filtered from the list and 3 medical colleges and 3 engineering colleges from Dakshina Karnataka population were selected. The quality and reliability of the questionnaire was made by doing a pilot study with sample size of 100 in each group.
Results: Each question was compared and assessed between the two groups. The results showed not much awareness and knowledge was present regarding malocclusion in both the groups and there was more of positive attitude towards orthodontic treatment in medical students in Dakshina Karnataka population.
Conclusion: This study suggests utmost need to educate both engineering and medical students all over Dakshina Karnataka population towards orthodontic treatment for better health of the people.

INTRODUCTION

Awareness of irregular teeth and esthetic appearance related to irregular teeth and need to correct them has been increased day to day comparatively to till present date in general public. Important aspect of motivation to correct the irregular teeth has been increasing self confidence and self esteem among the population after the orthodontic Treatment. Students in medical and engineering colleges would be benefited with the knowledge about orthodontic treatment has early orthodontic treatment could be advantageous in preventing further malocclusion complications. The benefits of orthodontic treatment are improvement in Esthetics and physical function. The uptake of orthodontic treatment is influenced by the desire to look attractive. Enhancing appearance and improving psychosocial status have been identified as an important motivating factor behind the decision to initiate orthodontic treatment (Siddegowda and Rani, 2013). Knowledge as defined by 'oxford dictionary' is the 'expertise and skills acquired by a person through experience or education. Knowledge acquisition involves complex cognitive processes: perception, learning, communication, association and reasoning. The term

knowledge is also used to mean the confident understanding (theoretical or practical) of a subject with the ability to use it for a specific purpose. Those who have assimilated the knowledge and feel a sense of personal control over their oral health are more likely to adopt self care practices. Developing such knowledge plays a key role in improving the oral health (Kakkad *et al*., 2015). An attitude is a relatively enduring organization of beliefs around an object, subject or concept which pre-disposes one to respond in some preferential manner. Attitude is an acquired characteristic of an individual (Shokhan Abdullah Karim, 2015). A malocclusion is defined as an irregularity of the teeth or a malrelationship of the dental arches beyond the range of what is accepted as normal (Walther *et al*., 1994). Maloccluded teeth can cause psychosocial problems related to impaired dentofacial aesthetics (Kenealy *et al*., 1989). The benefits of orthodontic treatment are improvement in aesthetics and physical function. The uptake of orthodontic treatment is influenced by the desire to look attractive, self-esteem and self- perception of dental appearance (Mandeep and Nirola, 2012). The young college students play a vital role in health promotion and preventive information dissemination among the family and their society. It is therefore important that their own oral health knowledge is good. They play a vital role in the health promotion and preventive information dissemination among the family and a

Corresponding author: **Sarvani Nukaraju,**
Department of Orthodontics and Dentofacial Orthopaedics, K.V.G.Dental College, Sullia, Dakshina, Karnataka.

society. The young engineering students were not exposed to health care knowledge as medical professionals. They encounter a number of issues of late teenage, i.e., peer pressure, change in food habits that cumulatively affects oral health (Kakkad *et al*., 2015). One of the most common dental problems in mankind along with dental caries, gingival disease, and dental fluorosis is malocclusion (Dhar *et al*., 2007).

MATERIALS AND METHODS

With prior permission from deans / principals of various universities under RGUHS and VTU of Karnataka, India a survey was planned in three respective colleges. The survey was carried out in randomly selected engineering and medical colleges in Dakshina karnataka district. The age group of students that were included in the study is eighteen to twenty two years. Total sample size was estimated based on pilot study. (n=555 rounded to six hundred in each group, to exclude any unfilled questionnaire the sample size was rounded up) the total sample size was of 1200 was selected from the three random medical and three random engineering colleges all over Dakshina Karnataka district. Ethical clearance to conduct the survey was obtained from KVG dental college and hospital ethical committee. Prior permission to conduct the survey was taken from the concerned college authorities. There were no exclusion criteria. A pre structured questionnaire consisting of twenty two questions of which majority were closed ended questions, to asses knowledge awareness and attitude towards orthodontic treatment was made. The questionnaire was explained to the subjects and they were asked to fill up. The time taken was around twenty five minutes. People demonstrated a wide variety of attitudes toward dental care and dentists. These attitudes naturally reflect their own experiences, cultural perceptions, familial beliefs and other life situations and they strongly influence the health status of the oral cavity (Chen, 1986; Friedman *et al*., 1976; McCaul *et al*., 1985; Wright *et al*., 1982). Engineering and medical colleges were selected by a lottery method (simple random sampling method). All four years students of engineering and medical colleges participated actively and were included in the study (n=600 of each group). The study was completed within a period of two months.

Statistical analysis

The data collected was compiled using MS-office excel and was subjected to statistical analysis by using statistical software (SPSS), MS windows and P<0.05 was considered statistically significant. Chi-square test was used to determine the difference between the two groups.

RESULTS

Based on the courses the sample population was divided into group 1 engineering and group 2 medical.

Table 2 shows the first 5 questions in the questionnaire.

There was marginally increase motivation in group 2 individuals towards dental treatment was seen. Group 2 individuals were more aware of orthodontics as a specialty in dentistry compared to group 1 individuals. Group 2 individuals were more aware of orthodontic treatment modalities compared to group 1 individuals. Out of two groups the medical group shows an increased % of individuals who had

undergone orthodontic treatment. Group 2 individuals showed an increased % of individuals who were satisfied with treatment out come. Difference did exist in knowledge about and experience with orthodontic treatment indicating differences in utilization of orthodontic services in the two groups

Table 3 shows the following result:

Group 2 individuals were more aware of various procedures under taken by orthodontists to correct the malocclusion. Both the groups showed almost similar knowledge about irregular teeth in general. Out of the two groups, group 2 individuals showed heightened awareness of ill effects of irregularly placed teeth on health of the body. Large percentage of both the groups showed ignorance on exact cause of malocclusion /irregular teeth. Few individuals who did know the cause belonged to group1 who were marginally more aware compared to individuals in group 2. Majority of individuals in the sample population do not feel a need to receive an orthodontic treatment. Out of two groups, group1 showed affinity towards receiving orthodontic treatment. Out of the sample population, majority of group one individuals had not identified the need to undergo orthodontic treatment.

Table 4 shows the following result:

Out of two groups majority of individuals in group 2 were aware of the fact that teeth should be properly arranged for a better facial appearance. Group 2 individuals were more confident of identifying individuals with orthodontic treatment needs. 65.7% of sample population were aware of the need for extraction while undergoing orthodontic treatment. Among the two groups, group 2 showed a greater awareness of extractions being a part of orthodontic treatment. Majority of sample population were aware of benefits of early orthodontic treatment with a larger percentage of individuals being in group 2. A majority of sample population had the opinion that the orthodontic treatment is expensive and was believed more by the group2 individuals. The maximum number of individuals who belonged to group 2 showed a positive response for undergoing orthodontic treatment. A large chunk of the sample population was ready to motivate their friends and family for orthodontic treatment if required. Out of the two groups, group 2 individuals were marginally more motivated to suggest or refer their friends and family for an orthodontic treatment.

Table 5 shows the following result:

Out of all the causes for irregularly placed teeth, abnormal number of teeth, size difference in upper and lower jaws and thumb sucking were identified by the sample population as the major cause. To be more specific, abnormal number of teeth was the most commonly cited reason for irregularly placed permanent teeth by group 2 individuals followed by size difference in upper and lower jaws and thumb sucking, again in group 2.

Few questions were not closed ended and statistical analysis was carried out and following are the results for Q.22, Q.13, and Q.18:

Dentists act as a more reliable source of information in medical students comparative Engineering students in the list of sources of information regarding orthodontic treatment.

Table 1.

		Groups Engineering	Groups Medical	Total	Chi square test Chi square value	Chi square test p-value
Gender	F	403(67.2%)	341(56.8%)	744(62.0%)	13.59(1)	<0.001*
	M	197(32.8%)	259(43.2%)	456(38.0%)		

*P<0.05 statistically significant

Table 2.

		Group Engineering	Group Medical	Total	Chi square test Value	Chi square test p-value
Q1	N	124(20.7%)	59(9.8%)	183(15.3%)	27.24(1)	<0.001*
	Y	476(79.3%)	541(90.2%)	1017(84.8%)		
Q2	N	257(42.8%)	93(15.5%)	350(29.2%)	108.49(1)	<0.001*
	Y	343(57.2%)	507(84.5%)	850(70.8%)		
Q3	N	221(36.8%)	93(15.5%)	314(26.2%)	70.67(1)	<0.001*
	Y	379(63.2%)	507(84.5%)	886(73.8%)		
Q4	N	486(81.0%)	406(67.7%)	892(74.3%)	27.95(1)	<0.001*
	Y	114(19.0%)	194(32.3%)	308(25.7%)		
Q5	N	17(14.9%)	43(22.2%)	60(19.5%)	2.43(1)	0.12(NS)
	NIL##	1(0.9%)	2(1.0%)	3(1.0%)		
	Y	96(84.2%)	149(76.8%)	245(79.5%)		

*P<0.05 statistically significant
Fisher's exact test

Table 3.

		Group Engineering	Group Medical	Total	Chi square test Value	Chi square test p-value
Q6	N	546(91.0%)	433(72.2%)	979(81.6%)	71.82(1)	<0.001*
	Y	54(9.0%)	167(27.8%)	221(18.4%)		
Q7	N	77(12.8%)	32(5.3%)	109(9.1%)	20.43(1)	<0.001*
	Y	523(87.2%)	568(94.7%)	1091(90.9%)		
Q9	N	482(80.3%)	423(70.5%)	905(75.4%)	15.64(1)	<0.001*
	Y	118(19.7%)	177(29.5%)	295(24.6%)		
Q11	N	419(69.8%)	437(72.8%)	856(71.3%)	1.32(1)	0.25(NS)
	Y	181(30.2%)	163(27.2%)	344(28.7%)		
Q14	N	423(70.5%)	359(59.8%)	782(65.2%)	15.03(2)	<0.001*
	Y	177(29.5%)	241(40.2%)	418(34.8%)		
Q15	N	468(78.0%)	390(65.0%)	858(71.5%)	24.88(1)	<0.001*
	Y	132(22.0%)	210(35.0%)	342(28.5%)		

*P<0.05 statistically significant
Fisher's exact test

Table 4.

		Group Engineering	Group Medical	Total	Chi square test Value	Chi square test p-value
Q8	DN	92(15.3%)	39(6.5%)	131(10.9%)	24.20(2)	<0.001*
	N	29(4.8%)	35(5.8%)	64(5.3%)		
	Y	479(79.8%)	526(87.7%)	1005(83.8%)		
Q10	DN	248(41.3%)	173(28.8%)	421(35.1%)	79.12(2)	<0.001*
	N	188(31.3%)	113(18.8%)	301(25.1%)		
	Y	164(27.3%)	314(52.3%)	478(39.8%)		
Q16	DN	176(29.3%)	84(14.0%)	260(21.7%)	57.36(2)	<0.001*
	N	91(15.2%)	61(10.2%)	152(12.7%)		
	Y	333(55.5%)	455(75.8%)	788(65.7%)		
Q17	DN	242(40.3%)	120(20.0%)	362(30.2%)	73.44(2)	<0.001*
	N	101(16.8%)	82(13.7%)	183(15.3%)		
	Y	257(42.8%)	398(66.3%)	655(54.6%)		
Q19	DN	296(49.3%)	200(33.3%)	496(41.3%)	41.37(2)	<0.001*
	N	99(16.5%)	88(14.7%)	187(15.6%)		
	Y	205(34.2%)	312(52.0%)	517(43.1%)		
Q20	DN	133(22.2%)	111(18.5%)	244(20.3%)	29.63(2)	<0.001*
	N	222(37.0%)	152(25.3%)	374(31.2%)		
	Y	245(40.8%)	337(56.2%)	582(48.5%)		
Q21	DN	115(19.2%)	104(17.3%)	219(18.3%)	23.25(2)	<0.001*
	N	125(20.8%)	68(11.3%)	193(16.1%)		
	Y	360(60.0%)	428(71.3%)	788(65.7%)		

*P<0.05 statistically significant

Table 5.

		Group		Total	Chi square test	
		Engineering	Medical		Value	p-value
Q12a	NIL	449(74.8%)	337(56.2%)	786(65.5%)	46.26(1)	<0.001*
	Y	151(25.2%)	263(43.8%)	414(34.5%)		
Q12b	NIL	517(86.2%)	392(65.3%)	909(75.8%)	70.88(1)	<0.001*
	Y	83(13.8%)	208(34.7%)	291(24.3%)		
Q12c	NIL	559(93.2%)	445(74.2%)	1004(83.7%)	79.25(1)	<0.001*
	Y	41(6.8%)	155(25.8%)	196(16.3%)		
Q12d	NIL	547(91.2%)	480(80.0%)	1027(85.6%)	30.32(1)	<0.001*
	Y	53(8.8%)	120(20.0%)	173(14.4%)		
Q12e	NIL	394(65.7%)	331(55.2%)	725(60.4%)	13.83(1)	<0.001*
	Y	206(34.3%)	269(44.8%)	475(39.6%)		
Q12f	NIL	408(68.0%)	308(51.3%)	716(59.7%)	34.63(1)	<0.001*
	Y	192(32.0%)	292(48.7%)	484(40.3%)		
Q12g	NIL	464(77.3%)	389(64.8%)	853(71.1%)	22.81(2)	<0.001*
	Y	136(22.7%)	211(35.2%)	347(28.9%)		
Q12h	NIL	445(74.2%)	370(61.7%)	815(67.9%)	21.51	<0.001*
	Y	155(25.8%)	230(38.3%)	385(32.1%)		
Q12i	NIL	484(80.7%)	414(69.0%)	898(74.8%)	21.68(1)	<0.001*
	Y	116(19.3%)	186(31.0%)	302(25.2%)		
Q12j	NIL	535(89.2%)	571(95.2%)	1106(92.2%)	14.96(1)	<0.001*
	Y	65(10.8%)	29(4.8%)	94(7.8%)		

*P<0.05 statistically significant

Question 22:

| Q22		Group		Total	Chi square test	
		1	2		Value	p-value
Q22a	NIL	403(67.2%)	317(52.8%)	720(60.0%)	25.68(1)	<0.001*
	Y	197(32.8%)	283(47.2%)	480(40.0%)		
Q22b	NIL	551(91.8%)	474(79.0%)	1025(85.4%)	39.66(1)	<0.001*
	Y	49(8.2%)	126(21.0%)	175(14.6%)		
Q22c	NIL	437(72.8%)	435(72.5%)	872(72.7%)	0.02(1)	0.89(NS)
	Y	163(27.2%)	165(27.5%)	328(27.3%)		
Q22d	NIL	272(45.3%)	239(39.8%)	511(42.6%)	3.71(1)	0.054(NS)
	Y	328(54.7%)	361(60.2%)	689(57.4%)		

*P<0.05 statistically significant

Question 13:

| Q13	Group		Total
	1	2	
>30 yrs	13	9	22
	2.2%	1.5%	1.8%
16-20 yrs	280	256	536
	46.7%	42.7%	44.7%
16-20, 21-25, 26-30, >30	2	2	4
	0.3%	0.3%	0.3%
16-20yrs, 21-25yrs	2	6	8
	0.3%	1.0%	0.7%
21-25 yrs	43	34	77
	7.2%	5.7%	6.4%
21-25,26-30	0	2	2
	0.0%	0.3%	0.2%
26-30 yrs	8	2	10
	1.3%	0.3%	0.8%
5-15 yrs	92	168	260
	15.3%	28.0%	21.7%
5-15 yrs, 16-20 yrs	7	13	20
	1.2%	2.2%	1.7%
5-15, 16-20, 21-25	0	1	1
	0.0%	0.2%	0.1%
5-15,16-20,21-25,26-30,>30	0	1	1
	0.0%	0.2%	0.1%
N	132	68	200
	22.0%	11.3%	16.7%
NIL	15	27	42
	2.5%	4.5%	3.5%
Y	6	11	17
	1.0%	1.8%	1.4%

Question 18.

Q18	Group		Total
	1	2	
>2YRS	28	53	81
	4.7%	8.8%	6.8%
1 YR,2 YRS	0	4	4
	0.0%	0.7%	0.3%
1YR	81	129	210
	13.5%	21.5%	17.5%
2YRS	72	91	163
	12.0%	15.2%	13.6%
2YRS,>2YRS	2	0	2
	0.3%	0.0%	0.2%
6 MONTHS	28	42	70
	4.7%	7.0%	5.8%
6 MONTHS,1YR	1	1	2
	0.2%	0.2%	0.2%
6 MONTHS,2 YRS	0	3	3
	0.0%	0.5%	0.3%
6MONTHS,1 YR,2 YR	0	1	1
	0.0%	0.2%	0.1%
DN	1	0	1
	0.2%	0.0%	0.1%
N	370	247	617
	61.7%	41.2%	51.4%
NIL	10	9	19
	1.7%	1.5%	1.6%
Y	7	20	27
	1.2%	3.3%	2.3%
Total	600	600	1200
	100.0%	100.0%	100.0%
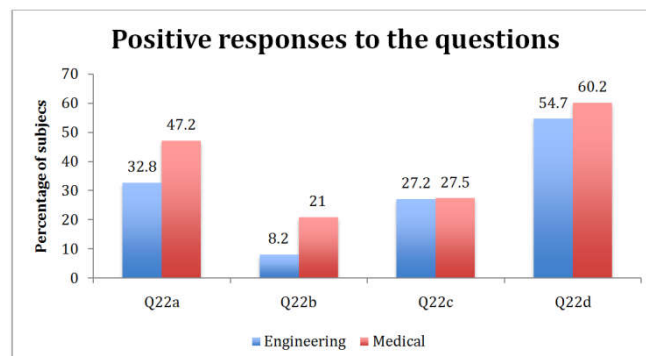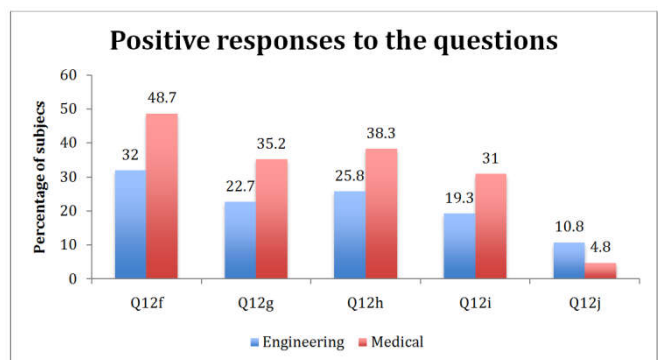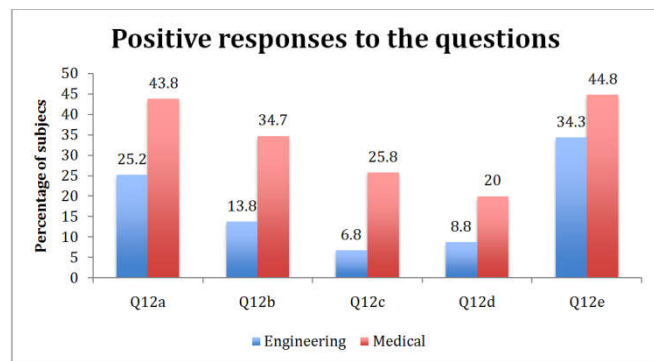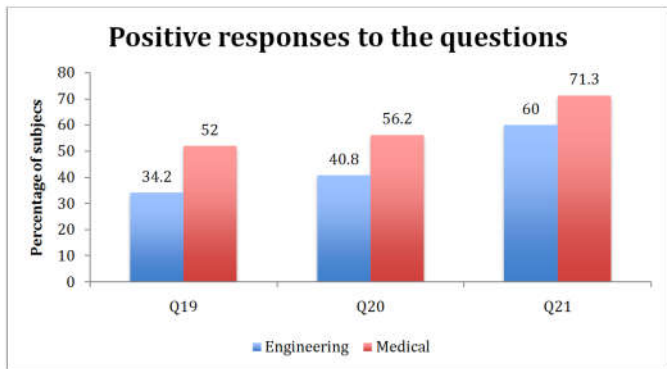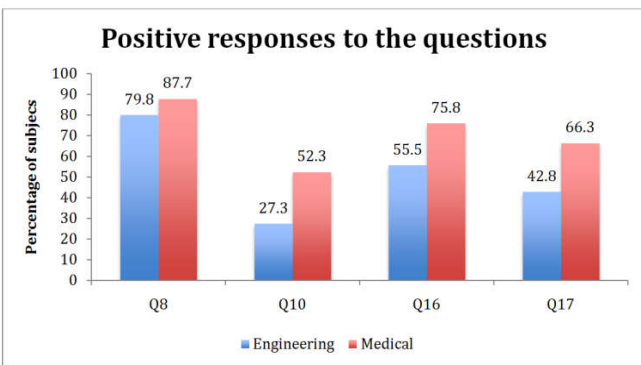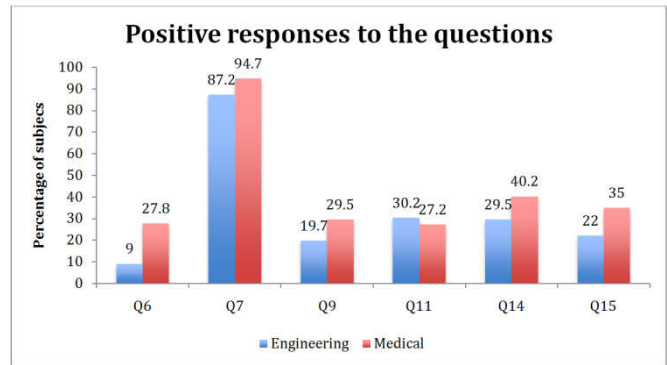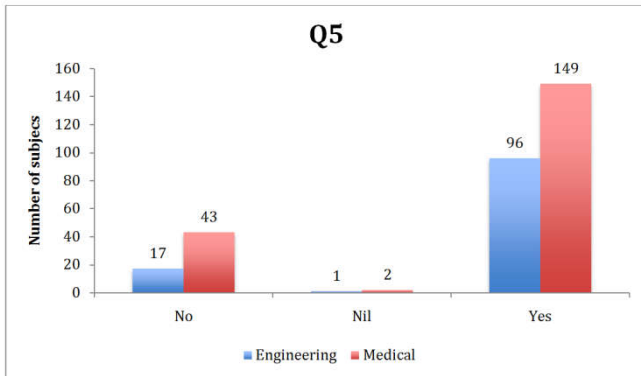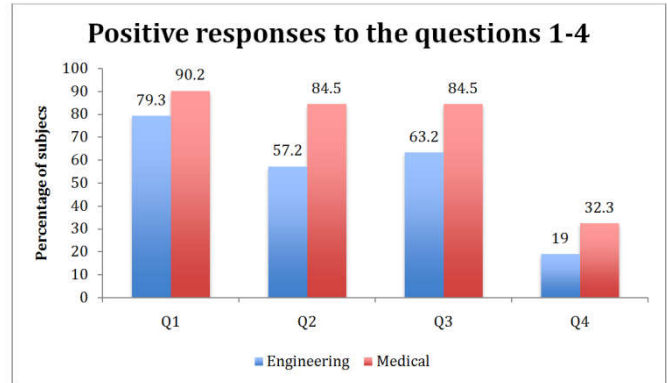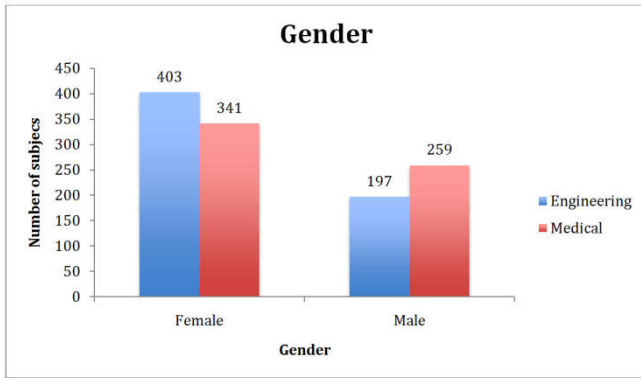
Magazine, friends and relatives books and journals and media internet were of less advantage in creating awareness regarding dental problems pertaining to malocclusion comparatively. According to the results among both group1 and group 2, 16 to 20 years age group was believed to be more appropriate age group to undergo orthodontic treatment, among which group1 subjects shared a high % of this belief. 5 to 15 years was also considered as the age group of orthodontic treatment comparatively less than other age groups, among which group2 was high. Around 16.7% of total individuals were unaware of the exact age group in which orthodontic treatment is to be undertaken. 1 year, 2 years was considered the duration of treatment time for undergoing orthodontic treatment among which group 2 was high. But a chunk of individuals (51.4%) were unaware of the treatment duration of both the groups together.

DISCUSSION

Health is a universal human need. It has been established that optimal health cannot be attained independent of oral health. A similar study was carried out to know the level of awareness regarding orthodontic procedures among preadolescents as there is very high prevalence of malocclusion (Pandey *et al*., 2014). Planning orthodontic treatment within a public health system requires information on the prevalence and distribution of malocclusions (Foster and Menezes, 1976). The present research work presents an overview of the knowledge, awareness attitude among 18 to 22 years engineering and medical under graduate college going students of Dakshina Karnataka district. Globally, there has been an increase in awareness of Orthodontics as a dental specialty in children as well as adults (Anitha and Asiya, 2010; Dacosta, 1999). A similar trend has been reported in Nigeria with an associated increase in Orthodontic care. i.e, Children's preventive dental behavior in relation their mothers' socioeconomic status, health beliefs and dental behaviors (Chen, 1986). Attitudes and perceptions towards dental appearance differ among populations and among individuals (Nobile *et al*., 2007). The level of dental health knowledge, positive dental health attitude, and dental health behavior are interlinked and associated with the level of education and income as demonstrated by studies in the past (Al-Wahadni *et al*., 2004; Kawamura *et al*., 1997; Barrieshi-Nusair *et al*., 2006; Kawamura *et al*., 2002; Hamilton and Coulby, 1991; Kerosuo *et al*., 1988). Malocclusion has an impact on the social and the psychological behavior of an individual, hence knowledge on how individuals perceive and react to malocclusion in a community is necessary for effective orthodontic treatment and care. The treatment aspect of dental problems are not known to the group 1,2 individuals, hence a better comprehensive dental education with exposure to dental health and prevention is to be incorporated into their curriculum. Medical doctors are the primary care givers for a vast majority of health-related complaints. If they are unaware of the impact of malocclusion and orthodontics on the health and general well-being of the patient, they may not identify, educate, motivate and refer patients for orthodontics care (Kerosuo *et al*., 1988). Difference did exist in knowledge about and experience with orthodontic treatment indicating differences in utilization of orthodontic services in the two groups (Tulloch *et al*., 1984).

Swathi vangipuram *et al* conducted a similar study in assessing oral health attitudes and behavior among undergraduate dental students using HU-DBI (Hiroshima university Dental Behavior Inventory), which showed the overall attitude of oral health was good among undergraduate dental students (Vangipuram *et al*., 2015). A similar result was obtained from the present study, indicating group 2 subjects had better awareness but lacking in knowledge regarding the appropriate treatment options. So basic introduction to the dental sub-specialties, especially orthodontics would enable them to identify malocclusions, educate the patients and make informed referrals appropriate. Incorporating oral health education into the medical curriculum is a natural way to make a positive on patients health and well being (Al Shahrani, 2014). The term 'malocclusion' refers to malalignment of teeth and incorrect relationship between the upper and lower arches (Gruenbaum, 2010). Malocclusion is the third most common oral health problem in the world and is often associated with inadequate oral hygiene, periodontal disease, speech problems, mouth breathing and many more complications (Glans *et al*., 2003). Orthodontic treatment often can correct these complications or at least prevent them from progressing; by ensuring proper alignment of the teeth and achieving harmonious occlusal and jaw relationships (Lara-Carrillo *et al*., 2010). Orthodontic problems are generally not associated with high mortality or morbidity; hence, they are often overlooked by most health professionals as less important. However, studies indicate that malocclusion has significant impact on the psychosocial health of the affected person (Shaw, 1981). General practitioners and physicians are the primary care givers and their role in oral healthcare delivery is very important due to the lack of awareness of patients concerning the treatment of oral health problems. Prevention of oral diseases is expected to be effective if the physicians who have more regular contact with individuals in developing countries are actively involved in screening and prevention of oral diseases (Adeghe *et al*., 2012).

Conclusion

This study presented a comprehensive over view of knowledge attitude and awareness about, towards orthodontic treatment among engineering and medical under graduate college going students of dakshina Karnataka district. The awareness about orthodontic treatment of the studied subjects stands merely acceptable among medical students and, among engineering students were below acceptable standards. More concentration efforts and care need to be taken regarding awareness of orthodontic treatment in terms of health education programs to both the groups all over Karnataka districts. The medical students surveyed had limited awareness of orthodontics as a specialty. A basic introduction to the dental sub specialties, especially orthodontics would improve their ability to identify malocclusions, educate the patients and make informed referrals appropriately. Incorporating oral health education into the medical curriculum is a natural way to make a positive impact on patients' health and well-being. Considering that the present-day medical students are the future medical doctors, the present study sough to assess their level of orthodontic awareness. Based on the results of present study, the authors would like to recommend for a review of curriculum in the College of Medicine by incorporating the growing body of evidence demonstrating the vital connections between oral health and overall body health. Formal training opportunities have to be offered to the students; thus helping them understand the concepts of oral health, orthodontics and health-related quality of life. Knowledge imbibed at undergraduate level from the curriculum influences the style and orientation of medical practice after graduation (Adeghe *et al*., 2012).

Recommendations

Community oriented orthodontic treatment enlighting camps to improving orthodontic treatment knowledge and practice are to be conducted to improve the knowledge and awareness among engineering and medical students. Inclusion of orthodontic oriented programs in their curriculum would improving their knowledge and behavior, so as to be a good model to the community. Conduction of awareness programs, screening camps, dental camps, sensitization programs, in engineering college to create awareness regarding malocclusion among engineering students would help

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1. **Have you ever visited a dentist?**
    Yes   No
2. **Have you heard of an Orthodontist?**
    Yes   No
3. **Do you know about brace/clip-treatment?**
    Yes   No
4. **Did you ever receive orthodontic treatment?**
    Yes   No
5. **If Yes, are you happy with the treatment and its results?**
    Yes   No
6. **Are you aware of the procedures orthodontists perform? If yes, please mention _____**
    Yes   No
7. **Have you ever noticed people having irregular teeth?**
    Yes   No
8. **Do you believe, teeth should be properly placed for a better facial appearance?**
    Yes   No   Don't Know
9. **Are you aware of the effects of irregular teeth on health of body? If yes, please mention_____**
    Yes   No
10. **Would you be able to identify if a person needs orthodontic treatment?**
    Yes   No   Don't Know
11. **Do u know the causes of irregular teeth?**
    Yes   No
12. **Do you think any of the following can cause irregular permanent teeth? Please tick**
    Thumb sucking   mouth breathing   mouth and nose connected from inside (cleft)
    Nail biting   size difference in upper and lower jaws   abnormal number of teeth
    big teeth in small jaws/small teeth in big jaws   injury at young age to teeth   gum disease
    none of the above
13. **Which age group you think is correct to undergo orthodontic treatment?**
    Yes   No
    5-15 yrs   16-20 yrs   21-25 yrs   26-30 yrs   >30 yrs
14. **Have you ever felt the need to receive an orthodontic treatment?**
    Yes   No
15. **Has anyone advised you to undergo orthodontic treatment?**
    Yes   No
16. **Are you aware that few teeth may have to be removed for re-arranging irregularly placed teeth?**
    Yes   No   Don't Know
17. **Do you know receiving orthodontic treatment at an early age would be easier and more beneficial?**
    Yes   No   Don't Know
18. **Do you have any idea of the average duration of orthodontic treatment procedures?**
    Yes   No
    6 months   1 yr   2 yr   >2yrs (please tick)
19. **Do you know if orthodontic treatment is expensive?**
    Yes   No   Don't Know
20. **Will you be interested to undergo orthodontic treatment, if required?**
    Yes   No   Don't Know
21. **Would you suggest any of your friends and family people for orthodontic treatment, if required?**
    Yes   No   Don't Know
22. **Source of information about various aspects of orthodontic treatment?**
    Please tick appropriately

    o   Magazine   o   Friends and relatives   o   Books and Journals

    o   Media   o   Internet   o   Dentists

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