THE ORAL HEALTH OF GLASS FACTORY WORKERS - A COMPARATIVE STUDY

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ABSTRACT

A study of glass factory workers was conducted. The workers were examined for caries, gingivitis and the presence of oral mucosal lesions. The smoking habits of these workers were noted. The results from this study was compared with a previous study on steelmill workers.

In general, the oral health (which includes the presence or absence of caries ,gingivitis and oral mucosal lesions) of factory workers in this study was similar to that of the steelmill workers where dental health (the presence or absence of caries and gingivitis)seemed to be of low priority.

INTRODUCTION

Epidemiological studies in Malaysia has begun since 1962 where the Interdepartmental Committe on Nutrition for National Defence (ICNND) comprising a joint US-Malaysia team, conducted a Federation of Malaya Nutrition Survey[1]. Within this survey, a dental survey was conducted in the Federation of Malaya where a steady rise of caries experience was observed through various age groups. Further epidemiological studies have been conducted since then by various institutions namely Institute for Medical Research, Ministry of Health, Dental Division and the Dental Faculty, University of Malaya. Most of these studies have been geared towards caries and gingivitis prevalence/incidence/occurrence.Two studies in 1973 specifically dealt with oral precancerous lesions[2,3]. An attempt to record the presence of soft tissue lesions was carried out in the 1978 survey by the Ministry of Health[1] where precancerous and cancerous lesions were noted while the other tissue lesions have been grouped together as abnormal soft tissue lesions. However, more recent literature,[5] have shown that there are many lesions which are specific entities other than precancerous and cancerous lesions. Andreasen et al[6] have indicated that the concept of oral health should include prevention, control and treatment of disorders of the oral mucosa, the dentition and the maxillofacial skeleton. They further reiterated that the old belief that oral health is synonymous with the absence of caries and periodontal disease should be discarded.

In line with the current concept of oral health as discussed by Andreasen et a1[6], it is the purpose of this paper to present data on the oral health of employees of glass factory in the state of Johor, Malaysia. The results will be compared with a previous study on employees of a steelmill which is also located in the state of Johor[4,5].

MATERIALS AND METHODS

One hundred and eighty factory workers aged 29.4±8.4 years were examined for caries, enamel opacities and oral mucosal lesions. Out of the 180 subjects, 134 (74.4%) were Malays, 32 (17.8%) were Chinese and 14 (7.8%) were Indians. There were 159 (88.3%) men and 21 (11.7%) women being examined (Table 1).

Examination were conducted by 2 examiners. The factory's first aid room was used with the aid of a portable dental chair and the equivalent of a dental examination light. Examination of hard tissue was carried out by one author (MJ) whilst the soft tissue examination was done by another (RBZ).

Diagnostic criteria for caries and gingivitis was similar to that used for the National Adult Survey in West Malaysia 1974/19751. The index used for enamel

Table 1. Age, ethnic group, sex distribution & caries status of factory workers

	GF (n=180)	**SM** (n=198)
Age - mean	29.4±8.4	27.4±7.4
Sex distribution:		
Men	88.3%	93,3%
Women	1 1.7%	6.7%
Ethnic group:		
Malay	74.4%	90.0%
Chinese	17.8%	10.0%
Indians	7.8%	
Caries Prevalence	91.0%	87.4%
DMFT	6.9±5.6	7.l±5.4
D	2.6±2.2	2.0±2.1
M	4.3±4.9	3.9±3.2
F	3.7±3.2	l.2±2.4
Required extractions	2.1/person	3.8/person
Enamel opacities	47.7%	75.6%

GF-current study, glass factory; SM-steelmill[4,5]

Table 2. Denture status of factory workers

	GF		**SM**	
DENTURE TYPES	**NO**	**%**	**No**	**%**
Full upper/Lower dentures	13	7.0	3	1.51
Partial dentures	25	14.0	15	7.58
Total denture wearers	38	21.0	18	9.09

GF-current study, glass factory;SM-steelmill[4,5]

opacities was the modified DDE Index[7]. All tooth surfaces were examined. The criteria used for oral mucosal lesions was as previously used by the first author[4,5]. These criteria were in accordance with that used by Axéll[8] and is based on the criteria given in the WHO's Guide to Epidemiology and Diagnosis of Oral Mucosal Diseases and Conditions in 1980.

RESULTS

CARIES

Out of 180 subjects examined, 164 (91 %) suffered from dental caries with a mean DMFT of 6.9±5.6. The mean D value was 2.6±2.2, the M value was 4.3±4.9 and the F value was 3.7±3.2 (Table 1).

There were a total of 266 decayed teeth and 97 of these (36.6%) needed extractions. These were found in a total of 47 subjects and therefore each subject requires 2.1 extraction (Table 1).

There were 30 (21%) denture wearers and the types of dentures worn were listed in Table 2.

ENAMEL OPACITIES

Enamel opacities were detected in 86 (47.7%) of the subjects examined.

ORAL MUCOSAL LESIONS

The prevalence of oral mucosal lesions were as tabulated in Table 3.

Table 3. Prevalence of oral mucosal lesions in factory workers

LESIONS	PREVALENCE(%)	
	GF	SM
White lesions:		
1. Preleukoplakia & Leukoplakia	1.1	-
2. Leukoederna	20.6	12.6
3. Frictional Lesion	5.6	6.5
4. Smokers Palate	5.6	-
5. Cheek & Lip Biting	1.7	-
Infections:		
1. Recurrent herpes labialis & history	1.1	7.6
Ulcers:		
1. Recurrent aphthous ulcers & history	38.9	56.5
2. Traumatic ulcers	3.3	1.0
Denture related lesions:		
1. Denture sore mouth	3.9	2.5
Tongue lesions:		
1. Geographic tongue	1.1	2.5
2. Median rhomboid glossitis	1.1	
3. Plicated tongue	1.7	1.0
Pigmentations:		
1. Excessive melanin pigmentation	62.2	82.3
2. Naevus	1.7	1.0
Other lesion:		
1. Fordyce condition	48.9	69.2

GF - current study, glass factory, SM - steelmill[4,5]

COMPARATIVE STUDY AND DISCUSSION

The work environment in a glass factory can be considered as a "stressful" environment where many of the workers are sorting out many kinds of glass products in a very heated atmosphere where furnaces are located. As such, comparison of the prevalence of oral mucosal lesions in this study and that of another study where a similar "stressful" environment existed, was carried out. This latter study was conducted on 198 steelmill workers[4,5]. A comparison of age, ethnic group, sex distribution, caries prevalence and enamel opacities of these two studies are presented in Table 1.

CARIES

The prevalence of caries in this study was only slightly higher than that for employees of a steelmill. The age and sex distribution of both studies did not vary tremendously and the slightly higher caries prevalence in this study maybe attributed to the different ethnic group distribution where the study at the steelmill consisted of 90% Malays while only 74.4% were Malays in this study. The mean DMFT of this study was found to be lower as compared with that of employees of the steelmill[4]. However, the D, M and F factors were found to be higher in this study than that of the steelmill (Table 1). The F factor of 3.71±3.2 for this study was very much higher than the F factor for employees of the steelmill (F=1.2±2.4). This may be due to the fact that the geographic location of the glass factory in this study was closer to an urban area where dental health facilities are more easily accessible as compared to the steelmill which was situated further away from a major town. The number of extractions required per person in this study (2.1) was lower than that of employees of a steelmill (3.8). This

Table 4. Status of cigarette smoking in factory workers

	GP	SM
Smoking	46%	54%
Non-smoking	54%	46%

GF - current study, glass factory, SM - steelmill 4,5

may indicate a lesser degree of neglect of their dental health as compared with the steelmill workers.

ENAMEL OPACITIES

The prevalence of this type of hard tissue lesion was much lower than that found in employees of the steelmill. Since the social background and place of residence during their childhood years was not available, the reason for such differences cannot be discussed. however, the examiner for the hard tissue leisons were different for both studies and some degree of interexaminer variability would exist as compared to the soft tissue lesion where the same examiner was used for both studies[5].

ORAL MUCOSAL LESIONS

The prevalence of excessive melanin pigmentations were found to be lower in this study (62.2%) as compared with that in steelmill workers (82.3%) (Table 4). It had been established in the literature that there is a positive relationship between tobacco smoking and excessive melanin pigmentation[9,10] This lesion was also found to be related to ethnic group where the Chinese experienced less pigmentation as compared to the Indians and Malays[11]. In this study there were less cigarette smokers as compared to that of the steelmill workers (Table 4). The cigarette smoking factor may partly contribute to the lower prevalence of pigmentation in the glass factory workers. The ethnic group distribution also differed in the two studies where a slightly lower percentage of Malays was found in this study as compared with the steelmill workers (Table 2). This factor may further contribute to the lower prevalence of pigmentation observed in this study. Prevalences of other soft tissue lesions in this study were also found to be lower in glass factory workers as compared to that of employees of the steelmill. The prevalence of RAU seemed to be very much lower in this study as compared to that in steelmill workers. Again, tobacco smoking had been shown to be associated with RAU. More studies showed that there is an inverse relationship between RAU and tobacco smoking[12,13] than otherwise[14]. Stress may also be a factor contributing to the occurrence of RAU. Therefore, an interplay of these factors may be contributory to the differences in the prevalence of RAU of the two factories.

In many of these comparison, other than the interplay of smoking and ethnic group, differences in prevalence may arise from insufficient intraexaminer calibration.

CONCLUSION

In general, the oral health of factory workers in this study was similar to that of the steelmill workers. Similar to the previous study on the steelmill workers, dental health seemed to be of low priority with workers of the glass factory. Whether this is a general trend in all factory workers in the country is yet to be determined. It is hoped that the examinations done on these workers by the authors and the advise given to those examined would have changed their attitude on oral health to a certain extent.

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