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Apprehension and attitude among population in India

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To assess the level of oral health knowledge, attitudes, and behaviour among Indian population in relation to location and demographic characteristics. This is a cross-sectional study including urban and rural subgroups of population by random sampling method. The study population consisting of 1760 subjects, of which 929 (52.8%) belong to rural area and 831 (47.2%) to urban area. A self administered structured questionnaire including 23 dichotomous questions pre-tested through a pilot survey was used in the study. The data were analyzed using the SPSS version 15.0. The Student's T-test and ANOVA test were used as test of significance. Karl Pearson's correlation test was used to assess the relation of oral health knowledge, attitude and behaviour. The mean score for oral health knowledge, attitude and behaviour were significantly higher in urban population as compared to rural population ($p<0.05$). A linear relationship was found between knowledge and attitude, knowledge and behaviour, and behaviour and attitude using Karl Pearson's correlation coefficient. Within the confines of this study it can be concluded that oral health awareness needs to be increased with especial focus on rural population. Health authorities should strengthen the implementation of oral disease prevention and health promotion programmes rather than traditional curative care.

Keywords: Oral health knowledge, attitude and behavior.

INTRODUCTION

Health is one of the most valuable assets one can possess. It is important for every person as an individual and for every country as a whole. Health is defined by the World Health Organization as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. In recent years; this statement has been amplified to include the ability to lead a "Socially and economically productive life" (Park, 2005, p. 10-32).

Mouth is the mirror of human body. Oral health is now recognized as equally important in relation to general health. Oral health may be defined as a standard of health of the oral and related tissues which enables an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to general well being (Udoye and Aguwa, 2000).

The oral tissue forms an integral part of the human organism and is extremely vulnerable to disease as they are in intimate relation with the external environment and being constantly subjected to mechanical, chemical and bacterial interactions (Dilip, 2005, p. 26-32). Oral diseases can be considered a public health problem due to its high prevalence and significant social impact (Smyth et al., 2007).

The most common oral health complaints across the world are tooth decay, gum problems, bad

breath etc. Apart from microorganisms there are various environmental and life style factors like nutritional status, tobacco smoking, alcohol, hygiene, stress, systemic conditions *etc*. which are linked to this wide range of oral diseases (Sheiham and Watt, 2000). According to oral health experts, a lot of people suffer from poor oral health without being aware of it and at times it can impact a person's quality of life (The Tribune, 2011, p. 8). Poor oral health not only affects chewing and digestion of food but also the overall personality and confidence of the population. Oral health is important at all stages of life to keep teeth longer and stronger.

The oral health concern of an individual is dependent on the attitude of a person. These attitudes naturally reflect their own experiences, cultural perceptions, familial beliefs, and other life situations and strongly influence the oral health behaviour (Friedman et al., 1976).

The broad categories of factors that may influence individual and community health behaviour include: knowledge, beliefs, values, attitudes, skills, finance, materials, time, and the influence of family members, friends, community, opinion leaders, and even health workers themselves (Park, 2005, p. 10-32).

Information about the oral health knowledge, attitudes, and behaviour among Indian population is still very limited, especially for rural people, who constitute more than 70% of the population. However, the urban population who have good access to oral hygiene care are also affected by poor oral health due to their unhealthy lifestyle and poor food habits (Patil et al., 2002). Studies have shown that only 56% of population brush their teeth daily and an approximately 32% have never gone to dentist (Diwan et al., 2011)

Many oral diseases can be prevented if proper education or awareness is provided such as tooth brushing and flossing which are useful for reducing the amount of bacterial plaque. Knowledge of oral health is considered to be a prerequisite for health related behaviour. It has been shown that rural Indian community has low level of oral health awareness and practice as compared to urban (Grewal and Kaur, 2007). Thus the purpose of this study was to assess the oral health knowledge, attitudes, and behaviour among Indian population according to different demographic characteristics.

MATERIALS AND METHODS

This cross-sectional study was conducted to determine the oral health knowledge, attitude and behaviour among urban and rural population in Sunam, India. Sunam is a city in the Indian state of Punjab with a population of around 150,000.

Before commencement of the survey, ethical approval was obtained from the Ethical Committee, and official permission was received. This study sample comprised of 1760 subjects including 831 urban (47.2%) and 929 rural population (52.8%). Urban area was geographically divided into four zones, and samples of around 207 subjects were randomly chosen from each zone. Data was collected from all sources such as factories, offices, hospitals, and main market areas by the investigator. In rural areas, subjects were recruited from their homes and fields in the villages. A pilot

survey was conducted to assess the appropriateness of the questionnaire, and it was found that averages of 10 minutes were needed to answer all the questions.

All subjects were above 18 years of age, so that they can easily understand and answer the questionnaire. The purpose of the survey was informed and explained to the participants and those who voluntarily agreed to participate in the survey and gave a written consent for the same were asked to fill the questionnaire according to the response format provided in the questionnaire.

The questionnaire was designed to evaluate the oral health knowledge, attitude and behaviour among all the participants which included eleven questions to check oral health knowledge, five to know attitude and seven for behaviour.

Assessment of participants' oral health knowledge included items on the number of deciduous and permanent teeth, the importance of brushing, the importance of bleeding gums and how to protect against it, the meaning of dental plaque and its effects, the reasons for tooth decay and cancer, and impact of oral health on the body.

Assessment of participants' dental attitudes included questions regarding regular visit to a dentist is necessary, attitudes towards health care in general and dental care in particular.

Assessment of participants' oral health behaviour included brushing habits (such as frequency, duration, time, and brushing aids), reason for visiting a dentist, and adverse habits.

Data analysis

For data analysis, each positive response was given a score '1' and each negative response was assigned as a score of '0'. Individual scores were summed up to yield a total score. Data was analyzed using SPSS version 15.0 (SPSS, Chicago, IL, USA). Descriptive statistics were obtained and frequency distribution, means, standard deviation were calculated. Student's t test was used to find the significance of difference in the means of oral health knowledge, attitude and behaviour in relation to gender and location of the participants at p value <0.05. One-

Table 1. Distribution of study population according to demographic characteristics

Characteristics	n (1760)	% (100)
Location		
Urban	831	47.2
Rural	929	52.8
Gender		
Male	892	50.7
Female	868	49.3
Age groups		
18 - 29 years	429	24.3
30 – 39 years	568	32.2
40 - 49 years	352	20.1
50 - 59 years	305	17.3
≥ 60 years	106	6.1
Educational level		
Illiterate	260	14.8
Primary	278	15.8
Secondary	174	9.9
Senior secondary	479	27.2
Graduation	394	22.3
Post graduation	175	10.0

Table 2. Showing knowledge, attitude and behaviour scores according to location

	Location	No.	Mean	S.d	p - value
Knowledge score	Urban	831	9.02	1.508	0.00*
	Rural	929	6.84	1.882	
Attitude score	Urban	831	4.64	0.617	0.00*
	Rural	929	3.98	0.789	
Behaviour score	Urban	831	5.29	0.953	0.00*
	Rural	929	3.78	1.178	

Test used: Student's t-test,* significant

Table 3. Showing knowledge, attitude and behaviour scores according to gender

	Sex	No.	Mean	S.d	p - value
Knowledge score	Male	892	7.68	1.980	0.00*
	Female	868	8.06	2.070	
Attitude score	Male	892	4.14	0.772	0.00*
	Female	868	4.45	0.765	
Behaviour score	Male	892	4.18	1.238	0.00*
	Female	868	4.81	1.318	

Test used: Student's t-test,* significant

way ANOVA was used to find the significance of difference in oral health knowledge, attitude, and behaviour in relation to different age groups and literacy rate levels. Karl Pearson's correlation was used to assess the relation of oral health knowledge, attitude and behaviour.

RESULTS

The total study population was 1760, comprising of 892 (50.7%) males and 868 (49.3%) females. The rural population consists of 929 (52.8%) compared to 831 (47.2%) from urban area.

The population of various age groups was taken as four hundred twenty nine (24.3%) subjects were between 18 to 29 years of age, 568 (32.2%) subjects were between 30 to 39 years of age, 352 (20.1%) subjects were between 40 to 49 years of age, 305 (17.3%) subjects were between 50 to 59 years of age and only 106 (6.0%) subjects aged 60 years and above.

According to their educational status, it was found that 260 (14.8%) were illiterate, 278 (15.8%) subjects were educated up to Primary level, 174 (9.9%) up to Secondary level, 479 (27.2%) up to Senior Secondary level, 394 (22.3%) up to Graduation level and 175 (10.0%) were educated up to the level of Post graduation. (Table 1)

The results showed that urban people had higher level of oral health knowledge, attitude and behaviour compared to rural ($P<0.05$), as shown in Table 2. Similarly a significant difference was observed according to the gender in which females were showing more interest than males regarding their oral health ($P<0.05$), as shown in Table 3.

Regarding educational status, it was observed that level of oral health knowledge, attitude and behaviour improved with increasing level of education among all the participants ($P<0.05$), as illustrated in Table 4. When oral health knowledge, attitude and behaviour levels were compared according to age groups, a significant downfall was seen with increasing age ($P<0.05$) (Table 5).

A linear relationship was found between knowledge and attitude, knowledge and behaviour, and behaviour and attitude using Karl Pearson's correlation coefficient (Table 6).

DISCUSSION

Oral health knowledge, attitudes and behaviour among different groups, professionals, populations and students were evaluated by survey worldwide in several studies (Kwan and Holmes, 1999) which were performed in different countries. Even, cultural differences in countries with similar or different social systems were investigated in previous studies (Kawamura et al., 2001; Kawamura et al., 2002).

Table 4. Showing knowledge, attitude and behaviour scores according to age groups

Age groups	Knowledge Score		Attitude score		Behaviour score	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
18 - 29 years	8.46	1.749	4.44	0.607	4.98	1.195
30 – 39 years	8.00	1.809	4.42	0.698	4.68	1.267
40 - 49 years	7.83	1.947	4.17	0.894	4.42	1.205
50 - 59 years	7.39	2.354	4.15	0.833	3.93	1.139
≥ 60 years	6.25	2.358	3.83	0.990	3.34	1.597
Total	**7.87**	**2.033**	**4.29**	**0.784**	**4.49**	**1.317**
F value	**33.082**		**22.284**		**58.489**	
P value	**0.000***		**0.000***		**0.000***	

Test used: ANOVA, * significant

Table 5. Showing knowledge, attitude and behaviour scores according to education level

Education level	Knowledge Score		Attitude score		Behaviour score	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Illiterate	4.97	1.274	3.07	0.248	2.46	0.902
Primary	6.40	1.389	3.68	0.466	3.60	0.767
Secondary	7.48	1.367	4.10	0.633	4.50	0.892
Sr. Secondary	8.05	1.065	4.64	0.481	4.82	0.800
Graduation	9.60	0.682	4.89	0.315	5.54	0.557
Post Graduation	10.50	0.501	5.00	0.000	5.67	0.705
Total	**7.87**	**2.033**	**4.29**	**0.784**	**4.49**	**1.317**
F value	**895.307**		**933.346**		**693.654**	
P value	**0.000***		**0.000***		**0.000***	

Test used: ANOVA, * significant

Table 6. Correlation between knowledge, attitude and behaviour using Karl Pearson's correlation test

Sr no.	Relationship between		Karl Pearson's coefficient of correlation
1	Knowledge score	Attitude score	+ 0.721*
2.	Knowledge score	Behaviour score	+ 0.752*
3.	Behaviour score	Attitude score	+ 0.772*

*significant

Due to lack of studies about oral health knowledge, attitudes and behaviour among urban and rural population, this study is of prime importance in this field and also emphasis was given to assess the relative effect of education, gender and age on these factors.

Overall urban people was found to possess more knowledge scores than rural people like knowing the number of deciduous and permanent teeth, reasons of bleeding gums, tooth decay and oral cancer, methods to prevent tooth decay and impact of oral health on general health.

Similarly urban people shown more positive attitude like visiting a dentist regularly, dentist cares properly and oral diseases is as important as any other organ of the body as compared to rural.

As we know that knowledge increases attitude and attitude brings changes in behaviour. So,

similarly results were found in behaviour scores in which urban people gave more positive response than rural people in habits like tooth brushing, use of other oral hygiene aids etc.

In general, females had better oral health knowledge, attitude and behaviour scores than males which were in agreement with other studies (Polychronopoulou et al., 2005; Kawamura et al., 2005). This condition may be explained on the basis that females usually care more about their body and appearance. They would thus be more concerned about visiting the dentist and would tend to be more educated about their oral health. Where as in some studies males had shown significantly higher knowledge scores compared to females (Leili et al., 2008).

Considering the influence of education on knowledge, attitude and behaviour, it was found that all the three scores increased significantly from illiteracy level to Post graduation level. Similar effects were observed in a study conducted by Syed et al. (2009) where age and education had significant influence on knowledge **(**Farid-ul-Hasnain et al., 2009**)**

The correlation coefficient of 0.752 was found between knowledge and behaviour, suggesting that an increase in knowledge would lead to increase in behavioural changes. Therefore, the significant differences that existed between urban / rural population, gender and age groups in knowledge co-existed in behaviour. The correlation coefficient of 0.772 was found between behaviour and attitude, again suggesting that an increase in positive behaviour led to an increase in attitude changes. Between knowledge and attitude, a correlation coefficient of 0.721 was found, which again suggested that increased knowledge led to increased positive attitude. These findings are similar to the traditional health education model (KAB model) which suggests that acquiring new knowledge would alter attitudes and lead to a change in behaviour (Daly, 2002, 26-32). This somewhat simplistic representation of human behaviour rarely exists in the real world. In reality, a very complex relationship operates between the three domains of learning. Therefore, the findings of this study need to be validated by further studies.

CONCLUSION

The present survey showed that the levels of oral health knowledge, attitude and behaviour among rural people were lower than those are in urban community which may be due to lower literacy level among rural people. The oral health behaviour of the population was dependent on attitude and knowledge which showed a linear relationship. Oral health education and motivation of people to adopt healthy behaviour would play a most important role in order to control oral disease. While this study examined the oral health knowledge, attitude and behaviour; among urban and rural population, more detailed studies probing these issues in depth are needed in different target populations. In addition, in order to prevent oral diseases and to promote oral health, the national health authorities should give priority to community-oriented oral health care programmes and essential care should be offered according to primary health care concept.

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