Oral Health Knowledge and Beliefs Assessment in Adult Population of Uttarakhand, India. A Cross Sectional Study; Oral Hygiene Project Part I

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ABSTRACT

Background: Oral hygiene is the most neglected aspect of general health in India. Lack of good knowledge, awareness and certain beliefs are responsible for poor oral health in a population. Identification of such factors provides opportunity to resolve them and improve oral health status of the population. The aims is to access oral health related knowledge and belief at three health centers in relation to socioeconomic and education status. **Methods**: A total of 600 individuals, 200 each from three health care centers were enrolled. A closed ended questionnaire was used for accessing knowledge and belief aspects. **Results**: 83.67 % had good knowledge and 16.5 % has adequate belief for the combined population. Mean ± standard deviation for center 1, center 2 and center 3 were; 0.67±0.47, 0.92±0.27, 0.92±0.26 respectively. For adequate belief the Mean ± standard deviation for center 1, center 2 and center 3 were 0.07±0.25, 0.18±0.38 and 0.24±0.42 respectively. Higher Education and income was statistically significant for all the parameters (P<0.05) for overall population. **Conclusion**: Majority of the population had good knowledge, while the beliefs were poor. Present study shows that despite good knowledge beliefs were very inadequate and wrong which might results in significant dental disease burden. The results of the study will provide important information for formulation of oral health care policies for education and awareness in the study population.

Keywords: Oral hygiene, knowledge, belief, survey questionnaire.

INTRODUCTION

Approximately 4 billion individuals across the globe are affected by dental disease.[1] Oral hygiene is essential for good systemic health. In India oral health is not considered as an essential care. The dental disease prevalence and incidence is not properly documented and reported in India.[2] Oral health is one of the most neglected parts of community health globally and more in developing countries like India.[3,4]

The reason for poor oral hygiene is multifactorial, including poor awareness, accessibility to health care and economic constraints. There is lack of dental and oral health awareness in our population. Due to Lack of economic resources majority of individuals resorts to dental extractions as compared to getting restoration of tooth. Loss of dentition at an early age results in poor quality of life for these individuals.[5]

The need of hour is to focus on preventive care to reduce dental disease burden.[1] World health organization also emphasizes in its various programs on preventive community aspect of Oral health.[6,7] It is economically sound when preventive dental interventions are employed in time.

Many prevalent community knowledge and belief are harmful to the oral health. These should be identified and community awareness and education should be employed to modify them. Knowledge and beliefs analysis are important in policy formulation and designing behavioral modifications strategies.[8-10]

Basic dental care and hygiene is an inexpensive tool for building healthy community. Present study is a part of oral hygiene project which focuses on knowledge and belief aspect of oral and dental health in our population.

MATERIALS AND METHODS

Present study is a part of 'oral hygiene project' crossesctional survey, to assess and compare knowledge and beliefs of oral health. The study

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was conducted at three centers, Dental surgery department, Himalayan institute of medical science (center 1), community health center doiwala (center 2) and District hospital New Tehri (center 3). From every center 200 individuals were enrolled. A total of 600 individuals participated in the study. The study was conducted between November 2019 to march 2020 at the respective centers. The study was approved by the institutional ethical committee vide letter no SRHU/HIMS/ETHICS/2020/66.

Sampling method and size calculation: Convenient sampling method was used to recruit the participants reporting to respective dental OPD at three centers. Sample size was calculated by standard formula of n= Z a/2 2 P Q / d 2; Here 'n' is number of sample, Z IS 1.96 at 0.05 p-value , P is unknown prevalence as there are no previous studies so its taken as 50%. Q is P-1 and d is relative precision which is 15% (i.e 15% of 50 %). Applying the above formulae the total number for each center was calculated to be 171. We added a 15 % standard attrition and rounder it to 200 individuals from each center.

Inclusion and exclusion criteria:
Patient of age 18 year and above who provided written informed consent were included in the study. Patient who are not mentally sound, recent face trauma or major dental surgery in last 6 months and cancer of head and neck origin were excluded in the study

Questionnaire development:
The questionnaire was developed by a systematic review of research papers. The questionnaire was finalized at the end of two interactive session in the peer review meeting. The panel for review consisted of 5 dental experts. A pilot study was done on 20 patients and further the questions were refined.

Definition of parameters:
Beliefs were defined as any action/ opinion which are not scientifically documented but are prevalent in masses as accepted opinion/ behavior. Knowledge was defined as any known actions/opinion, which are stated as facts and verified by scientific methodologies.

Calculation of scores:
In 'oral hygiene project'; there were 11 questions on Knowledge and 6 questions on belief domain; all participants with 'yes' Reponses was given score 1. While 'Do not know'and'No' response were given score 0. Individuals who scored 4 or more cumulative score were classified as having good knowledge and adequate belief respectively.

Statistical analysis:
A p value of 0.05 was considered significant at Confidence interval of 95% and 90% power. Chi square test was utilized to calculate significant difference with cross tabulation of various parameters in respect to education and income separately. Sperman's correlation coefficient was used see correlation between knowledge and belief.

RESULTS

61.8% of the total population were female, 42.2 % were in age range 31-50 years, 51.5% with education of graduation and above and 44.2% with income in range of twenty to fifty thousand. While comparing between centers for various parameter center 2 had highest percentage population (67%) with graduate and above education followed by center 3 and center 1. While center 3 had highest percentage of population (53%) in income range of 21000-50,000 Rupees followed by center 1 and center 2 [Table 1].

Calculation of the scores for knowledge and belief as mentioned in methodology, correlation was done using two tailed spearman's correlation set at significant of 0.001. There was no correlation between knowledge and belief using Spearman correlation coefficient of 0.063 and p value of 0.12. Calculation of mean score for knowledge and belief: For overall population 83.6% of population had good knowledge, 16.3 % had adequate beliefs. Mean± standard deviation values for good knowledge was highest for center 2 (0.92±0.27) followed by center 3 (0.92±0.26) and center 1(0.67±0.47). For adequate belief center 3 had highest scores (0.24±0.42), followed by center 2 (0.18±0.38) and center 1 (0.07±0.25). [Table 2]

Comparison of knowledge domain:
On comparison of eleven parameters of knowledge domain, it was observed that six parameters were statistically significant with education level and income status criteria. These six parameters were 1) sticky sugar causes decay, 2) diabetes associated with poor oral health, 3) systemic infection associated with poor health, 4) faulty prosthesis is harmful, 5) fluoride prevent decay and 6) interdental aids use. Parameter of dental treatment during pregnancy was statistically significant when compared for income criteria. While two parameter i.e 1) food lodgment causes decay, and 2) cleaning of artificial teeth were significant when compared for education criteria. However no significant difference was found for smoking effect on oral cavity and Areca nut effect on oral cavity when compared with income and education criteria [Table 3].

70.2 % & 75.8 % of the participants knew sticky sugar causes decay and food lodgment causes decay respectively. While 19.8 % of participants knew about the protective effect of fluoride on tooth decay. Only 34.3% of the participants knew that dental treatment can be done during pregnancy. [Table 3]

In between group comparison center 1 showed statistically significant values for six parameter for both income and education criteria, these included 1) sticky sugars causes decay, 2) food lodgment causes decay, 3) diabetes associated with poor oral health, 4) systemic infection associated with poor oral health, 5) fluoride prevent decay and 6) use of interdental aids.

Center 2, had two statistically significant parameters for income criteria (fluoride use for decay & use of interdental aids) and 6 significant parameters (faulty prosthesis is harmful, fluoride and decay, pregnancy and dental treatment , interdental aids use, artificial teeth cleaning, smoking deleterious effect) for education criteria. While center 3 had no statistically significant parameter for knowledge for both income and education. [Table 3]

Between the three centers, center 3 had highest percentage (91.5%) of participant awareness for decay by sticky sugar and food lodgment followed by center 2 (85%) and center 1(52%). For fluoride role center 2 had highest percentage (24.5%) of participant awareness followed by center 1 (19%) and center 3 (16%) [Table 3].

Comparison of belief domain:
For Belief domain had all six parameter were statistically significant for education criteria. These parameters were 1) extraction effect on eyesight, 2)

professional cleaning and tooth loosening, 3) saving primary teeth, 4) Tobacco as pain relief, 5) dental treatment is expensive and 6) extraction is better than restorative procedures.

While for income criteria only three parameters were significant, theses were 1) professional cleaning and tooth loosening, 2) Tobacco as pain relief and 3) Extraction is better than restorative procedures.

57.2 % believe extraction effects eyesight, 42 % believed cleaning causing tooth losing, 34 % belief saving deciduous teeth is necessary, 48.2 % belief tobacco act as pain relief, 63% belief dental treatment is expensive, 54.3% believed extraction is better than restoration.

Inter center comparison for center 1, parameter of 'tobacco as pain relief', was significant for both income and education criteria. While 'extraction is better than restorative procedure' was significant for only education criteria.

For center 2 parameter of 'tobacco as pain relief' and 'extraction is better than restorative procedure' was significant for both income and education criteria. While 'dental treatment is expensive' was significant for only education criteria.

For center 3 parameter of 'tobacco as pain relief' was significant for income criteria and 'dental treatment is expensive' was significant for only education criteria. (P<.05). [Table 3]

Table 1: Socio-economic demographic of three centers and over all population in terms of frequency and percentages.

Characteristic	Center 1	Center 2	Center 3	Total population
Gender				
a)Male	81(40.5)	75(37.5)	73(36.5	229(38.2)
b)Female	119 (59.5)	125(62.5)	127(63.5)	379(61.8)
Age in years				
a)18-30	66(33)	82(41)	73(36.5)	221(36.8)
b)31-50	70(35)	92(46)	91(45.5)	253(42.2)
c)51-70	56(28)	24(12)	35(17.5)	115(19.2)
d)>70	8(4)	2(1)	1(0.5)	11(1.8)
Education				
a)illiterate	22(11)	9(4.5)	11(5.5)	42(7)
b) < 1oth grade	46(23)	15(7.5)	37(18.5)	98(16.3)
c)10-12th garde	52(26)	42(21)	57(28.5)	151(25.2)
d)graduate and above	80(40)	134(67)	95(47.5)	309(51.5)
Income in rupee				
a)Less than 10000	21(10.5)	35(17.5)	19(9.5)	75(12.5
b)10000-20000	94(47)	55(27.5)	66(33)	215(35.8)
C)21000-50000	82(41)	77(38.5)	106(53)	265(44.2)
d)> 50000	3(1.5)	33(16.5)	9(4.5)	45(7.5)

Table 2: Mean± standard deviation values along with percentage of good knowledge and adequate belief for each health center and total population.

Parameters	Center 1		Center 2		Center 3		Total population	
	Mean+_ s.d	N (%)	Mean+_ s.d	N (%)	Mean+_ s.d	N (%)	Mean+_ s.d	N (%)
Good Knowledge	0.67±0.47	133(66.5)	0.92±0.27	184(92)	0.92±0.26	185(92.5)	0.84±0.37	502(83.67)
Adequate Belief	0.07±0.25	14(7)	0.18±0.38	37(18.5)	0.24±0.42	48(24)	0.16±0.37	99 (16.5)

Table 3: Table depicts health center wise and total population data for various belief and knowledge based responses in percentage. {In brackets   * p-value denotes statistical significant in relation to income; † p-value denotes statistical significant in relation to education; significant set at <0.05.}

Belief domain Parameter	CENT	Center 2 (N=200)	Center 3 (N=200)	Total population (N=600)
BELIEF DOMAIN	**CENTER 1 (200)**	**CENTER 2 (200) % P-value (*/†)**	**CENTER 3 (200) % P-value (*/†)**	**Total Population (600) % P-value (*/†)**
	% P-value (*/†)			
1.Eyesight is effected by extraction	48 (0.11/0.4)	62 (0.25/0.2)	61.5 (0.16/0.07)	57.2 (0.06/0.002)
2.professional cleaning cause loose teeth	43 (0.29/0.36)	41 (0.11/0.24)	42 (0.06/0.06)	42 (0.000/0.000)
3.saving the Primary tooth is necessary	15.5 (0.65/0.15)	36.5 (0.46/0.45)	27.5 (0.24/0.33)	34 (0.12/0.005)
4. Tobacco is effective dental pain relief	73.5 (0.009/0.04)	38 (0.001/0.03)	33 (0.007/0.06)	48.2 (0.000/0.000)
5. Dental treatment is Expensive	82.5 (0.1/0.14)	52 0.9/0.005	54.5 (0.2/0.01)	63 (0.05/0.000)
6.Extraction is better than restorative procedures.	86.5 (0.7/0.03)	47 (0.009/0.002)	29.5 (0.34/0.8)	54.3 (0.000/0.000)
Knowledge domain				
1.Sticky sugars causes decay	52 (0.000/0.000)	85 (0.5/0.4)	91.5 (0.7/0.9)	70.2 (0.002/0.000)
2.Food lodgement causes decay	51 (0.04/0.004)	85 (0.5/0.7)	91.5 (0.5/0.8)	75.8 (0.14/0.000)
3.Diabetes associated with poor oral health	34 (0.001/0.000)	46.5 (0.1/0.8)	22.5 (0.2/0.3)	34.3 (0.001/0.003)
4.Systemic infection associated with poor oral health	19.5 (0.02/0.02)	58 (0.7/0.05)	22 (0.1/0.1)	33.2 (0.001/0.000)
5.Faulty prosthesis is harmful	18.5 (0.05/0.3)	60 (0.1/0.07)	29.5 (0.4/0.2)	36 (0.000/0.001)
6.Fluoride prevent dental caries	19 (0.01/0.01)	24.5 (0.00/0.000)	16 (0.05/0.4)	19.8 (0.000/0.000)
7.Dental treatment can be done during pregnancy	25 (0.02/0.2)	42 (0.2/0.03)	34 (0.6/0.4)	34.3 (0.03/0.05)
8.interdental aids are used for dental care	23.5 (0.02/0.001)	32 (0.03/0.003)	20.5 (0.08/0.8)	25.3 (0.000/0.000)
9.artificial teeth needs cleaning	41 (0.3/0.1)	77.5 (0.2/0.002)	75 (0.3/0.7)	64.5 (0.5/0.000)
10.smoking has deleterious effect on oral cavity	70 (0.06/0.01)	88 (0.3/0.03)	96 (0.6/0.5)	84.7 (0.1/0.2)
11.supari has deleterious effect on oral cavity	78.5 (0.05/0.3)	91.5 (0.3/0.3)	90 (0.2/0.6)	86.7 (0.6/0.8)

DISCUSSION

Oral hygiene is a noninvasive intervention which results in prevention of oral & systemic diseases. There are many well-formed deep rooted believes and myths which are population specific and hence require a customized policy and plan of action to address them. These surveys are long used worldwide as an effective tool in community to understand health problems of the population.[12,13]

In context of Indian population there are few study which have seen dental disease burden and awareness but these were limited to children.[14-16]

The reason for high values of knowledge domain scores can to contribute to the fact that majority of the population was either young or middle age with graduation and above education and a good level of income. Also high and frequent information on oral care by means of advertisement on electronic and print media can be an additional reason for such results.

There was high awareness that sticky sugar and food lodgement causes decay this findings were in coordination with finding s of reddy et al. The awareness about effect of poor oral status on systemic health was low, only 33.2 % of population believed that poor oral health can have systemic effects. These finding were contrary to studies by nagesh et al and reddy et al.[17,18] They reposted that awareness of systemic health and oral health was higher in their participants. One of the reason for such awareness that the participant in these studies were collage going students and ours population was form rural areas with mean age between third and fifth decade.

Awareness regarding fluoride use, interdental aids, dental treatment during pregnancy was low, theses finding were similar to the studies.[19,20] This can be attributed to the fact that there is inadequate importance of oral care emphasized in primary and secondary education .

84.7% of the population in present study knew about deleterious effect tobacco smoking and 86.7% knew about deleterious effect supari on oral cavity. These results were similar to the reddy et al and Warnakulasuriya et al.[18,21] this could be attributed to print and electronic media awareness campaigns.

Majority of population believed that Eyesight is effect by extraction of upper tooth, professional cleaning loosens the teeth, tobacco reduces tooth pain, saving deciduous dentition is not important, extraction of tooth is better than treatment and dental treatment is expensive similar findings were reported by reddy et al.[18] Belief are deep rooted characteristic of a community and they represents a pattern. In the entire three centres there were low mean scores for adequate beliefs. Beliefs can only be modified with constant reinforcement and acceptance of these facts by the community members. On the other hand knowledge can be updated by various means but belief modification requires a more organized and structured approach.

Present study is one of its kinds in adult population. From similar population under a nationwide survey was done by global adult tobacco survey. In our study the knowledge for deleterious effect of smoking and areca nut chewing were between 84.7% and 86.7 % respectively. Similar to GATS-2 survey the knowledge about deleterious use of smoking and smokeless tobacco was 96-99%.[16]

Adult population already have adequate knowledge and require constant reinforcement for change. Modifying habit in children are easy as it can be structured in school curriculum by teacher and reinforced by parents and later can be formed as part of habit.[19] To modify an adult behavior is difficult but possible by a systematically structured oral awareness program using community health care workers and infrastructure.

The present study was initiated with an aim to formulate policies for oral awareness and education in our center to benefit the population we serve. Baseline knowledge of the prevalent knowledge and belief is essential in efficient delivery of health care. This study will also serve as a base line data for future study on same population.

Limitations: Present study had convenient sampling of patients reporting to our three centers for dental problems which results in problem of non-representative sampling. As there are no previous studies on adult's population, this makes difficult to provide conclusive recommendations. More studies focusing on adult population with larger sample size are recommended for more clear understanding of the prevalent oral knowledge and belief in adult population.

CONCLUSION

Present study shows that majority of the population had good knowledge but inadequate belief. A systematic and structured oral health awareness and education policy is the need of the hour for our population. The data form present study has been processed as recommendations to these health centers to develop oral health care guidelines to serve the study population and focus on decreasing dental disease burden by preventive and early dental care and interventions.

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