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Knowledge, attitude, and practice on Non-Communicable Diseases (NCDs) among the adult population in the urban area of Negeri Sembilan, Malaysia

Muslimah Ithnin[1], Nadeeya Ayn Umaisara Mohamad Nor[1], Norsham Juliana Nordin[2], Nadia Mohd Effendy[3], Mohd Azmani Sahar[4], Khadijah Hasanah Abang Abdullah[4], Muhammad Shamsir Mohd Aris[5], Mohd Dzulkhairi Mohd Rani*[1]

[1]Department of Primary Care, [2]Department of Medical Science I, [3]Department of Medical Science II, [4]Department of Medicine Based Disciplines, [5]Department of Surgical Based Disciplines, Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia, Kuala Lumpur, Malaysia

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ABSTRACT

Studies assessing the level of knowledge, attitude, and practice on non-communicable diseases (NCDs) among the general population are still insufficient in literature. This study aimed to assess the baseline levels of knowledge, attitude, and practices (KAP) of the adult population in Malaysian urban area towards NCDs. A thoroughly designed and validated KAP questionnaire was administered, and the responses were coded and analysed. The survey involved 207 respondents from the urban area of Ampangan, Negeri Sembilan with an average age of respondents is 53.52 ± 17.86 years. Seventy-six (36.7%) were male and 131 (63.3%) were female. Majority of the respondents had good knowledge (81.2%) and attitude (53.1%) towards NCDs. However, only 8.7% of the respondents possess good practice while the majority had moderate (56.5%) practice score towards NCDs. Older age category of more than 40 years old had better knowledge scores compared to those below 40 years [median=25 (IqR=4) *vs* 23 (5), p=0.001]. Female respondents had higher attitude [25(7) *vs* 56 (6), p=0.025] and practice [5(2) *vs* 5(3), p=0.007] scores compared to male. Respondents with hypertension [25(4) *vs* 24(5), p=0.002] and diabetes mellitus [25(4) *vs* 24(4), p=0.014] had higher knowledge scores compared to non-disease respondents. The findings of this study depicted that respondents in the studied urban area had good knowledge and attitude towards NCDs. However, the practice was moderate. To overcome this problem, repeated reinforcement with health education will bring about a positive change in urban general population knowledge towards NCDs, especially in younger and non-disease population.

* Corresponding Author

Name: Dr. Mohd Dzulkhairi Mohd Rani
Phone: +603-4289 2000
Email: drzulkhairi@usim.edu.my

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INTRODUCTION

Lifestyle-related disorders which are classified as non-communicable diseases (NCDs) are leading causes of deaths worldwide and have emerged as major public health problems. NCDs are also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioural factors (Trovato, 2012). Metabolic syndrome such as high blood pressure, overweight/obesity, hyperglycemia and hyperlipidaemia also contributed to the increased risks of NCDs (Lim and Cheah, 2016). World Health Organization (WHO) eventually listed four main

group of NCDs which is cardiovascular disease, diabetes, cancer and COPD (WHO, 2017).

People of all age groups, regions and countries are affected by NCDs. These conditions are often associated with older age groups, but evidence shows that 15 million of all deaths attributed to NCDs occur between the age of 30 and 69 years. Of these "premature" deaths, over 80% are estimated to occur in low- and middle-income countries (WHO, 2006).

NCDs now contribute to an estimated 73% of total deaths in Malaysia, with the main contributor being cardiovascular diseases which include heart attacks and strokes. An estimated 35% of deaths occur in individuals aged less than 60 years, which are mainly the working population. A review of metabolic syndrome in Malaysia by Lim and Cheah in 2016 indexing all literatures with original data involving the Malaysian population between the year 2000 and 2015 which include 75 articles revealed that metabolic syndrome affects 25% to 40% of the Malaysian adult population. However, all the studies conducted in Malaysia only focused on the prevalence of metabolic syndrome, while the study of population awareness of NCD and its risk factors are still lacking. Due to that, obtaining information about the level of knowledge of the general population is vital in forming a preventive programme for the disease. Thus, there is a demand to study the knowledge, attitude, and practice (KAP) among the general population to aid in future development of effective health education and provide a baseline for evaluating intervention programmes (Talib *et al.,* 1997).

This study aimed to assess the baseline levels of KAP among the general population of the urban area in Malaysia towards NCDs which include hypertension, stroke, ischemic heart attack, diabetes mellitus and chronic obstructive pulmonary disease.

MATERIAL AND METHODS

Study Design and Sampling

This study was approved by the Research Ethics Committee, Universiti Sains Islam Malaysia [USIM/JKEP/2017-27]. A cross-sectional study on villagers from an urban district in Malaysia using a stratified two-stage sampling method was conducted to identify the villages, whilst a selection of the respondents in these villages was based on convenience sampling. Written informed consent was obtained from respondents before the interview.

Upon selection of respondents, the questionnaire was administered through a face-to-face interview in the subject's house. The inclusion criteria for this survey include Malaysian citizen residing in the urban area, aged 18 years and above, and able to communicate in the Malay language. Respondents are to be excluded if they suffer from a terminal or psychiatric illness with communication disabilities as well as pregnant women.

Study Questionnaire

This study was carried out using a pre-tested, modified validated questionnaire verified by experts from the Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia (USIM). The semi-structured interview questionnaire is comprised of three parts of close-ended questions. The first part was presented with details of the respondents including socio-demographic status. The second part focused on the respondents' disease profile of NCD. Self-reported hypertension, hypercholesterolemia, diabetes mellitus, chronic obstructive pulmonary disease and history of heart attack and stroke were recorded. For the KAP section, there are 27, 15 and 6 questions constructed for the knowledge, attitude and practice domain respectively. The questions were developed based on clinical practice guidelines on the management of hypertension, diabetes mellitus, stroke, chronic obstructive pulmonary disease as well as from the Malaysian Dietary Guidelines (MOH, 2010; MOH 2015).

The knowledge part consists of yes/no and correct/false questions with an additional option of unsure (1 point score for correct answers and 0 points for wrong or uncertain responses). The attitude was assessed based on the Likert criteria from 1 point, as the weakest, to 5 points, as a desirable score. To assess the practice domain, the respondents' exercise activity, tobacco use, vegetable consumption, body weighting practice and stress management were assessed (WHO, 2017).

The questionnaire was piloted among 30 respondents who had a similar profile of the target population. Validation results show that the constructed validity and reliability were optimal. Cronbach alpha coefficient values for KAP domains was 0.74 reflecting the good internal consistency and reliability.

Data Analysis

Data entry and statistical analysis were computed using the Statistical Package for Social Sciences (SPSS) version 23. The socio-demographic data were presented in frequencies and percentages. The normality of data was determined using the Kolmogorov–Smirnov test, as well as skewness and kurtosis values. All tests conducted were two-tailed. The alpha level of significance was set at

0.05 unless otherwise specified. Since the data is not normally distributed, the difference between NCDs KAP scores, and demographics and disease profile of respondents were analysed using the Mann–Whitney test.

Calculating the scores for each of the three sections (KAP), the quartiles were determined; the first and second quartiles were coded as poor, the third quartile was coded as moderate, and the last quartile was coded as good. Minimum scores for knowledge, attitude and practice were considered to be 0, 15 and 0, respectively and maximum scores were considered to be 28, 75 and 11, respectively. Respective thresholds and ranges for weak, medium and desirable scores were set as follows: knowledge <15, 15–21 and >21; attitude < 38, 38–56 and >56, practice <5, 5–7 and >7.

RESULTS

Socio-Demographic Characteristics

Data collection was conducted from 16th October until 10th November 2017 involving five villages in an urban area of Ampangan, Negeri Sembilan, Malaysia. 207 respondents were interviewed, and the mean age was 53.52 ± 17.86 years, with slightly more female (63.3%) than male. Table 1 shows the general characteristics of the respondents involved in the survey. The majority of respondents were aged 45 years old and above, 27.1% of the subjects were between 65 to 74 years of age. Almost half of the population received secondary school education and 63.3% of the respondents were married.

Disease Profile

Table 2 shows the disease profile of the respondents. The highest prevalence of disease was hypertension (34.3%) followed by hypercholesterolemia (24.2%) and diabetes mellitus (20.3%).

KAP Score

Majority of the respondents had good knowledge (81.2%) and attitude (53.1%) scores. However, the majority of respondents had moderate score towards practice (56.5%) and only 8.7% of the respondents had good practice score on preventing NCD. Summary of KAP score is demonstrated in Figure 1.

Table 3 revealed the correct answers for the key components of knowledge among the respondents. Only 30% of the respondents can correctly differentiate between non-communicable and communicable disease. Chronic obstructive pulmonary disease (COPD) was the disease with the highest all wrong answers by the respondents (11.6%). Whereas, less than half of the respondents answer correctly (48.8%) for diabetes mellitus disease.

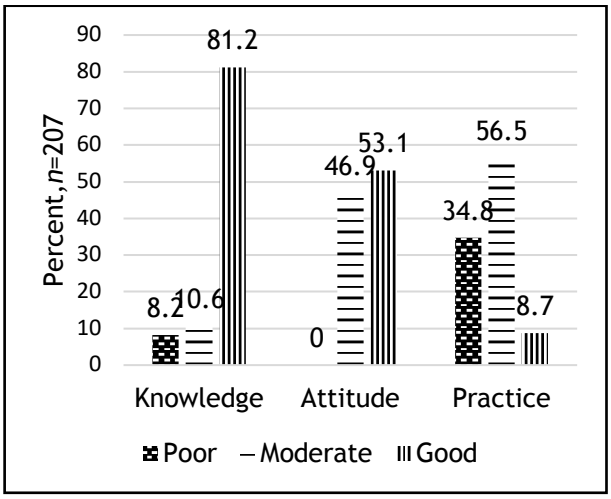

Figure 1: Knowledge, attitude and practice category among respondents (*n*=207)

Association of Sociodemographic and Disease Profile with KAP

Table 4 shows the scores for several age group, gender, educational level, marital status, household income and disease profile of hypertension, hypercholesterolemia and diabetes mellitus. There is an increased score in elderly group age 40-year-old and above for knowledge score [25 (IqR=4)) *vs*23 (IqR=5), p=0.010]. However, no significant difference in attitude and practice were recorded in the age group.

Knowledge and practice scores of male and female groups were not significantly different. However, females had higher scores in attitude compared to male [57 (IqR=7) *vs* 56 (IqR=6), p=0.025] and practice [5 (IqR=2) *vs* 5 (IqR=3), p=0.007].

Higher income group of RM3001 and above possess significantly higher knowledge scores compared to lower income group [25.5 (IqR=3) *vs* 24 (IqR=4)]. However, there is no significant difference in attitude and practice between different household income groups. The KAP score for different educational level and marital status was not significantly different.

There was also a significant difference in knowledge score of respondents with hypertension [25(IqR=4) *vs* 24(IqR=5), p=0.002] and diabetes mellitus [25(IqR=4) *vs* 24(IqR=4), p=0.014] which are higher compared to the non-disease respondents. There are no significant differences in attitude and practice among respondents with hypertension, hypercholesterolemia and diabetes mellitus and non-disease respondents.

Table 1: Sociodemographic of the respondents (n = 207)

Characteristics	*n*	%
Age, years [mean (SD)]	53.52 (17.86)	
Age Category		
18-40	55	26.6
41-59	57	27.5
60 and above	95	45.9
Gender		
Male	76	36.7
Female	131	63.3
Educational Level		
No formal education	4	1.9
Primary education	57	27.5
Secondary education	105	50.7
Tertiary education	40	19.3
Others	1	0.5
Marital Status		
Single	38	18.4
Married	131	63.3
Widow	34	16.4
Divorced/ Separated	4	1.9
Household income, RM [mean (SD)]	1974 (1930)	

Table 2: Disease profile of the respondents (*n* = 207)

Disease	*n*	%
Hypertension	71	34.3
Hypercholesterolemia	50	24.2
Diabetes Mellitus	42	20.3
Ischaemic Heart disease	13	6.3
Stroke	3	1.4
Asthma	2	1.0
Chronic Obstructive Pulmonary Disease	1	0.5

Table 3: Correct answer to key component of knowledge among respondent, *n*=207

Component, *n*=207	All correct, *n* (%)	All wrong, *n* (%)
Examples of NCDs	62 (30.0)	3 (1.4)
Heart attack	138 (70.5)	4(1.9)
Stroke	132(63.8)	6(2.9)
Hypertension	110 (53.1)	3(1.4)
Diabetes Mellitus	101 (48.8)	6(2.9)
Chronic obstructive pulmonary disease	158 (76.3)	24 (11.6)

n = frequency, NCDs = non-communicable diseases

DISCUSSION

In recent years, the progression of urbanization and industrialization, as well as due to the decreased physical liveliness and changes in dietary patterns especially with more fat consumption are known to be associated with changes in health. This is particularly true in urban population which often lead to increased prevalence of NCDs (Noor, 2002; Khambalia and Seen, 2010; Zainuddin, 2012). Due to the exponentially increasing rate of NCDs, unnecessary burden of NCDs suffered by individual, family, society and government, and the modifiable risk factor that can reduce the risk of NCDs, the study on KAP among the general population is vital to promote health education, nutritional status, and the healthy lifestyle of the population.

Although there were KAP studies conducted on diseases and the general population, most of them were only focused into specific diseases such as cardiovascular disease and diabetes mellitus (Ambigapathy *et al.,* 2003; Ding *et al.,* 2006; Ibrahim *et al.,* 2016). Most of the studies also looked only at the prevalence and related risk factors towards NCDs (Lim and Cheah, 2012).

According to National Health Morbidity Survey (NHMS) in 2015, Diabetes Mellitus is among the disease with a high prevalence rate in Malaysia after cardiovascular disease (IPH, 2015). However, less than half of the respondents were able to

Table 4: Knowledge, attitude, and practice score association with demographic groups and disease profile

Variable	Median (IqR)		*z*-statistics	*P*-value[a]
Age (years)	Below 40, *n*= 52	40 and above, *n*=155		
Knowledge	23 (5)	25 (4)	-3.417	0.001**
Attitude	56 (4)	57 (6)	-1.962	0.050
Practice	5 (2)	5 (2)	-0.858	0.391
Gender	Male, *n*= 76	Female, *n*=131		
Knowledge	24 (6)	25 (6)	-0.807	0.420
Attitude	56 (6)	57 (7)	-2.236	0.025*
Practice	5 (3)	5 (2)	-2.542	0.011*
Educational level	Primary, *n*= 57	Secondary, *n*= 105		
Knowledge	24 (3)	25 (4)	-1.617	0.106
Attitude	57 (6)	57 (6)	-0.696	0.486
Practice	6 (2)	5 (2)	-0.771	0.441
Household income	≤RM 3000, n=181	>RM3000, n=26		
Knowledge	24 (4)	25.5 (3)	-2.274	0.023*
Attitude	57 (6)	57.5 (6)	-0.901	0.368
Practice	5 (2)	6 (3)	-0.506	0.613
Hypertension	Yes, *n*= 71	No, *n*=136		
Knowledge	25 (4)	24 (5)	-3.078	0.002**
Attitude	58 (7)	57 (5)	-0.748	0.455
Practice	6 (2)	5 (2)	-1.006	0.314
Hypercholesterolemia	Yes, *n*= 50	No, *n*=157		
Knowledge	25 (3)	24 (5)	-1.840	0.066
Attitude	58 (7)	57 (6)	-1.206	0.305
Practice	5 (2)	5 (2)	-0.228	0.820
Diabetes Mellitus	Yes, *n*= 42	No, *n*= 165		
Knowledge	25 (4)	24 (4)	-2.446	0.014*
Attitude	58 (6)	57 (6)	-0.816	0.415
Practice	5 (2)	5.5 (2)	-0.916	0.360

answer all the correct answers regarding diabetes mellitus risks, symptoms, medication and complications. Among all the diseases, COPD had the highest number of respondents with all the wrong answers. About 7% of all deaths in Malaysia was due to chronic respiratory diseases including COPD (WHO, 2014). COPD is a preventable disease and may develop due to modifiable risk factors for tobacco use and does not present itself until clinically apparent (Loh *et al.,* 2005; Pirabbasi *et al.,* 2015). Thus, there is a need for increased knowledge among the general population concerning this disease.

Only 8.7% of the respondents had good practice score. Most of the respondents do not exercise for more than three times per week, lacking vegetable consumptions, and did not weight at least once a week. An important practice for all ages is to adopt a more active lifestyle and be more cautious of their food habits towards approaching healthy and balanced lifestyle to reduce the risks of NCD (Norimah and Kather, 2003; Teh *et al.,* 2015). The alarming figure of practise score indicated an urgent need to increase population good practise to prevent the occurrence of NCDs for non-disease population and also for better control of disease among diagnosed NCD population.

Knowledge and awareness study among younger generation regarding NCDs is very crucial in reducing its prevalence (Ibrahim *et al.,* 2016). In this study, there was a significant difference in knowledge score among the young adult group as their knowledge score was significantly lower compared to the older group. Younger age group are at higher risk to develop the disease at an older age if their attitude and practice towards NCDs remain unchanged (Khambalia and Seen, 2012; Ibrahim *et al.,* 2016). Knowledge programmes among youngster should be increased as it may reduce the pace of risk factor development in the future.

Findings from the study also showed that the lower income group had lower knowledge score than higher income group. A study by Ding et al. (2006) in Negeri Sembilan, Malaysia showed that the income of diabetic respondents was significantly lower than the higher income group. A systematic review by Dans et al. (2011) concluded that modifiable risk factors are increasing in low-income populations because of ineffective

urbanisation, marketing of unhealthy food, and inadequacies in public health policies. Therefore, it is essentially important to conduct more research in this lower income group in urban areas to better understand the needs of this population.

Female respondents had a significantly good attitude and practice towards NCDs as compared to male respondents. A high proportion of positive attitude on screening and measuring risk factors was due to their awareness towards healthy lifestyles such as healthy eating and regular exercise as promoted in the mass and social media eventually promote their behaviour change (Lynch *et al.,* 2006; Muhamad *et al.,* 2012). Most of the women also reported high vegetable consumption, were a non-smoker and possess good weighting practice. This is also in line with a study by Muhamad et al. (2012) and Ibrahim et al. (2016) which demonstrated that female had a better attitude and practice scores towards risk factor of cardiovascular disease.

Respondents with hypertension and diabetes mellitus had significantly higher knowledge scores compared to non-disease respondents. This is consistent with the study by Ding et al. (2006) in Negeri Sembilan urban area which showed that diabetic respondents had higher knowledge scores. Population with the disease consistently received continuous education from medical officers or healthcare staffs on their disease. Thus their level of knowledge on the disease was high. However, attention shall be given to the non-disease population to reduce the burden of NCDs in this population.

Limitation

As this study only focused on KAP domains in an urban area, it may not represent the data of the general population. However, the results of this study can be used as an initial plan for future education and intervention programmes. Malaysia consists of multicultural ethnic group and studies had shown that this may contribute to the risk of developing NCDs (Rampal *et al.,* 2012; Omar *et al.,* 2016). However, the association was not studied as the number of respondents from ethnics other than Malay were low.

CONCLUSION

Majority of the respondents demonstrated poor practice concerning NCDs despite having good knowledge and attitude. NCDs and their complications can largely be prevented if the relevant healthy and balanced lifestyle is practised among the population. This study revealed a reasonable gap between knowledge, attitude, and practice especially in the younger age group, lower income and non-disease population. To overcome this, it is very important to formulate and implement a proper strategy and mechanism by which positive attitudes can be converted into beneficial practices.

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Conflict of Interest

The authors reported no conflict of interest.

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