# Original Article

# Dental Caries Status and Oral Health Behavior among Myanmar Migrant Workers in Mae Sot District, Tak Province, Thailand

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**ABSTRACT**

This cross-sectional study was aimed to assess dental caries status, knowledge, attitudes and practices in oral health, and their associations among Myanmar migrant workers in Mae Sot district, Tak province, Thailand. A total of 130 Myanmar Migrant workers participated in an oral examination and were interviewed by structured questionnaires.

The prevalence of caries among this group of workers was 86.9% with a mean DMFT of 2.09+1.39. The majority of them had a good score on level of knowledge (83.1%), but a poor score on level of practices (60.8%) in oral health and an equal proportion of good and poor level of attitude scores (53.1% and 46.9%, respectively). Those who had poor scores on knowledge, attitude and practice in oral health, had a higher prevalence of caries than those who had a good score on knowledge, attitude and practice in oral health (poor score: 16.9% on knowledge, 46.9% on attitude, 60.8% on practice, good score: 83.1% on knowledge, 53.1% on attitude, 39.2% on practice).

This study suggests on oral health promotion program along with oral health care services for this group of Myanmar migrant workers. Simple treatment for scaling, filling, and extraction should be available for them for better oral health status.

KEY WORDS: MYANMAR MIGRANTS/ ORAL HEALTH STATUS

**Introduction**

Oral Health can be described as “the normality and functional efficient of teeth, supporting structures of the teeth, jaws and structures related to mastication and maxillofacial complex.(1) It also describes the well-being of the oral cavity, including the absence of oral disease, the dentition and its supporting structures and the optimal functioning of the mouth and its tissues and it is a fact which preserves the highest level of self-esteem and interpersonal relationships.(2) Oral health problems affect the quality of human life. It is mainly as a result of two major oral diseases: dental caries and periodontal disease. Since dental caries and periodontal diseases are the multi-factorial origin, the contributions made by epidemiological studies render more understanding of the factors related to these major oral diseases.(3)

Dental caries is one of the major causes of tooth loss in the world. It is also one of the most common disorders of mankind, starting at an early age, affecting children and young adults but can occur any age. (4) A number of factors have been put forward to explain the variation in prevalence, extent and severity of dental caries, not only between developing and developed countries but also between rural and

urban populations.

Many people claimed that they knew a lot about dental facts, including how to keep their oral hygiene to the best level. However, most of the studies reported a lot of cases pertaining to dental caries and periodontal diseases, which is mainly related to poor oral hygiene and lack of dental knowledge. In addition, it has been observed that numerous campaigns in promoting oral health awareness to the public by dental health care providers have always received poor responses and yielded results less than hoped for. (5, 6) Kiyak (1981) found that there was a significant relation between Decayed, Missing and Filling Teeth Total (DMF-T) scores and awareness of oral health among Asian people i.e., lower DMF-T in an individual with higher awareness level.(7)

Health Education attempts to change behavior by altering an individual's knowledge, attitude, belief and practice about oral health matters. Education of general public is an integral part of a preventive oriented approach to oral health and disease problems. Education can help to increase knowledge of public. It is often assumed that knowledge determines attitude and attitude determines behavior.(8) When knowledge (K), attitudes (A), and practices (P) of a person towards oral health is profound, the oral health status of this person is good (KAP control oral health). KAP take part in the major role in the promotion of oral health; since prevention of oral diseases entirely depend on the individual awareness. Within KAP model, the change from an unhealthy attitude to a health attitude will occur if adequate information, motivation and practice of the measures to be adopted by the subject are given.(9) Information means that the subject has all the data necessary to understand what oral disease is and how it arises, as well as to understand the protective measures that need to be adopted (Knowledge). This knowledge will, in theory, lead to changes in attitude, which will in turn lead the subject to make changes in their daily life (practice).(9)

Working population usually is majority of population who need to have good health for good quality of life. In Myanmar, proportion of working population was about 53.10 % (2010).(10) Myanmar had to face with problem in moving out of population, especially working group to nearby country such as Thailand. Main reasons for migration are known to be better work, civil war, food and job insecurity, or having suffered from military acts of tyranny. In addition to cross-border trade, the town's main industries comprise sweat shops and factories.(11)

Migrants belong to the difficult-to-reach population in health and preventive care. Essential criteria for the sustainable effectiveness of preventive and health promotion consist of the proper selection of target groups and successfully approaching them. Some of the barriers such as low literacy and language barrier make the access to preventive care and health promotion more difficult. In addition, there are only a few preventive offers which are target group focused. The use of native speaking preventive consultant is an effort to improve the access to preventive care for migrants by low threshold come and access-structures.(12)

Mae Sot is one of nine districts in Tak province where many foreign migrants (mostly Myanmar) have been staying. Those migrants are with or without registration with the Office of Provincial Administration, Ministry of Interior. The migrant population was about 524,897 and only 124,618 foreign migrants are registered (Ministry of Interior, 2004). Since a lot of Myanmar, Laos and Cambodian migrants have stayed at Mae Sot without precise health data, the health planning for those foreign migrants has not been universally covered yet and those foreign migrants could not reach their equitable right. The migrants' health strategy was prepared by Mae Sot Health Office to allow them to receive the integrated and universal public health service. (13)

Although the Thai Government provides the health care services for the migrants, even

documented Myanmar migrants still cannot reach these health services.(13)

There is limited information in exploring the factors which make migrants not to access these health care services. The mortality and morbidity of Myanmar migrants will be increased in the future if the health problems of those migrants cannot be solved. Though health care services are availability for Myanmar migrants, there is still big gap between migrants and utilization of these services. Only if we narrow down this gap, we can save many lives of migrants. (13)

Another factor influencing the utilization of general health and dental health care services may be their health perception, which is so poor that utilization of general health and dental services are not very common in these populations compared to their concern on housing and foods. Some of Myanmar migrants do not want to consult the health care personnel when they get sick for a number of reasons. It may be because of Language barrier and socioeconomic factors. (13)

Regarding the dental health of the migrant students, the school health team visits schools for displaced children in and near Mae Sot to provide a number of services such as screening, water/sanitation assessment, first aid supplies, polio vaccinations, biannual prophylactic de-worming and vitamin A supplementation and dental and oral care.

For adult, Mae Sot General Hospital and Mae Tao Clinic provide general and dental health care services for them.(14)

The aims of this study was to assess caries status and knowledge, attitude and practices regarding oral health including utilization of oral health care services, and their association among Myanmar migrant workers in Mae Sot district, Tak province, Thailand.

## Materials and Methods

A cross-sectional study was carried out in Myanmar migrant workers in Mae Sot District, Tak Province, Thailand during January to February 2013. Study Population was Myanmar migrant workers who lived in 14 communities of Mae Sot District, Tak Province, Thailand.

### Inclusion Criteria

(1) Migrants who were working in Mae Sot District, Tak Province, Thailand.
(2) Migrants who agreed to participate in this study under consent.
(3) Migrants who were Burmese.

### Exclusion Criteria

(1) Migrants who were ill with physical or mental disorders which cannot participate in oral health examination.
(2) Migrants who were unable to answer questionnaire by making, writing and interviewing.

Based on the household data of Myanmar migrants available from International Organization of Migration(IOM) in March 2006, there were total of 1337 households with 6152 Myanmar migrants workers in 14 communities of Mae Sot community area in Mae Sot District. It consisted of 14 municipal communities which considered as 14 clusters. Two communities or clusters were selected by purposive sampling. One was congested community and one was non-congested community. From these communities, the respondents were selected according to the inclusion criteria. As the migrants were staying without registration, it is better to estimate the number of households. Therefore convenience sampling was applied in selecting the respondents or study sample.

The sample size of the study was 129 respondents, calculating from the following formula (Cochran, 1963),

$$n = \frac{z2\ \alpha/2\ P(1-P)}{d2}$$

n = sample size
z = value from normal distribution associated with 95% confident level = 1.96 = Significant level, set at 0.05

P = Anticipated proportion of individuals in the study population on "A pilot study of dental caries status in relation to knowledge, attitudes and practices in oral health in Myanmar, Asia Pac J Public Health.(2003)" =86 %

d = maximum allowable error = 0.06

$\alpha$ = significant level

$$n = \frac{(1.96)2\ (0.86)\ (0.14)}{d2} = 128.5$$

Minimum sample size = 129subjects.

A total of 130 subjects participated in this study.

Questionnaires were constructed by researcher. The contents of the questionnaires were divided into 5 parts.

For pretesting of questionnaires, they were translated into Myanmar language. Pre-test of questionnaires were performed for content validity by dental expert. Reliability test was done among 30 migrants Myanmar, and alpha's Cochran was calculated. Improving questionnaires were done.

Oral health examination form was modified from the WHO Record Form for DMFT Index and treatment needs.

Dental caries status was measured as decayed, missing and filling (DMFT) in permanent dentition. It was detected by the naked eyes under the natural light.

Individual DMFT = DT+MT+FT in severity of dental caries

Mean DMFT = Total individual DMFT/Number of persons examined

Mean DMFT = ∑ Individual DMFT

Total population of examined

High affected group = DMFT >13.9

Moderately affected group = DMFT 9.0-13.9

Low affected group = DMFT 5.0-8.9

Very low affected group = DMFT <5.0

Survey team was consisted of 1-2 examiners, 1-2 recorders and 1 dental assistant. Meeting of team was scheduled before working to calibrate and to standardize oral health examination.

**Data Collection**

The survey protocol was reviewed by ethical committee. Data was collected by face to face interview using the structure questionnaires after taking informed consent and also explained about the study to get high validity. Questionnaires were asked by the researcher only, so as to prevent interpersonal bias and using local language (Myanmar Language) to eliminate misunderstanding so as to establish least errors. Validity of questionnaires was reviewed by advisor and co-advisor.

For standardization and calibration, before data collection period, intra-examiner calibration was performed by examining a group about 60 school children twice on following day and the consistency of examination was determined. The kappa statistics result was 0.80 showing strong agreement.

The consistency of examination was determined by examining a group about 20 migrant workers twice on following days. This study involved two examiners. The examiner was able to obtain an estimate of the extent and nature of the diagnostic errors by comparing two times of examinations within one month. Duplication of examination was performed in second time. Kappa statistics or trust of agreement was calculated. Teeth showing disagreement were subjected to reexamination. The Kappa value was 0.92, showing almost perfect agreement according to the World Health Organization, Calibration of Examiners for Oral Health Epidemiological Surveys.

Procedure for answering the questionnaires for on Knowledge and Practice of migrant workers in Oral Health

The questionnaires were translated to Myanmar

Language and distributed to the community. The migrant workers were explained how to answer for each segment of questionnaires properly. Questionnaires were collected when they had been finished to answer all the questionnaires. After finishing answering questionnaire, migrant workers were asked to participate in oral examination.

**Procedures for Oral Health Examination**

Oral health examination was carried out by the researcher and recorded by one trained recorder. Oral examination was performed by using codes and criteria described by Oral health Survey Basic Methods of WHO (1997). Examination was done under daylight reflected through a plane mouth mirror, with a worker seated on a chair. The researcher was dictated findings to the recorder who sited beside the subject. This was account for checking whether all data entry was correct. Then, 20% of samples were reexamined to check the examiner's consistency.

**Data Analysis**

After data entering and editing by SPSS 11.5 (Statistical Software), the following statistical analysis was calculated.

For Descriptive Statistics, frequency of distribution, proportion and mean with standard deviation were used to describe the general characteristics, prevalence of dental caries status (DMFT), oral behavior.

To assess the associations between dental caries status and dental behaviors, Chi-square test and Mann-Whitney test were used. A p-value less than 0.05 was considered as statistically significant.

**Result**

Total number of participants with complete information was 75 from congested and 55 from uncongested area in Maesot District, Tak Province, Thailand.

Table - 1. Proportions of Caries Free among Myanmar migrant workers (n=130)

| Dental Caries Status | Number | Percent |
|---|---|---|
| Caries free | 17 | 13.1 |
| At least 1 cavity | 113 | 86.9 |

Table -2. Mean and SD of DMFT and each component of DMFT (n=130)

| Caries status | N | Mean | SD | Minimum | Maximum |
|---|---|---|---|---|---|
| DT | 113 | 2.06 | 1.39 | 1 | 5 |
| MT | 0 | 0.00 | 0.00 | 0 | 0 |
| FT | 0 | 0.00 | 0.00 | 0 | 0 |
| DMFT | 113 | 2.06 | 1.39 | 1 | 5 |

Table -3. Comparison of average score of DMFT by general characteristics

| Variables | DMFT | | | | |
|---|---|---|---|---|---|
| | N | Mean | SD | z-value | p-value* |
| Age | | | | | |
| ≤ 30 yrs | 93 | 1.16 | 1.07 | -7.9 | 0.01 |
| 31-40 yrs | 37 | 3.38 | 1.14 | | |
| Sex | | | | | |
| Male | 65 | 2.08 | 1.59 | - 2.17 | 0.03 |
| Female | 65 | 1.51 | 1.30 | | |
| Educational Status | | | | | |
| Middle School Level | 84 | 2.02 | 1.57 | -1.99 | 0.05 |
| High School Level | 46 | 1.39 | 1.20 | | |
| Living Place | | | | | |
| Congested Area | 75 | 2.13 | 1.55 | -3.49 | 0.01 |
| Non Congested Area | 55 | 1.33 | 1.25 | | |

*P-value from Mann Whitney test

Table - 4. Comparison of average score of DMFT by level of knowledge, attitude and practice of oral health

| Variables | DMFT | | | | |
|---|---|---|---|---|---|
| | N | Mean | SD | z-value | p-value* |
| Knowledge | | | | | |
| Good (8-10 marks) | 108 | 1.31 | 1.06 | -7.22 | 0.01 |
| Poor(1-7 marks) | 22 | 4.14 | 0.89 | | |
| Attitude | | | | | |
| Good ( 31-50 marks) | 69 | 0.97 | 0.71 | -6.66 | 0.01 |
| Poor (10-30 marks) | 61 | 2.72 | 1.57 | | |
| Practice | | | | | |
| Good ( 7-10 marks) | 51 | 0.78 | 0.58 | -6.67 | 0.01 |
| Poor ( 1-6 marks) | 79 | 2.44 | 1.52 | | |

*P-value from Mann Whitney test

Table -5. Comparison of average score of DMFT by accessibility of oral health care services

| Variables | DMFT | | | | |
|---|---|---|---|---|---|
| | N | Mean | SD | z-value | p-value* |
| Convenient | | | | | |
| Yes | 82 | 1.74 | 1.35 | -0.29 | 0.76 |
| No | 48 | 1.87 | 1.68 | | |

*P-value from Mann Whitney test

Table - 6. Association of dental caries status by level of knowledge, attitude and practice in oral health

| Variables | DMFT | | | |
|---|---|---|---|---|
| | N | Mean | SD | p-value* |
| Knowledge | | | | |
| Good (8-10 marks) | 17(15.7%) | 91(84.3%) | 3.98 | 0.04 |
| Poor(1-7 marks) | 0(0.0%) | 22(100.0%) | | |
| Attitude | | | | |
| Good ( 31-50 marks) | 13(18.8%) | 56(81.2%) | 4.29 | 0.04 |
| Poor (10-30 marks) | 4(6.6%) | 57(93.4%) | | |
| Practice | | | | |
| Good ( 7-10 marks) | 14(27.5%) | 37(72.5%) | 15.26 | 0.01 |
| Poor ( 1-6 marks) | 3(3.8%) | 76(96.2%) | | |

* p-value from chi-square test

**Discussion**

The aims of this study was to assess caries status and knowledge, attitude and practices in oral health including utilization of oral health care services, and their association among Myanmar migrant workers in Mae Sot district, Tak province, Thailand. This study was conducted by using face to face interviewed questionnaires and doing oral health examination.

Results showed that the proportion of Myanmar migrant workers with caries free was 13.1% while the remaining (86.9%) was affected by dental caries. Similarly, 113 Myanmar migrant workers were affected by dental caries with at least 1 cavity whereas 17 Myanmar migrant workers were free from dental caries. The percentage of dental caries status was a little bit higher than those in the percentage of (86.0%) the pilot study of dental caries status in relation to knowledge, attitudes and practices in oral health in Myanmar. The differences of the results of these two studies can be caused by three reasons.

- The pilot study of the dental caries status in Myanmar was conducted in 2003 and this study was carried out 10 years later. (16)
- The pilot study was conducted in Myanmar but this study was conducted in Maesot (Thailand-Myanmar border area.)
- The lifestyle and socio-economic status was changed within 10 years.

Regarding the associations of the dental caries status with age, it showed that there was significant association with age and dental caries status by chi-square test. According to the Mann Whitney test, it also showed that it was significant association with age and dental caries status. Prevalence of having at least 1 DMFT was lower in ≤ 30 years of age group than 31-40 years of age group with significant association between caries status and age group. It means that ≤ 30 years of age group was less caries than 31-40 years of age group. The mean age is 26.83± 5.77 and caries prevalence was 86.9%. There was evidence to show that in the study of dental caries experience, prevalence and severity in Mexicans adolescents and young adults (mean age = 18.20±1.65, caries prevalence=74.4%) which was significantly associated with age and dental caries status. (15)

According to the results of the knowledge, attitude and practice of Myanmar migrant workers in oral health, answered by migrant

workers were quite good but some questions had low percentage in correct answers. For some particular questions like "When you suffered from toothache, you usually go to see dentist to relieve the symptoms", "Every carious tooth needs to be extracted" and "Dental caries is a disease which cause only to children and young person", only 46.2%, 57.7% and 57.7% respectively can give correct answers. This result showed that the lack of knowledge in certain aspect of dental caries regarding etiology and prevention. It was due to lack of dental health education in the community.

Attitude questions regarding to oral health, the questions like "The pain in the tooth will go forever after it is properly treated by a dentist" can answer that strongly agree and agree are only 3.8% and "Filled teeth by dentist cannot guarantee for future caries if no proper cleaning teeth" can answer that strongly agree and agree are 10.7. The attitude of the migrant workers in the community should be improved although almost all of Myanmar migrant workers can answer satisfactory in attitude questions.

For practice questions regarding to oral health, the questions like "Do you often rinse your mouth with antiseptic (medicated) mouthwash?" and "You change your toothbrush when it becomes too old at least every 3 months", only 29.2% and 30.0% can answer correctly. But for the question which was "You go to see dentist every 6 months for cleaning teeth and for regular check up", no one can answer correctly. It means that they didn't go to see dentist every 6 months for check-up. It may be due to factors such as socio-economic status. Their practice should be improved and health promotion programs also need to be implemented.

For the utilization of oral health care facilities which is quite important thing among these groups of study population, most of the migrant workers can answer satisfactory. Almost all of the questions answered by migrant workers were quite good according to accessibility, affordability and availability. But regarding the convenience to reach to oral health care facilities, one third of the migrant workers answered "inconvenient". They gave the reasons that they cannot go to the oral health care facilities because they didn't have identity card. They stayed in Thailand as non-registered and polices will catch them. Regarding the comparison of mean between convenient in utilization of oral health care or dental visit and dental caries status, there was no significant difference. Mean DMFT of the convenient group was 1.74±1.35 and the inconvenient group was 1.87±1.68. According to the results of this study from mean DMFT, it was found that no one had filled teeth and missing teeth due to caries, only decayed teeth. It was also found that the oral health services in clinics nearby was scaling or cleaning the teeth or treatment of gingivitis and periodontitis.

Regarding the associations between level of knowledge, attitude and practice, there was association between knowledge, attitude and practice of oral health by chi-square test. By calculating with the Mann Whitney test, it also showed that there was significant difference of means scores between level of knowledge, attitude and practice of oral health. According to the score, 108 of them received good score in knowledge of oral health in which 17 of them were caries free and 91 of them were affected by dental caries. The rest 22 Myanmar migrant workers, who got low score in knowledge of oral health, all of them had at least 1 cavity. Regarding the attitude of oral health, 69 Myanmar migrant workers received more than 30 marks (good score) in attitude while 61 Myanmar migrant workers got less than 30 marks in it. Among 69 Myanmar migrant workers who got good score in attitude, 17 of them were free from caries while 91 were affected by dental caries. For the oral hygiene practice, 51 of them received good score in oral hygiene practice in which 14 of them were caries free and 37 of them were affected by dental caries. The rest 79 migrant workers, who got low score in oral hygiene practice, 3 of them were caries free but 76 of them had at least 1 cavity. In the pilot study of

dental caries status in relation to knowledge, attitudes and practices in oral health in Myanmar, there was also significant association between knowledge, attitude and practice of oral health.

To sum up, this study showed association with dental caries status and level of knowledge, attitude and practice. For the comparison means between convenient and dental caries status, there was no significance difference of means. Even though the results showed high proportion of good knowledge (81.3%), but the proportion of good practice was just only one third. This means that good knowledge could not lead to a good practice. Therefore, oral promotion program should be focused in the community. On the other hand, the caries prevalence was 86.9% and it was quite high in the community. Therefore, the reduction of high caries prevalence rate can be achieved by a preventive and oral hygiene promotion program in order to improve oral health status of this population.

**Barriers to assess the oral health care facilities**

Most of the Myanmar migrant workers were un-registered and thus they felt they were insecure to going to use the oral health care facilities. From the study, it was found that most of them could not afford the registration fees and that led to delay in getting health insurance. They did not aware of their registration status and health insurance system because of lack of knowledge and lack of money to make the registration. Therefore, information and importance of registration and oral health insurance should be educated to Myanmar migrant workers.

This study was a cross sectional survey with purposive sampling which demonstrate an association not a causation. Besides, this study was conducted in only 2 areas of Mae Sot District, Tak Province, Thailand. Moreover, sample size was not big enough for referring this result to the whole study population in areas of Mae Sot with the limitation of time. Thus, the result of the study was not implying the general population of migrant workers as a whole.

**Conclusion**

Although knowledge in oral health was good among the majority of working age group of Myanmar migrant workers, the high prevalence of dental caries with low to moderate level of attitude and practice suggested that oral health promotion program along with oral health care services should be provided especially effective oral health education, regular dental check-up and simple treatments.

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