

SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH POOR KAP REGARDING DIPHTHERIA VACCINATION AMONG ADULT POPULATION AT RISK IN MUANG, NONGBUALAMPHU PROVINCE, THAILAND

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ABSTRACT:

Diphtheria is a serious acute, toxin-mediated disease with fatality rates between 5% and 10%. Outbreaks of diphtheria were reported in Thailand in 2012, which led the government to initiate health promotion activities including vaccination in the affected areas. Vaccination in particular confers to the personal choice of an adult, which in turn depends on his/her knowledge and attitude. This cross-sectional survey aimed to evaluate the socio-demographic factors that affect the respondents who had poor knowledge, attitude and preventive practice (KAP). Multi-stage random sampling was used to select 406 participants and KAP questionnaires were used for collecting data. Findings in the final multivariable logistic regression analysis showed that four socio-demographic characteristics were statistically significantly related to lower KAP scores at $p < 0.05$, including age (age group 20-39 years) [AOR=2.580; 95%CI=1.358-4.903], gender (male) [AOR=1.615; 95%CI=1.032-2.527], occupation (unemployed) [AOR=1.977; 95%CI=1.118-3.499], and distance from home to nearest hospital (> 20 kilometers) [AOR=17.474; 95%CI =4.040-75.589]. Therefore, to increase KAP regarding vaccination, health information activities should be focused on unemployed young adult males under 40 years, who live far away from hospitals.

Keywords: Socio-demographics, Adult population, Diphtheria vaccination, Thailand

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INTRODUCTION

Diphtheria is a serious acute, toxin-mediated disease with fatality rates between 5% and 10%. [1]. In children under five years and adults over 40 years, the fatality rate may be as high as 20% [2]. Outbreaks, although very rare, still occur worldwide even in developed nations [3]. Outbreaks of diphtheria are quite resurgent in Thailand [4]. In 2010, according to Report 506 of the Epidemiology Division, Ministry of Public Health, there were 78 cases of diphtheria reported all over Thailand which began in June 2012 in northeastern region of Thailand [5]. The outbreak started in Loei province and spread to adjacent provinces. According to the

Thai Ministry of Public Health (MOPH), Bureau of Epidemiology report on situation of diphtheria infection in Thailand, a total of 43 confirmed cases and 4 deaths were reported from 6 provinces between 1 Jan 2012 and 4 Nov 2012.

A report in December 2012 revealed that diphtheria increased in adults in Nongbualamphu province of Northeast (NE) Thailand [5]. A majority of diphtheria cases were adults with 13 cases, the youngest patient was 4 years old and the oldest was 48 years old. Four patients visited the doctor upon onset and 9 patients attempted to treat themselves. To reduce the spread of diphtheria, the Ministry of Public Health (MOPH) [6] implemented a policy of diphtheria vaccination coverage of all people in the area of the outbreak including Nongbualamphu province.

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The health promotion program on diphtheria and vaccination was conducted across the country and more in high incidence areas. Gaining knowledge to health officers is needed, therefore MOPH set up specialist teams to train and refresh knowledge on diagnosis and treatment of diphtheria for them in the 16 provinces including Nongbualamphu [6]. Although vaccination program was recommended, it was not mandatory for the adults in this country. This was a personal choice made by each adult, and it was dependent on the knowledge and attitudes of the at-risk adult population. Thailand plans to provide vaccine for most adults by the middle of 2013, thus research related to knowledge, attitudes, and preventive practices is important before this time period. This cross-sectional survey aimed to evaluate what socio-demographic factors affected the uptake of vaccination among people who had poor KAP scores on diphtheria vaccination.

METHODS

A cross-sectional study was conducted in Muang district located in Nongbualamphu province of Thailand. The sample population criteria included adults aged 20 and over, willing to participate in this study and signed informed consent, able to speak, read, and understand Thai language currently living in Muang district, Nongbualamphu. Migrants, non-citizen and people who moved to other provinces during the study were excluded. The total sample size was 406 subjects, which was chosen using a multi-stage random sampling method. Firstly, the sub-districts in Muang, Nongbualamphu were randomly selected and then simple random sampling was done to select the villages. The households were selected based on Family Folder Record (last even number as 2, 4, 6...etc.).

Data was collected using a structured questionnaire which consisted of 5 parts: socio-demographic characteristics, Knowledge on diphtheria and vaccination, attitudes and awareness towards diphtheria, attitude about diphtheria vaccination and preventive practices towards diphtheria. The socio-demographic part consisted of 12 items including respondents' age, gender, religion, marital status, education level, occupation, place of living, employment status, monthly family income, family members, who he/she is currently living with and vaccination history. The range of KAP scores was from 0-35 (based on 35 knowledge, attitudes and preventive practices questions) and the cut-off point for classification was based on Median scale score.

The questionnaire was checked for content validity by 3 educated and experienced professors who gave feedback for improvement. Content validity index value of 0.79 was obtained. The questionnaire was pre-tested on 30 adults who were at risk in Nongbualamphu Town municipality and Cronbach's alpha coefficient was obtained to assess reliability of the questionnaire (Reliability coefficient = 0.88).

Data collection was done after approval from the Khon Kaen University Ethics Committee for Human Research based on the Declaration of Helsinki and the ICH Good Clinical Practice Guidelines (Reference No. HE561267). For the purpose of data collection, 2 research assistants were hired and trained and double data entry was used.

The data analysis was performed using statistical software. Descriptive statistics calculated included frequency, percentage, median and inter-quartile range. Then bivariate statistics and multivariable logistic regression was used to determine the factors associated with lower KAP scores.

RESULTS

Among 406 respondents, the majority was females (68.2%), and was educated in primary schools (65.5%). The age distribution was positively skewed; meaning that the frequencies of older ages were greater than the frequencies of the younger ages - 50-59 (25.4%) and 40-49 years (24.4%), respectively. Table 1 shows the socio-demographic characteristics of the study subjects in Nongbualamphu province.

The range of KAP scores was from 0-35 (based on 35 knowledge, attitudes and preventive practices questions, not included question no.25-35 and 37-40) and the cut-off point for classification was based on Median scale score. Respondents who got ≥ 27 point were classified as having upper KAP scores, while those who got ≤ 26 point were classified as lower KAP scores. The classification of knowledge, attitudes and preventive practices scores (KAP score) on diphtheria and vaccination among respondents indicated that almost 53.9% of respondents had upper KAP score, while 46.1% had lower KAP score respectively. Only 34 respondents (8.4%) had KAP score of 35 points.

Bivariate analysis

The bivariate analysis of socio-demographic characteristics associated with lower knowledge, attitudes and preventive practices scores (lower KAP score) is given in Table 2.

Findings from the bivariate analysis showed that age, gender, marital status, education,

Table 1 Socio-demographic characteristics of study population

Socio-demographic characteristics	Number (n=406)	%
Age (years)		
20-39	108	26.6
40-59	202	49.8
60 years old and over	96	23.6
Gender		
Male	129	31.8
Female	277	68.2
Education		
No school	6	1.5
Primary school	266	65.5
Lower secondary school	42	10.3
High school	46	11.3
College	12	3.0
Bachelor's degree	32	7.9
Post-graduate or higher education	2	0.5
Distance from home to nearest hospital (kilometers)		
≤ 20	377	92.9
>20	2	0.4
Status in household		
Head	149	36.7
Member	257	63.3
Vaccination history - Have you ever got diphtheria vaccination? (during year 2003-2013)		
No	0	0.0
Yes	406	100.0
got vaccination 1 time	9	2.2
got vaccination 2 times	397	97.78

Table 2 Bivariate analysis of socio-demographic characteristics associated with knowledge, attitudes and preventive practices scores (KAP score) on diphtheria vaccination

Socio-demographic characteristics	KAP score		p-value
	Upper (27-35) (n=219)	Lower (1-26) (n=187)	
Age (years)			
20-39	46(11.3%)	62(15.3%)	0.008 ^a
40-59	115(28.3%)	87(21.4%)	
60 years old and over	58(14.3%)	38(9.4%)	
Gender			
Male	57(14.0%)	72(17.7%)	0.007 ^a
Female	162(39.9%)	115(28.3%)	
Education			
No school	3(0.7%)	3(0.7%)	0.007 ^a
Primary School	149(36.7%)	117(28.8%)	
Lower secondary school	16(3.9%)	26(6.4%)	
High school	28(6.9%)	18(4.4%)	
College	2(0.5%)	10(2.5%)	
Bachelor's degree	21(5.2%)	11(2.7%)	
Post-graduate or Higher education	0(0.0%)	2(0.5%)	
Marital status			
Married	159(39.2%)	125(30.8%)	0.001 ^a
Single	28(6.9%)	47(11.6%)	
Divorced & Widowed	32(7.9%)	15(3.7%)	
Occupation			
Others	87(21.4%)	71(17.5%)	0.044 ^a
Farmer	90(22.2%)	65(16.0%)	
Unemployed	42(10.3%)	51(12.6%)	
Distance from home to nearest hospital (kilometers)			
≤ 20	219(53.9%)	185(45.7%)	< 0.001 ^a
> 20	0(0.0%)	2(0.4%)	

^a Test of difference between proportions (Chi-square test)

Table 3 Analysis of factors associated with lower KAP scores*

Variables	Adjusted OR	95% CI Lower, Upper	p-value
Age (Reference group = Age 60 and over)	1		
Age 20-39	2.580	1.358, 4.903	0.004
Age 40-59	1.440	0.826, 2.512	0.198
Gender (Reference group = female)	1		
Male	1.615	1.032, 2.527	0.036
Occupation (Reference group = others)	1		
Unemployed	1.977	1.118, 3.499	0.019
Farmer	0.810	0.484, 1.355	0.421
Distance from home to nearest hospital (Reference group = nearest hospital 0-20 kilometers)	1		
More than 20 kilometers	17.474	4.040, 75.589	<0.01

Note * Nagelkerke R Square = 16.3%, Model significant at $p < 0.05$

occupation, distance from home to nearest hospital were the six socio-demographic characteristics associated with lower KAP score (KAP scores between 1-26).

Multivariable logistic regression analysis

Upon conducting the multivariable logistic regression analysis, only four factors including age (20-39) [AOR=2.580; 95%CI=1.358-4.903], gender (male) [AOR=1.615; 95%CI=1.032-2.527], occupation (unemployed) [AOR=1.977; 95%CI=1.118-3.499], and distance from home to nearest hospital (more than 20 kilometers) [AOR=17.474; 95%CI =4.040-75.589] were significantly related to lower KAP score. Results of the multivariable logistic regression model are shown in Table 3.

DISCUSSION

In this study, we evaluated the socio-demographic factors that affected the respondents who had lower KAP scores. Among 12 characteristics, four socio-demographic factors; age group (20-39 years), being male, being unemployed, and living more than 20 kilometers from the nearest hospital were statistically significantly associated with lower KAP scores (scores between 1-26) with the AOR (95% CI) shown in Table 3. Distance of more than 20 kilometers from home to the nearest hospital was found to be one of the major predictors of low KAP, which is obvious as people living far from the hospitals have less access to its preventive and promotive services, and also acts as a barrier to health seeking behavior and health utilization of individuals [7-9].

Age group of 20-39 was also found to be significantly associated with lower KAP in the current study, which is in contrast with the findings of a similar study conducted in Bangkok in which younger age group (<36) were found to have higher

awareness and willingness to receive vaccine [10]. This may be because most people of age group 20-39 in Nongbualamphu live around the city center and work most days, which may have limited their access to health promotion program on diphtheria and vaccination conducted by the local health facilities. The current study also found that being unemployed was significantly associated with low KAP, which may be because unemployed people in Nongbualamphu have limited access to health promotion programs as they mostly remain in their homes. This may be further attributed to the considerable psychosocial stress among unemployed people which leads to their social withdrawal and isolation [11]. A similar study conducted in Saudi Arabia also found unemployment to be a strong predictor of low KAP among respondents despite many being educated [12].

This study indicated that males had lower KAP, and the association was found to be statistically significant. This finding agrees well with previous studies conducted in various countries in which females were found to have higher knowledge, positive attitude, and better practice in terms of vaccination than males solely because of their higher rates of health utilization and visits for maternal and child care, and active participation in health promotion programs [13-16].

In the current study, factors like education, family income, and history of getting diphtheria vaccination were not significantly associated with lower KAP scores, which is in sharp contrast with the findings of similar studies in which these three factors were one of the main predictors of awareness and willingness towards vaccination [9, 12, 17-18].

The main strength of this research was that it was the first research in Nongbualamphu to study KAP in adults about diphtheria vaccination after the last outbreak in 2012. Also, high response rate (no

missing data) and double data entry helped improve the validity of the study. The limitations of the study include some questions items which were unspecific to the objective of the study and omission to ask if anyone in the family had diphtheria. The results of this study can be helpful in identifying socio-demographic barriers of health promotion and prevention programs, and help provide guideline for healthcare providers, policy makers and other health authorities regarding diphtheria and vaccination in similar settings.

CONCLUSION

This study evaluated the socio-demographic factors that affected the respondents who had poor KAP scores. The findings showed that most of the respondents had good level of knowledge. In addition, having lower KAP score was associated significantly with age (20-39), gender (male), occupation (unemployed), and distance from home to nearest hospital (more than 20 kilometres). Therefore, health information activities for improving knowledge of transmission, prevention, and symptoms after vaccination should be focused on adults in the age group 20-39 years, males, unemployed people and those who live far from the hospital. Therefore, to increase KAP levels, health information activities to improve knowledge of transmission, prevention, and symptoms after vaccination should be focused on adult age group 20-39 years, males, unemployed and those who far from the hospital.

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