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Oral health inequalities among rural and urban population of north India: Short survey study

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Abstract

In past few decades, there have been major improvements in oral health, globally, but inequalities are persistent between urban and rural communities. These inequalities exist in the awareness related to oral health, oral hygiene practices, accessibility to oral health, treatment preferences & oral health- related quality of life. People living in rural areas are generally less educated, poorer, have less knowledge regarding oral health, also have lesser money to spend on oral health related issues. Lower education levels in rural areas are related to lower levels of health literacy and poor use of health care services. Aim of this study was to understand inequalities of oral health awareness, practices, treatment preferences & oral health related quality of life among rural & urban population of North India. Cross-sectional study was conducted on patients visiting hospital from rural & urban areas of North India. Self-administered & validated questionnaire was used for study. Descriptive analysis & chi-square tests were used to check significance of the result. Result of the study showed that rural community still has lesser knowledge about maintaining oral health and treatment of choice is still mainly surgical instead of conservative approach. The majority of the participants (73.3%) in this study used a toothbrush and a tooth paste to brush their teeth. But still a significant portion uses toothpaste & finger. Thus there is an utmost need to strengthen strategies to improve oral health in rural settings of India, taking into account the socioeconomic gradients or inequalities in rural–urban areas.

Keywords: Oral health, Inequality, Rural & Urban, North India, Quality of Life

Introduction

In past few decades, there have been major improvements in oral health, globally. More advanced treatment options, materials & techniques are being invented to give patients the best treatment possible.[1] Oral health has also been given importance recently because oral health is not only important for appearance and sense of well-being but also for overall health. Even after so much advancement, there are significant differences in the distribution of oral health services, accessibility, utilization, and outcomes between urban and rural areas of both developing and developed countries.[2,3] These inequalities exist in the awareness related to oral health, oral hygiene practices, accessibility to oral health, treatment preferences & oral health- related quality of life. People living in rural areas are generally less educated, poorer, have less knowledge regarding oral health, also have lesser money to spend on oral health related issues. Lower education levels in rural areas are related to lower levels of health literacy and poor use of health care services. India is a developing nation, which has a huge population of 1.25 billion. Majority of this population resides in rural areas with poor or no access to dental services. So, we need to understand the kind of inequalities among rural and urban populations have. Also, what measures can be taken to remove this inequality should be understood.

Methodology

The primary objective of this study was to understand inequalities in awareness & hygiene practices related to oral health among rural & urban population of North India. The study population was selected from North Indian subjects visiting hospital for oral health issues. The present study was a cross-sectional study conducted among 401 North Indian subjects of 18-79 years of age. Study population was chosen from urban and rural areas in approximately 1:1 proportion. Ethical clearance was obtained from the Ethical Committee of Ahmedabad Dental College after explaining the aim, importance and methodology of the study.

Information sheet was provided to the each subject explaining the purpose and procedure of the study, before taking informed consent from them prior to the examination. Permission from the concerned authorities of the clinics and hospital was taken prior to the study. The study was conducted from October 2019 to and October 2020. A maximum of 15 subjects were examined on each day.

Sample size determination

The sample size is estimated by using n Master software (2.1 versions, CMC, Vellore). The data required for estimation of sample size is procured from the pilot study conducted on 50 subjects. Based on the results obtained in the pilot study, minimum sample size of 401 was calculated. Study subjects were selected by a combination of convenience and snow ball sampling.

Inclusion Criteria

- Subjects visiting hospital for the treatment
- Subjects will to participate and provide consent for the participation
- 18-79 years old subjects.

Exclusion Criteria

- Physically challenged and mentally compromised people and those with cognitive impairment will be excluded.
- Subjects who were not ready to give consent.
- Subjects visiting for carcinoma, pre-cancerous situation were also excluded.

Survey instrument/questionnaire

The survey instrument was comprised of items of Oral Health Impact Profile (OHIP)-14 items, demographics variables, awareness and practice of oral hygiene and oral health status. The Validity of the survey (in Both Hindi & English) was assessed and was found to be acceptable (α=0.79 & 0.82 respectively). To check the simplicity, relativity, and importance of the questionnaire, it was sent to researchers and professionals from medical backgrounds to give their expert opinion, after that it was used to collect data.

Data analysis

The data was entered in Microsoft excel format and was analyzed using SPSS version 21(IBM SPSS Corp. Ltd. Armonk, N.Y). Summarized data was presented using Tables and Graphs. Descriptive data was reported for each variable. Descriptive statistics such as mean and standard deviation for continuous variables was calculated. Chi-square test was used to confirm significance of the results.

Results

When the patients were asked whether they clean their teeth regularly, 13.2% rural population & 5.1% urban population said they were not cleaning their teeth regularly. (Table -1)

		Do you clean your teeth regularly?			
		Yes		No	
		Count	%	Count	%
Location	Rural	178	86.80%	27	13.20%
	Urban	**186**	**94.90%**	**10**	**5.10%**

Table 1: Distribution according to regular cleaning

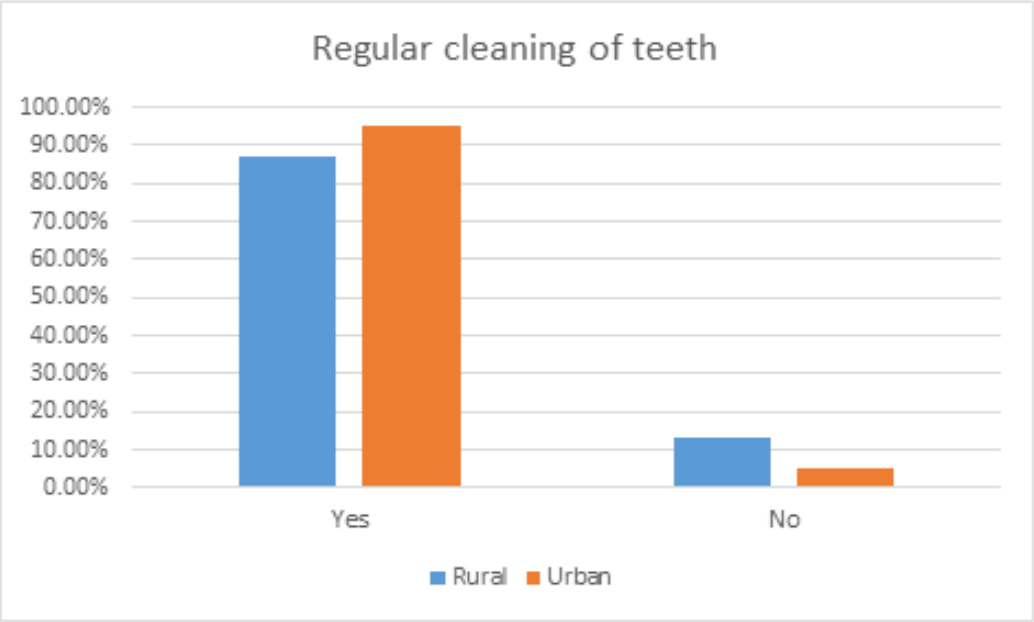

Figure 1: Distribution according to regular cleaning

Table 2**:** shows distribution according to agent used for brushing. Significant differences were observed in the distribution of agent used in rural and urban population. Majority of the subjects in rural area used tooth paste and finger where as in urban majority used tooth paste and brush.

	Method of Brushing						Total
	Wooden Stick	Wooden Stick, Brush & Paste	Charcoal	Finger & Paste	Finger & Paste, Brush & Paste	Brush & Paste	
Rural	3	0	5	68	5	124	205
	1.50%	0.00%	2.40%	33.20%	2.40%	60.50%	100.00%
Urban	1	4	3	17	0	171	196
	0.50%	2.00%	1.50%	8.70%	0.00%	86.70%	100.00%
Total	4	4	8	85	5	295	401
	1.00%	1.00%	2.00%	21.20%	1.20%	73.30%	100.00%
P-Value	**0.0001**						

Table 2: Distribution according to agent used for brushing

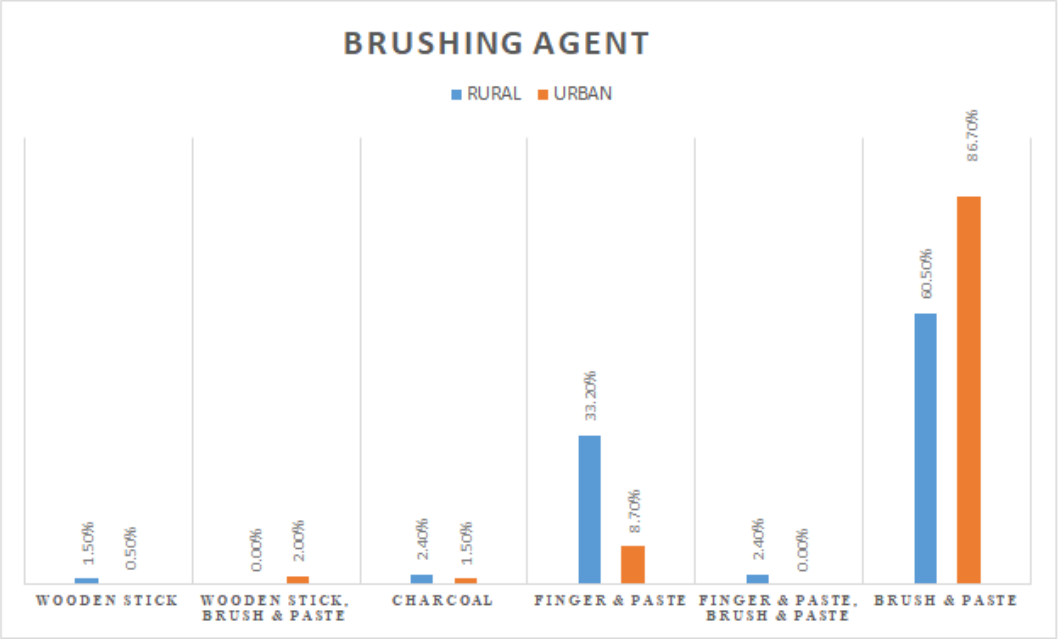

Figure 2: Distribution according to agent used for brushing

Table 3: Showed Distribution according to preferred treatment in case of toothache. Significant differences were seen in the preferred choice of treatment in rural and urban population when compared using Chi-square test. Majority of the subjects in rural area preferred extraction whereas among urbanite majority preferred getting it treated with RCT.

					Total
			Saving tooth (RCT)	Extraction	
Group	Urban	N	139	57	196
		%	70.90%	29.10%	100.00%
	Rural	N	78	127	205
		%	38.10%	61.90%	100.00%
Total		N	217	184	401
		%	54.10%	45.90%	100.00%
P value					**0.0001**

Table 3: Distribution according to preferred treatment in case of toothache

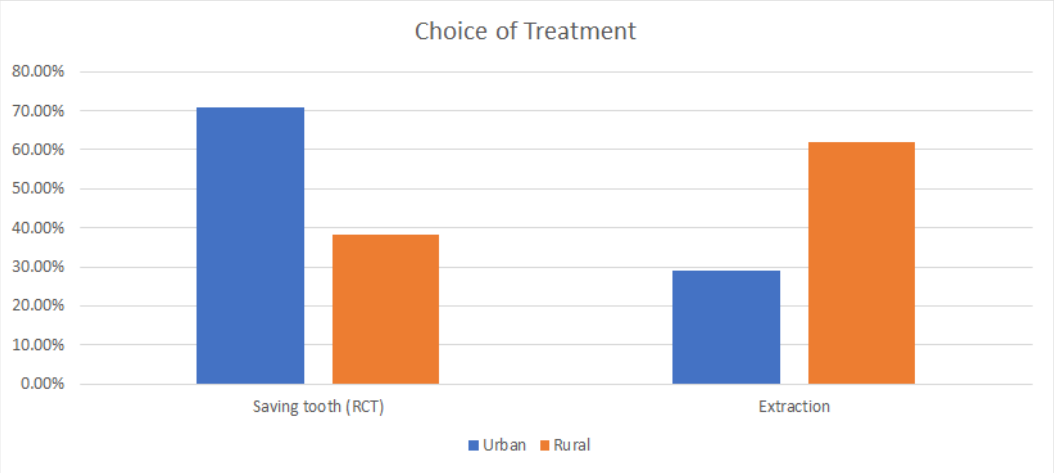

Figure 3: Distribution according to preferred treatment in case of toothache

Table 4 showed Distribution according to awareness about different specialists in dentistry for different treatments. Significant differences were seen in awareness about different specialists in dentistry for different treatments in rural and urban population when compared using Chi square test. Majority of the subjects in rural area were not aware whereas among urbanites majority were aware about it.

					Total
			No	Yes	
Group	Urban	N	94	102	196
		%	47.97%	52.04%	100.00%
	Rural	N	190	15	205
		%	92.68%	7.30%	100.00%
Total		N	284	117	401
		%	70.80%	29.17	100.00%
P value					0.0001

Table 4: Distribution according to awareness about different specialists in dentistry for different treatments

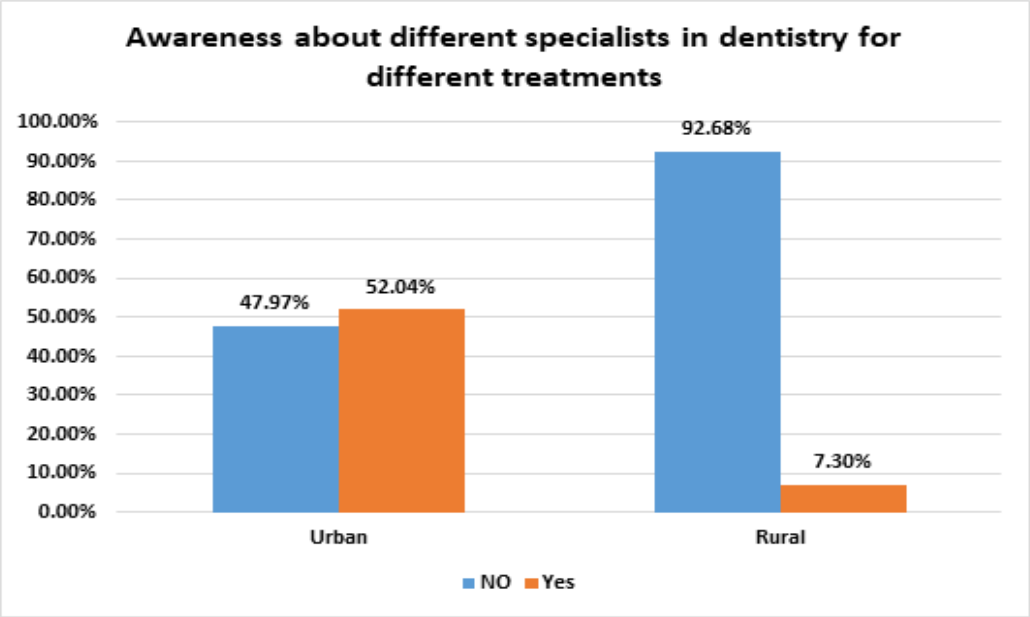

Figure 4: Distribution according to awareness about different specialists in dentistry for different treatments

Table 5 shows cleaning of teeth may help decaying your tooth where 99.5% urban population agreed with this, while from rural population 97.1% agreed with the same

		Cleaning of teeth may help reduce tooth decay			
		Yes		No	
		Count	%	Count	%
Location	Rural	199	97.1%	6	2.9%
	Urban	195	99.5%	1	0.5%

Table 5: Distribution according to awareness about that Cleaning of teeth may help reduce tooth decay

Table 6 shows cleaning of teeth may help keeping gums healthy where 97.4% urban population agreed with this, 83.4 % rural population agreed with the same. It shows that rural population has less knowledge that cleaning procedures are also necessary to keep gums healthy

		Cleaning of teeth may help keeping gums healthy			
		Yes		No	
		Count	%	Count	%
Location	Rural	171	83.4%	34	16.6%
	Urban	191	97.4%	5	2.6%

Table 6: Distribution according to awareness about that Cleaning of teeth may help keeping gums healthy

Table 7 shows overall awareness about importance of fluoride was very less. Where in rural population only 2.9% people were aware about it, in urban population 35.3% people were aware.

		Fluoride is important to prevent tooth decay			
		Yes		No	
		Count	%	Count	%
Location	Rural	6	2.9%	199	97.1%
	Urban	70	35.3%	126	64.7%

Table 7: Distribution according to awareness about importance of Fluoride

Discussion

Although there have been major improvements in oral health in the past decades, inequalities still remain, with a marked social gradient in oral health, similar to that in general health.[1]

There are significant differences in the distribution of oral health services, accessibility, utilization, and outcomes between urban and rural areas of both developing and developed countries.[2,3] Some of the prominent factors among the rural-urban variations include differences in preventive oral health knowledge and practices, including dental visits differences in health insurance coverage between and within urban/rural communities; inequality in oral health–related quality of life among children, youths, and adults; and inequality in the prevalence of early childhood caries and feeding habits in children, among others.[1]

There are more positive dental attitudes and knowledge about oral diseases among urban communities compared with the rural areas.[4,5] A higher percentage of the urban population has knowledge that regular cleaning of teeth and periodic visits to dentists may prevent oral diseases compared to rural population. A significant proportion of the rural population (97.1%) was not aware of the effectiveness of fluoride.

Results of the present study showed that majority of the study subjects cleaned their teeth regularly yet significant differences were seen in the frequency of regular cleaning

among rural and urban population. Frequency of not cleaning teeth regularly was found to be significantly more among rural population. The majority of the participants (73.3%) in this study used a toothbrush and a tooth paste to brush their teeth. This is lower than similar studies conducted by Oberoi et al[6] and Ali et al[7] in Indian population, and in the Pakistani population, in which it was found to be 83.6% and 88% respectively. Thus, a substantial portion of the population still does not use a toothbrush and toothpaste to clean their teeth.

Prevalence of using finger, charcoal and wooden stick was also found to be significantly more among rural population. Significantly more subjects in rural area preferred to get their teeth extracted whereas more number of subjects in urban area preferred to get RCT done. Similar results were reported by Doescher et al[8] in a study to assess Dentist Supply, Dental Care Utilization, and Oral Health Among Rural and Urban U.S. Residents. According to Khan et al[9] and Luo et al[10] residents in rural areas are less likely to receive preventive services and more likely to receive restorative and oral surgery services than those residing in urban areas .Majority of the subjects in urban population had an idea about multiple dental specialities. Despite through literature search we could not find any study assessing the knowledge about dental specialities hence this variable was not compared with other studies.

Majority of the study population had knowledge regarding cleaning teeth can keep the teeth decay free and also promote healthy gums and no significant difference were observed in the knowledge of rural and urban population. Urban population had significantly more knowledge regarding the preventive role of fluoride.

Ettinger et al[11] in areview of rural dentistry, concluded that for people living in rural and remote areas, unmet dental care remains one of the most urgent health care needs. Persons living in rural areas are likely to be older, less health literate, have more caries, have fewer teeth, and have less money to spend on dental care than persons living in urban areas. A study in Tanzania revealed that urban residents were 5 times more likely to use toothpaste than rural residents.[5] Since it's impossible to meet all the needs of such rural populations, it is suggested that prevention must be the focus of any program aimed at improving the oral health of rural population.[11] The lower percentage of dental care use in rural areas is also related to the lower density of dental care providers practicing in these areas.

Conclusion

Thus there is an utmost need to strengthen strategies to improve oral health in rural settings of India, taking into account the socioeconomic gradients or inequalities in rural–urban areas. Furthermore, there is a need to increase the promotion of the use of oral health services in rural settings, in order to reduce existing rural–urban inequalities. To be effective, we first need to educate both rural and urban population about the importance of oral health and their ability to prevent and manage oral diseases. To bring all these changes, oral health should be fully integrated into primary health care (PHC) and community health care services.

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