

Oral hygiene habits, oral health status, and oral health care seeking behaviors among spinning mill workers in Guntur district: A cross-sectional study

Vikram Simha Bommireddy¹, Sai Siva Naga Gayathri Naidu²,
Tulasi Priya Kondapalli², Harish Chowdary Kommineni³, Rammohan Madem⁴,
Gowtham Manikanta Yadav Padagala⁵

¹Department of Public Health Dentistry, SIBAR Institute of Dental Sciences, Guntur, Andhra Pradesh, ²General Dental Practitioner, Guntur, Andhra Pradesh, ³Department of Pedodontics, SIBAR Institute of Dental Sciences, Guntur, Andhra Pradesh, ⁴Department of Conservative Dentistry and Endodontics, SIBAR Institute of Dental Sciences, Guntur, Andhra Pradesh, ⁵Department of Pedodontics and Preventive Dentistry, SIBAR Institute of Dental Sciences, Guntur, Andhra Pradesh, India

ABSTRACT

Introduction: Though the oral health status of workers from different industries was reported in literature, there is little information with regard to spinning mill workers. The aim of this study was to document the oral health status, oral hygiene routine, and frequency of utilization of oral health care services among spinning mill workers in Guntur district. **Materials and Methods:** 458 spinning mill workers in Guntur district participated in this study. Data on hygiene practices, self-reported dental problems, past dental visits, type and place of availed treatments, and barriers for utilizing dental services were recorded. Oral health status was examined using Simplified Oral Hygiene Index, DMFT index, and Community Periodontal Index. **Results:** Female participants were found to have better oral hygiene status compared to males, which is partially significant. Similar was the scenario when caries experience was considered. Majority of the study subjects (74%) have a DMFT score of 1–6. There were 86 participants without any coronal caries experience. The mean coronal caries experience was more among older spinning mill workers compared to the younger workers. The difference in DMFT scores between males and females was not significant. Majority of the participants (46.3%) were with CPI score 2, while only 10.2% were observed to have all healthy sextants. 136 subjects (30.15%) demonstrated loss of attachment of some severity. **Conclusion:** Though the oral hygiene habits reported by the spinning mill workers were fair, oral health care seeking behaviors were found to be less informed. There is a serious need to improve the oral health awareness and care seeking behaviors among these workers.

Keywords: Care seeking behaviors, industrial workers, oral health status

Introduction

India is the third largest producer of cotton in the world and second largest producer of cotton yarns and textiles. Owing to the domestic and multilateral policy reforms, India was expected to play an important role in global textile market. High

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Address for correspondence: Dr. Vikram Simha Bommireddy,
Department of Public Health Dentistry, SIBAR Institute
of Dental Sciences, Guntur, Andhra Pradesh, India.
E-mail: vikramsimhams@gmail.com

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profitability associated with commercial crops like cotton drives cultivation of cotton in unfriendly agro-climatic conditions. The demand for cotton in India was exclusively generated by the domestic market until the liberalization of industrial policies in 1990s, but the scenario has changed since then with a substantial growth in textile exports.^[1] However, recent reports suggest that a third of spinning mills across India have shut down in light of the drastic decline in export and domestic sales.^[2] India's textile industry is the second largest employment generator with around 100 million workers finding employment in this sector. The reports by Directorate General of Commercial Intelligence and Statistics (DGCI and S) suggest that the cotton yarn export in India fell by 34.6%, and this has resulted in a huge loss of jobs.^[3] Guntur is one of the leading cotton producers in the state of Andhra Pradesh, and textile industry is one of the focus sectors in this district along with cement industry and agro and food processing.^[4]

Workers comprise a huge and valuable population. In 2007, WHO estimated that the global labor volume would be about half of the global population. 60%–70% of males and less than half of females across the globe are officially registered working labor. According to the joint committee of WHO and International Labor Organization (ILO), occupational health is defined as the promotion and maintenance of the highest degree of physical, mental, and social well-being of workers in all occupations.^[5] Occupational environment constitutes the extraneous states and drivers existing at the workplace which would have an influence on the health of the workers. The incidence of occupational diseases in India is a matter of concern with India contributing 20% to the world's occupational disease burden.^[6] Working environments are often regarded as important risk factors for oral health problems and in light of the established negative influence of oral health problems on the quality of life of people, poor working environments frame a vicious cycle where the quality of life of the stake holders keeps compromising with time.

Though the oral health status of workers from different industries like cement,^[7] marble,^[8] battery,^[9] fireworks,^[10] bakery,^[11] etc., was reported in literature, there is little information on the oral health status, oral hygiene behaviors, and dental care seeking patterns of spinning mill workers. With this background and given the reputation of spinning mill industry in Guntur district of Andhra Pradesh, the aim of this study was to document the oral health status, oral hygiene routine, and frequency of utilization of oral health care services among spinning mill workers in Guntur district.

Materials and Methods

This cross-sectional study was conducted among spinning mill workers in and around Guntur city, Andhra Pradesh. The ethical approval for this study was obtained from the Institutional Ethical Committee of the teaching dental institution the investigators are affiliated with (54/IEC/SIBAR/2018). Five spinning mills from this geographical area were randomly selected and all the

industrial workers were invited to participate in the study. Of the 642 workers employed in the mills, 39 were not present on the days when the study was conducted. The response rate was 92.7% with 559 workers demonstrating interest to take part in the study. Subjects with self-reported systemic diseases and experience of less than 3 months as a spinning mill worker were excluded from the study. The final sample constituted 458 subjects and the study purpose was explained to all the participants; informed consent was obtained prior to the collection of data. Data on gender, age, education, income, tobacco and alcohol habits, oral hygiene practices, self-reported dental problems, past dental visits, type and place of availed treatments, and barriers for utilizing dental services were recorded. Oral health status was examined using Simplified Oral Hygiene Index (OHI-S),^[12] Decayed, Missing, Filled Tooth Index (DMFT),^[13] and Community Periodontal Index (CPI).^[13] Two investigators took part in the data collection process after demonstrating good interexaminer reliability [intraclass correlation coefficient ranged from 0.84–0.87; weighted Kappa for CPI was 0.91 (95% CI 0.84–0.97)]. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 20 software (IBM SPSS statistics for Windows version 20, Armonk, NY, USA) and descriptive statistics, independent samples t-test, one-way analysis of variance, and Fisher's exact test were employed to analyze the data. The significance level was set at 5%.

Results

Of the final sample of 451, 229 (50.77%) were males and 222 (49.23%) were females. Majority of the participants (33.7%) belonged to the age group of 31–40 years. 41.01% of the study subjects were illiterate, while 33.03% did not complete primary school education. The prevalence of tobacco use in any form was 32.15% and such use was reported only among males, which implies that 63.6% of male spinning mill workers have the habit of tobacco consumption. Nearly 60% of the male spinning workers reported alcohol use. Descriptive statistics of the background characteristics of the study population is reported in Table 1.

More than 90% of the study participants reported using toothbrush and toothpaste. Greater than 50% of those reported using toothbrush responded that they change the brush once in a year. Only 31.5% of the study participants reported availing oral health services in the past, and a significant difference was noted between the age groups in this regard, with considerably higher percentage of older subjects reporting past dental visits compared to younger age groups. No differences were noted between males and females in the proportion of participants reporting past dental visits. Almost 50% of those who reported availing dental services in the past sought dental care more than 12 months from the time of data collection. Nearly 80% of the study subjects have experienced some sort of oral health problems in their lifetime, and toothache was the most common problem reported accounting for 57.14% of all the problems reported, followed by dental caries (24.3%), loose teeth (21.56%), bleeding

gums (16.8%), and missing teeth (13.16%). Among those who sought dental care in the past, extraction was the most common treatment sought (64.78%), followed by restorations (22.53%). Majority of the participants reported availing dental care from private clinics (40.14%), and consulting a registered medical practitioner and quacks in the locality for oral health problems was found to be not uncommon among the study population. High costs associated with dental treatment, lack of time, other expenses to meet, and the perception that dental pain will go away in some time even left unattended were the major reasons for not availing oral health care. Gender wise and age group wise

differences among study population with regard to oral hygiene habits, previous dental visits, dental problems experienced in the past, type of care sought, and barriers for utilization of dental services are presented in Table 2.

Female participants were found to have better oral hygiene status compared to males, which is partially significant. Similar was the scenario when caries experience was considered. Majority of the study subjects (74%) have a DMFT score of 1-6. There were 86 participants without any coronal caries experience. The mean coronal caries experience was more among older spinning mill workers compared to the younger workers. The difference in DMFT scores between males and females was not significant. Majority of the participants (46.3%) were with CPI score 2, while only 10.2% were observed to have all healthy sextants. 136 subjects (30.15%) demonstrated loss of attachment of some severity. The age and gender wise differences in the oral health status of the study participants are presented in Table 3.

Table 1: Descriptive statistics of the background characteristics of study population

Variable	Category	Number (n)	Percentage (%)
Gender	Male	229	50.77
	Female	222	49.23
Age group	18-30 years	84	18.62
	31-40 years	152	33.7
	41-50 years	135	29.93
	51 years and above	80	17.73
Education	Illiterate	185	41.01
	Not completed primary education	149	33.03
	Primary education	85	18.84
Tobacco habit	Yes	145	32.15
	No	306	67.85
Alcohol habit	Yes	137	30.37
	No	314	69.63

Discussion

The study data shows that there is near equal employment from both genders in the spinning mills considered for this study. Majority of the participants were middle-aged adults aged between 31 and 50 years. One of the reasons for this observation could be the tendency to explore other livelihood options among the younger age groups.

In a study conducted by Sherley *et al.*^[10] toothbrush was used among 61% of workers, while 29% used fingers and 7% used

Table 2: Age and gender wise differences in oral hygiene habits and oral health care service utilization among the study subjects

Variable	Category	Gender		P	Age group				P
		Male n (%)	Female n (%)		18-30 n (%)	31-40 n (%)	41-50 n (%)	51 and above n (%)	
Cleaning aid	Brush	202 (88%)	209 (94%)	0.04*	82 (97%)	148 (97%)	124 (91%)	57 (71%)	0.03*
	Finger	23 (10%)	9 (4%)		2 (2%)	4 (2%)	8 (5%)	18 (22%)	
	Twig	4 (1%)	4 (1.8%)		0	0	3 (2%)	5 (6%)	
Cleaning material	Paste	214 (93%)	212 (95%)	0.38	84 (100%)	151 (99%)	128 (94%)	63 (78%)	0.041*
	Powder	13 (5%)	7 (3%)		0	1 (0.6%)	6 (4%)	13 (16%)	
	Others	2 (0.8%)	3 (1.3%)		0	0	1 (70%)	4 (5%)	
Frequency of changing toothbrush	3 months	37 (18%)	68 (32%)	0.003*	23 (0.28%)	36 (0.24%)	26 (20%)	20 (12.7%)	0.036*
	6 months	44 (21%)	43 (20%)		17 (0.20%)	23 (0.15%)	24 (19%)	23 (40.3%)	
	1 year	121 (59%)	98 (46%)		42 (51%)	89 (60%)	74 (59%)	14 (24.5%)	
Past dental visit	Yes	63 (27.5%)	79 (35.5%)	0.06	24 (28.5%)	31 (20.3%)	49 (36.2%)	38 (47.5%)	0.001*
	No	166 (72.4%)	143 (64.4%)		60 (71.4%)	121 (79%)	86 (63.7%)	42 (52.5%)	
Last dental visit	6 months	19 (30.1%)	23 (29.1%)	0.18	6 (25%)	6 (19.3%)	17 (34.6%)	13 (34.2%)	0.001*
	12 months	9 (14.2%)	21 (26.5%)		3 (12.5%)	5 (16.1%)	14 (28.5%)	8 (21%)	
	>1 year	35 (55.5%)	35 (44.3%)		15 (62.5%)	20 (64.5%)	18 (36.7%)	17 (44.7%)	
Facility where dental care was sought	Government hospital	7 (11.1%)	11 (13.9%)	0.02*	2 (8.3%)	2 (6.4%)	3 (6.1%)	11 (28.9%)	0.001*
	Private clinic	35 (55.5%)	22 (27.8%)		7 (29.1%)	22 (70.9%)	17 (34.6%)	11 (28.9%)	
	Dental college	7 (11.1%)	14 (17.7%)		9 (37.5%)	4 (12.9%)	6 (12.2%)	2 (5.2%)	
	Quacks	5 (7.9%)	13 (16.4%)		2 (8.3%)	2 (6.4%)	8 (16.3%)	6 (15.7%)	
	RMPs	9 (14.2%)	19 (24%)		4 (16.6%)	1 (3.2%)	15 (30.6%)	8 (21%)	

Chi-square test; $P \leq 0.05$ considered statistically significant; * denotes statistical significance

Table 3: Age and gender wise differences in the oral health status of the study participants

Variable	Category	Gender		P	Age group				P
		Male n (%)	Female n (%)		18-30 n (%)	31-40 n (%)	41-50 n (%)	51 and above n (%)	
Subject wise	0	17 (7.4%)	29 (13%)	0.013*	25 (29.7%)	11 (7.2%)	8 (5.9%)	2 (2.5%)	0.001*
CPI SCORE [†]	1	51 (22.2%)	67 (30.1%)		44 (52.3%)	39 (25.6%)	29 (21.4%)	6 (7.5%)	
	2	113 (49.3%)	96 (43.2%)		12 (14.2%)	88 (57.8%)	62 (45.9%)	47 (58.7%)	
	3	48 (20.9%)	30 (13.5%)		3 (3.5%)	14 (9.2%)	36 (26.6%)	25 (31.2%)	
Mean OHI-S (SD) [‡]		2.41 (0.83)	2.29 (0.64)	0.086	1.7 (0.31)	1.93 (0.54)	2.68 (1.05)	3.27 (1.81)	0.001*
Mean DMFT (SD) [‡]		4.73 (2.1)	4.6 (2.26)	0.52	3.08 (0.93)	3.76 (1.62)	5.41 (2.18)	6.75 (4.80)	0.001*

[†]Chi-square test; [‡]Independent samples *t*-test for dichotomous independent variable and One-way analysis of variance for multichotomous independent variable; *P*≤0.05 considered statistically significant; * denotes statistical significance

neem stick to clean their teeth. In our study, 91.74% reported using toothbrush, 7.14% used fingers, and 1.16% used neem stick. Though the percentage of population using toothbrush were observed to be comparatively more, close to 10% of study subjects still rely on cleaning aids like neem twigs and fingers. In spite of using toothbrush daily, the results showed that the subjects had only fair oral hygiene. Sharma *et al.*^[7] showed similar results in which despite daily tooth brushing by 86.67% of participants, 60% of the population had poor oral hygiene. Although greater number of workers used toothbrush to clean their teeth, this habit failed to show its effect on periodontal status of spinning mill workers.

The overall mean DMFT score of the study participants in our study was higher when compared to the study conducted by Raj *et al.*^[9] where the overall mean DMFT score was 3.1. The results of the study revealed that mean DMFT score of the workers increased with age, which is similar to the study conducted by Dileep *et al.*^[11] and is in contrast with the study conducted by Duraiswamy *et al.*^[8] where no such trend was observed. International experiences suggest poor oral health status among spinning mill workers.^[14] A recent study conducted in the same geographical location as the present study reported relatively better oral health status and oral health related quality of life among spinning mill workers compared to workers from tobacco industry.^[15]

Majority of the workers sought their dental care through private dental clinics and least number of workers through government hospitals and by the quacks. This can be due to their financial background which and one of the reason could be due to the lack of facilities in the government hospitals. Most of the spinning mill workers had not undergone previous dental visits which can be supported by the fact that there is a lack of knowledge regarding their oral health and the timing of the work could be one of the reasons and their negligence can be one of the contributing factors.

Primary care physicians and oral health care professionals play a key role in informing and enabling the spinning mill workers to realize the importance of oral health care in safeguarding general health and maintain quality of life. In addition, oral health is increasingly being emphasized as an essential component of primary care.^[16] Often oral health care facilities serve as the

primary contact points for people in the diagnosis of general health conditions and in engaging the subjects to seek requisite medical care.^[15] However, people from lower socioeconomic strata neglect dental care for a variety of reasons.^[17] It is, therefore, important that primary care physicians play a proactive role in emphasizing on the maintenance of good oral hygiene, screening for basic oral health problems, and referring to oral health care professionals in case of necessity, especially for those from lower socioeconomic strata. This study highlights the increased normative dental needs among spinning mill workers and calls for the need for awareness programs among the study population.

Conclusion

It is to be understood that workers comprise a valuable sector vastly contributing toward the comfortable living of the concerned populations. In this context, it is important to safeguard the health and maintain the quality of life of the working sector which consequentially improves the quality of life of the beneficiaries. The documentation of oral hygiene behaviors, status, and oral health care seeking behaviors in this study identifies the areas which demand focus while aiming to improve the oral health status and related quality of life of spinning mill workers.

Declaration of patient consent

The authors certify that they have obtained all appropriate participant consent forms. In the form, the participants have given their consent for their images and other clinical information to be reported in the journal. The participants understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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