Factors Related to Intention to Quit Smoking among Industrial Workers in Myanmar: A Cross-Sectional Study

Myo Zin Oo[1], Alessio Panza[2], Sathirakorn Pongpanich[3]

[1]PhD Candidate, College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand
[2]Lecturer, College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand
[3]Professor, Dean, College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand
E-mail: dr.myozinoo@gmail.com; alessio3108@hotmail.com; sathirakorn.p@chula.ac.th

Abstract— *Smoking causes harmful effects to health and increases the risk of premature deaths. Smoking can harm the industrial workers not only to their health but also to their absenteeism and productivity in their work which may lead to less income with high cost for the medical care and treatment. The objective of this study is to assess the factors related to intention to quit smoking among industrial workers in Myanmar and this cross sectional study was conducted among 292 workers aged 16 years old and above from Mandalay Industrial zone. An interviewer administered questionnaire was used for data collection and data analysis was done by using SPSS version 22. Chi-squared test was used to find the associations between socio-demographic characteristics, smoking history, nicotine dependence and intention to quit smoking with the statistical significant value of p < 0.05. Among 292 respondents, about 42.5% had intention to quit smoking. There were statistically significant association between age, education status, number of years cigarette smoked, place of smoking and intention with p value of p = 0.029, p = 0.009, p = 0.049 and p = 0.010 respectively. As this study was conducted on intention to quit smoking, further qualitative studies are recommended to be conducted and to assess relationship between intention to quit smoking and quit attempts, and smoking abstinence.*

Keywords— *Industrial workers, Intention to quit smoking, Myanmar, Nicotine dependence, Smoking history.*

I. INTRODUCTION

Smoking is one of the preventable cause of public health concerns for morbidity and mortality (World Health Organization [WHO], 2015). According to world health organization (WHO) in 2013, about 21% of adults were current smokers globally with 950 million men and 177 million women. It is about 16% of current adult smokers were from low income countries and 21% were from middle income countries (WHO, 2015).

In 2014, it was estimated that a number of cigarettes smoked all over the world was 5.8 trillion (Eriksen, Mackay, Schluger, Gomeshtapeh & Drope, 2015). According to National Cancer Institute on the economics of tobacco and tobacco control in 2016, it is about 6 million people die each year at presently and it is projected to increase up to 8 million by the year 2030, and the majority of mortality (80%) will be occurred in low and middle income countries (U.S. National Cancer Institute and World Health Organization, 2016). According to the global and regional projections of mortality and burden of disease cause, it was projected that death due to

tobacco will be about 175 million with nearly 140 million in developing countries and about 40 million in developed countries (Mathers & Loncar, 2006).

According to Ministry of Health and Sport, Myanmar 2015 survey, the prevalence of respondent current smokers was 26.1% when divided by sex, male smokers was 44% and females smokers was 8%. (Ministry of Health [MOH], 2014). Smoking can harm the health status of the workers including reduced productivity and absenteeism at the workplace (Gaafar & Basiony, 2013). Although there are few studies on the specific population of industrial workers on smoking, there are limited studies worldwide and no study on intention to quit smoking in Myanmar.

II. OBJECTIVES

The objective of this study is to study the factors related to intention to quit smoking among the industrial workers in Myanmar.

III. MEDHODOLOGY

This is a cross sectional study and it was conducted in Mandalay industrial zone, Mandalay city, business center in central Myanmar. Mandalay industrial zone was purposively selected because it has a second largest industrial zone in Myanmar with variety of industries. Sample size was calculated by using Cochran formula and a total of current smoking two hundred and ninety two (292) industrial workers had participated. Data were collected by using interviewer administered questionnaire. Independent variables in this study were socio-demographic characteristics (age, marital status, education status and income), smoking history (age at first cigarette smoked, number of years cigarette smoked, reason of start smoking, place of smoking, number of cigarette smoked per week) and nicotine dependence (using Fagerstorm test of Nicotine Dependence); and the dependent variable in this study was intention to quit smoking. Frequency and percentage were presented as descriptive findings and Chi-squared test was used for the associations between independent variables and dependent variable. Fisher's exact test was used for variables with frequency less than 5 in more than 20% of cells. Data analysis was done by using SPSS version 22 with the p value < 0.05 for the statistically

significance variables. Ethical approval was granted by RECCU (The Research Ethics Review Committee For Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University), Bangkok, Thailand on 4th April, 2018 and the number was 018.1/61 (COA Number 086/2018).

IV. Results

The mean age of respondents in this study was 30.7 and all respondents were male industrial workers. More than half of the respondents (60.6%) had basic education while the rest 39.4% had university education. About 72.6 % of the respondents had low income (≤193400 MMK) (it was equivalent to 126 USD according to central bank of Myanmar, assessed on 5th June 2019) (1USD is equivalent to 275 MMK for purchasing power parity) (Central Bank of Myanmar, 2019; World Bank, 2019).

About 64.4% of the respondents started smoking cigarette in their lifetime between 15 to 20 years of age and nearly half of the respondents (48.3%) had smoked more than 11 years at time of current study. More than half of the respondents (67.5%) started smoking due to peer and about 61% smoked at restaurants and teashops. Average number of cigarette smoked per week was 22.4 and about 50.4% of the respondents smoked more than 21 cigarettes per week.

Table 1 shows level of nicotine dependence of the respondents. Among the respondents, only 19.2% had high nicotine dependence.

Table 1. Level of Nicotine Dependence of the respondents (n=292)

Variables	Frequency (n)	Percentage (%)
Level of Nicotine Dependence		
Low Dependence	219	75.0
Medium Dependence	17	5.8
High Dependence	56	19.2

Table 2 shows intention to quit smoking of the respondents. More than half of the respondents (57.5%) had intention to quit smoking at the time of current study.

Table 2. Intention to quit smoking of the respondents (n=292)

Intention to quit smoking	Frequency (n)	Percentage (%)
Yes	124	42.5
No	168	57.5

Table 3 shows the association between independent variables (socio-demographic characteristics) and dependent variable (intention to quit smoking). A high percentage of intention to quit was found only in the age group of more than 56 years old (61.5%) while the rest of age groups had low percentage of intention to quit smoking. There was low intention to quit smoking in all of the marital status, education status and monthly income. Age and education status were statistically significantly associated with intention to quit smoking which had p value of p = 0.029 and p = 0.009 respectively.

Table 3. Association between independent variables (socio-demographic characteristics) and dependent variable (intention to quit smoking)

Variables	Intention to Quit Smoking		x^2	p-value
	Yes n (%)	No n (%)		
Age				
≤ 25	43 (43.9)	55 (56.1)		
26-35	58 (47.5)	64 (52.5)		
36-45	10 (22.7)	34 (77.3)	10.830	0.029*
46-55	5 (33.3)	10 (66.7)		
≥ 56	8 (61.5)	5 (38.5)		
Marital Status				
Single never married	58 (43.3)	76 (56.7)	0.068	0.795
Married	66 (41.8)	92 (58.2)		
Education status				
Basic Education	86 (48.6)	91 (51.4)	6.894	0.009*
University Education	38 (33.0)	77 (67.0)		
Income (Monthly)				
Low (≤ 193400)**	85 (40.1)	127 (59.9)	1.781	0.182
High (≥193401)**	39 (48.8)	41 (51.2)		

* Significant level p < 0.05
**1USD is equivalent to 275 MMK for purchasing power parity

Table 4. Association between independent variables (smoking history, level of nicotine dependence) and dependent variable (intention to quit smoking).

Variables	Intention to Quit Smoking		x^2	p-value
	Yes n (%)	No n (%)		
Age at first cigarette smoked				
< 15	34 (54.0)	29 (46.0)		
15-20	72 (38.3)	116 (61.7)	6.899[a]	0.059[a]
21-25	18 (47.4)	20 (52.6)		
≥ 26	0 (0.0)	3 (100)		
Mean = 18.0 (3.23)				
Number of years cigarette smoked				
1-5	30 (50.8)	29 (49.2)		
6-10	36 (39.1)	56 (60.9)	7.861	0.049*
11-15	32 (52.5)	29 (47.5)		
≥ 16	26 (32.5)	54 (67.5)		
Mean = 12.5 (8.71)				
Reason of start smoking				
Due to peer	86 (43.7)	111 (56.3)		
Due to stress	16 (34.8)	30 (65.2)	1.344	0.511
Others	22 (44.9)	27 (55.1)		
Place of smoking				
Home, workplace, market	59 (51.8)	55 (48.2)	6.604	0.010*
Restaurants, teashops	65 (36.5)	113 (63.5)		
Number of Cigarette smoked per week				
≤ 10	21 (36.2)	37 (63.8)		
11-20	37 (42.5)	50 (57.5)	1.341	0.719
21-30	50 (45.5)	60 (54.5)		
≥ 31	16 (43.2)	21 (56.8)		
Mean = 22.4 (10.58)				
Level of Nicotine Dependence				
Low	98 (44.7)	121 (55.3)	1.87	0.393
Moderate	6 (35.3)	11 (64.7)		
High	20 (35.7)	36 (64.3)		

* Significant level p < 0.05
[a] Fisher's exact test

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Table 4 shows association between independent variables (smoking history, level of nicotine dependence, health knowledge on smoking) and dependent variable (intention to quit smoking). Higher percentage of intention to quit smoking were found in the group for number of years cigarette smoked within 1 to 5 years (50.8%) and 11 to 15 years (52.5%) which showed statistically significant association with intention to quit smoking. Place of smoking also showed statistically significant association with intention to quit smoking (p = 0.010).

V. DISCUSSION

In this study, intention to quit smoking was found in 42.5% of the respondents which is less than what found in the study by the Hein Ko Ko (62.3%) conducted among male smokers aged more than 18 years in Yangon, Myanmar regarding to intention to quit smoking in 2016 (Hein & Pumpaibool, 2016). The difference between these studies might be due to the workload, stress and peer pressure of the industrial workers in this current study compared to general population. A similar result (40.2%) was found in a cross-sectional study among adult smokers in Thailand and Malaysia regarding to predictors on smoking in 2010 (Li et al., 2010). This current result is higher than a study of determinants of intention to quit smoking (36%) among adult smokers in Bangladesh in 2010 (Driezen, Abdullah, Quah, Nargis, & Fong, 2016). The difference between intention to quit smoking in general population of Myanmar, Thailand, Malaysia and Bangladesh might be due to country specific figures, probably due to country related general population characteristics.

All of the respondents in this study were male and could not identify the female industrial smokers. This might be due to the culture and context of Myanmar as smoking and drinking alcohol are seen as a bad habit among females and they are afraid of disclosing about their smoking status. In a 2018 cross sectional study among university students in Thailand for differences of gender in intention to quit smoking and this study stated that males had less intention to quit smoking than females as females were pressured by family members including awareness on the harmful effect of smoking (Chinwong, Mookmanee, Chongpornchai & Chinwong, 2018). Smoking cessation and quit smoking is an active and dynamic activity which involves repeated quit attempts (Vidal et al, 2011). Since this study among Myanmar workers has not found female smokers, it seems that it is needed to identify current female smokers and to assist them for smoking cessation including medical and psycho-social support.

In marital status, married respondents in this study had low intention to quit compared to single respondents. There are few studies on association between marital status and intention to quit smoking. The result is similar with the study on intention to quit among newly diagnosed TB patients in Iran which stated married respondents had low intention to quit smoking than single (Aryanpur et al., 2016). It seems that both in workers and TB patients which are very different population, married respondent had low intention because married respondents were suffering from family stress which leads to continue smoking.

This current study stated that higher education (university level) had less intention to quit smoking than lower education (basic education) which is in contrast with the study on correlation between tobacco quit attempts and cessation in 2010 among adult population in India where respondents with higher education had more intention to quit smoking (Srivastava, Malhotra, Harries, Lal & Arora, 2013). It seems that high educated respondents in India had exposed to health education program including smoking cessation while high educated respondents in Myanmar had not exposed to health education program.

Regarding history of smoking, the mean age of start smoking was 18 years which is consistent with the Myanmar national survey on Diabetes mellitus and risk factors for non-communicable diseases (NCDs) conducted by Ministry of Health, Myanmar in 2014 (MOH, 2014). In this current study, a decrease in intention to quit smoking was found when there was an increase in nicotine dependence but there was no significant association. Another population study in Switzerland conducted between 2003 and 2006 on factors association between difficulty and intention to quit smoking among 35 to 75 years old found a similar result to this current study (Vidal et al, 2011). A secondary data analysis study extracted from the national representative data from GATS survey (2014) in Kazakhstan also stated that the higher the nicotine dependence, the lower the intention to quit smoking (Wang & Mati, 2019).

VI. CONCLUSION

Intention to quit smoking in this study was 42.5% and it is needed to conduct quantitative and qualitative studies to assess their health knowledge on smoking, intention to quit, nicotine dependence, and their needs for any assistance with the smoking cessation. The strength of this study is the first study among industrial workers among Myanmar assessing intention to quit smoking and associated factors to the best of our knowledge. Another qualitative studies are recommended to conduct for the reason why this study did not find out the current female smokers. This current study focused only on intention to quit smoking and its associated factors, and it is recommended to include further quantitative studies on quit attempts and smoking abstinence. Myanmar's government authority should focus on health education program not only to general population but also specific population such as industry workers to raise the awareness of health hazards and dangers of smoking including establishment of smoking cessation center.

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