ORIGINAL ARTICLE

Knowledge, Attitude and Practices Towards Lifestyle-Related Non-Communicable Diseases (NCDs): A Cross-Sectional Study among Indigenous Orang Asli Adults in Negeri Sembilan, Malaysia

Ithnin M[a], Nor NAUM[b], Juliana N[c], Effendy NM[d], Sahar MA[e], Abdullah KHA[e], Aris MSM[f], Rani MDM[b]
[a]Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia
[b]Department of Primary Care, Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia
[c]Department of Medical Science I, Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia
[d]Department of Medical Science II, Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia
[e]Department of Medicine Based Disciplines, Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia
[f]Department of Surgical Based Disciplines, Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia

ABSTRACT

INTRODUCTION: An increase in the prevalence of non-communicable diseases (NCDs) among Orang Asli in Malaysia was reported to be associated with their lifestyle changes. This study aimed to determine the level of knowledge, attitude, and practice (KAP) on NCDs among the Orang Asli community and its association with demographic factors of gender, age, and education level. **MATERIAL AND METHODS:** A cross-sectional study among consented adult Orang Asli in Jelebu, Negeri Sembilan, was conducted by a face-to-face interview using a validated questionnaire. Their knowledge, attitude, and practice on selected NCD risk factors, complications, and treatment was recorded. Bivariate analysis was performed to test the association between their demographic profile and KAP score. **RESULTS:** A total of 325 respondents with a mean age of 39.9 (±13.2) ranged from 18 to 83 years old participated in this study. Majority of the participants (72.3%) had inadequate knowledge. Despite the inadequacy, they have a good attitude (72.3%) and a moderate practice level (63.4%). Respondents with higher education backgrounds had significantly better knowledge scores compared to lower education background ($p<0.001$). Female respondents had better practice scores than male respondents ($p=0.001$). **CONCLUSIONS:** The study shows that the level of knowledge on NCDs among Orang Asli is low with a moderately healthy lifestyle. Improving the Orang Asli understanding of NCDs prevention by incorporating health programs regularly in their community is a strategic method to increase their awareness. Hence, escalating their good practice on NCDs and eventually their health.

KEYWORDS: knowledge, lifestyle, Orang Asli, Malaysia, non-communicable diseases

INTRODUCTION

Orang Asli (literally, original people) is the collective term for the indigenous peoples of Peninsular Malaysia.[1] *Orang Asli* classified into three main ethnolinguistic groups, namely the Senoi, Proto-Malays or Aboriginal Malays, and the Negritos, each consisting of different dialectic subgroups and geographical locations.[1] *Orang Asli* is the minorities in Malaysia, which account for less than 1% of the total population in Malaysia.[2] The social transformation occurring to *Orang Asli* in the name of economic, physical, and capital development has given rise to many effects in the life of this minority society which includes financial, religion, education, communication, and health.[1]

The World Health Organization (WHO) defines the quality of human life is determined by physical, biological, chemical, social, and psychosocial

Corresponding Author:
Assoc. Prof. Dr. Mohd Dzulkhairi Mohd Rani
Department of Primary Care,
Faculty of Medicine and Health Sciences,
Universiti Sains Islam Malaysia,
Menara B, Persiaran MPAJ,
Jalan Pandan Utama, Pandan Indah
55100 Kuala Lumpur, Malaysia
Tel No: +603 42894 200
Email: drdzulkhairi@usim.edu.my

factors.[3] For the *Orang Asli* communities, the changing environment and health factors have impacted their quality of life and exposed the *Orang Asli* community to the diseases that are more prevalent among urban populations.[4] Studies among *Orang Asli* reported that there was a change of disease trends from infectious to non-communicable diseases (NCDs), especially among *Orang Asli* living in the fringe and urban areas.[4-6] Already burdened with poorer health compared with the national population, studies show that there is a growing problem of NCDs among the *Orang Asli*.[7,8] Exposing them to NCDs that are also known as a lifestyle or preventable chronic diseases, will eventually increase the burden to this marginalised and vulnerable group of communities.[1,9]

The shift to more urban life, added with their low education level, little knowledge on diseases, and lack of accessibility to healthcare facilities expose them to the threat of mismanagement and complications of NCDs.[10] These chronic diseases exert a substantial economic burden on this society, and the Malaysian healthcare system is also facing increasing pressure to provide universal health care coverage, particularly for the *Orang Asli* population.[11]

Studies on knowledge, attitude, and practices are essential so that continuous education and intervention program can be conducted mainly to the group who are at risk.[12,13] Previous studies reported that among the three groups of *Orang Asli*, Proto-Malays had poor knowledge of diabetes despite their close accessibility to the city and had among the highest prevalence of NCDs.[4, 10]

From literature search until date, there is no study published on knowledge, attitude and practices towards NCDs among *Orang Asli*, particularly for the most significant contributor of NCDs in Malaysia, which is cardiovascular diseases, diabetes, cancer, and chronic pulmonary diseases.[14] These NCDs share the common behavioural or lifestyle risk factors of tobacco use, alcohol consumption, physical inactivity, and also unhealthy diet.[15] Therefore, analysing their current state of understanding of the lifestyle diseases and also their attitude and practices will eventually assist in future intervention and education programs that can be designed to suit the need of *Orang Asli* communities.

The purpose of this study was to evaluate the knowledge, attitude, and practices towards lifestyle-related NCDs among indigenous people of *Orang Asli* in Jelebu district of Negeri Sembilan, Malaysia, and to determine the significant relationship between the socio-demographic characteristics of the *Orang Asli* with their knowledge and attitude level.

MATERIALS AND METHODS

Study design

This cross-sectional study was conducted from January to December 2018 among the *Orang Asli* population in Jelebu district of Negeri Sembilan state in Peninsular Malaysia. Jelebu is the second largest district in Negeri Sembilan and located 99 km from the capital of Malaysia, Kuala Lumpur. Most of the *Orang Asli* population in Jelebu was from the Temuan subtribe of the Proto-Malay tribe.[16]

The selection of villages was conducted using the systematic sampling method according to the *Orang Asli* village list provided by the authority. Participants were recruited using the purposive and snowballing sampling method based on the defined inclusion and exclusion criteria.

The total population of *Orang Asli* in Jelebu, Negeri Sembilan updated in 2010 was 2475, including those aged below 18.[17] The calculated sample size using Krejie and Morgan (1970), was 331 with the assumed population proportion of 0.05 and 95% confidence interval.18 The total number of respondents chosen for this study was 364, after taking into consideration the 10% non-response rate. However, at the end of the research period, the total respondents were 325.

Inclusion and exclusion criteria

The inclusion criteria were Malaysian citizens with *Orang Asli* ethnicity, age 18 and above who provided informed consent. Participants with documented psychiatric illnesses, or do not understand Malay language or healthcare personnel were excluded to reduce bias.

Study instruments

A guided, face-to-face interview was carried out through a structured questionnaire. The interview

session was conducted using the local language (Malay) for the ease of communication between the researcher and the participants. The survey consisted of four sections. The questionnaire was adapted from a validated questionnaire by Ithnin et al. (2018) in a study "Knowledge, attitude and practices on non-communicable diseases among the adult population in the urban area of Negeri Sembilan, Malaysia" done in 2018.[19]

For the content validity of the questionnaire, a panel of experts assessed the questionnaire to verify the content and relevancy of the questions. A pilot study was conducted among 30 Orang Asli residents from the Temuan tribe in Selangor, Malaysia who had similar community profile with the study population. Cronbach's alpha test was used to assess the internal consistency of the questionnaire. The Cronbach's alpha test for all items was as follows; knowledge on NCDs (0.961), attitude towards NCDs (0.898), and practice on lifestyle-related NCDs (0.705), which showed excellent internal consistency. [20]

The first section detailed on socio-demographic of the participants, which included age, gender, and education level. These factors used as the independent variables in this study. As for the dependent variables, knowledge, attitude and practices scores used as the outcome. These factors were included based on the literature reviews from previous papers with the hypotheses that they have a significant relationship with knowledge, attitude and practices towards lifestyle-related NCDs.[10, 19]

There were 27 questions in the second part of the knowledge section. Their knowledge of risk factors, complications, and treatment of cardiovascular diseases, diabetes mellitus, and chronic obstructive pulmonary diseases asked. The correct answer for each question in the knowledge section was given one mark while the wrong answer or 'did not know' answers given zero marks. The total score of knowledge ranged from zero to 28 marks. Score zero to 14 categorised as poor, score 15 to 21 as moderate, and score 21 to 28 as having good knowledge.

For the attitude section, there were a total of 15 questions, and answers were in Likert scoring form with a more positive attitude carry a higher score from one to five. Score zero to 38 categorised as poor attitude, score 39 to 56 as moderate, and 57 to 75 as good attitude category.

The final section was to assess the lifestyle-related NCDs practices, specifically on physical activity, smoking status, alcohol consumption, body weight, stress management and fibre intake. These lifestyle practices identified by the World Health Organization [WHO, 2017].[15] The total score of practices ranged from zero to twelve marks. practices score less than six was considered poor, 7 to 9 moderate, and 10 to 12 having a good practices.

Ethical issues

Before the collection of the data, an ethical approval was obtained from the Malaysia Medical Research and Ethics Committee [NMRR-18-3111-44674(IIR)]. The purpose and procedures of the study were explained to and approved by the Malaysian Department of *Orang Asli* Development [JAKOA/PP.30.052JLD14].[24] Before the interview, an information about the study was given to the participants and written informed consent obtained from those who consented to participate. As the participation was voluntary, and the participants had the right to stop participating in this study at any time and had the right not to answer any question that made them feel uncomfortable. The participants confidentiality assured throughout the study.

Statistical analysis

Data analyses were executed using IBM SPSS version 23.0 with descriptive analysis using frequency, percentages, mean, and standard deviation. Histogram with normality curve and Kolmogorov-Smirnov test was used to check for the normal distribution of data in this study. Since the data not normally distributed, the non-parametric test used for inferential analysis. The association between demographic factors with knowledge, attitude, and practices status were analysed using the Mann-Whitney test for two categorical variables, and the Kruskal-Wallis test used for more than two categorical variables. Pearson correlation analysis and scatter plot were performed to check the relationship between knowledge, attitude, and practices score. Results were significant if the p-value was less than 0.05.

RESULTS

Demographic characteristics of the sample population

The survey was conducted among 325 participants and the demographic characteristics of the participants is summarized in Table I. The mean age were 39.94 ± 13.196 years old, ranged from 18 to 83 year old. Only 4.0% of participants received tertiary education and 24.9% received secondary education, while majority of them received primary education or has no formal education (39.1% vs 32.0%).

Table I Socio-demographic of the participants (n = 325)

Characteristics	n	(%)
Age category		
18-39	176	54.2
40 and above	149	45.8
Gender		
Male	94	28.9
Female	231	71.1
Educational Level		
No formal education	104	32.0
Primary education	127	39.1
Secondary education	81	24.9
Tertiary education	13	4.0

Knowledge, attitude and practices score towards lifestyle-related NCDs

Results in Figure 1 show the knowledge and attitude level categories. In general, most of the participants have inadequate knowledge level (72.3%), good attitude level (72.3%), and moderate practices level (63.4%). Only 16.0% of the participant has a good practices category. The mean score of knowledge among the participants is 12.82 ± 9.671, while the mean score of attitudes among the participants is 59.81 (SD= 6.237). The mean score for practices is 7.66 (SD=1.780).

Association between demographic factors with knowledge, attitude and practices status

Table II shows the results of statistical analysis to compare the knowledge, attitude, and practices regarding lifestyle-related NCDs with socio-demographic categories of gender, age group, and education level. There is a significant difference in knowledge scores in education level with higher education levels has significantly higher knowledge scores compared to lower education level ($p<0.001$). There are no significant differences in knowledge between gender ($p=0.791$) and age group ($p=0.210$). All the p values are more than 0.05, indicating that there are no significant differences in attitude score regarding lifestyle-related NCDs between the groups of gender ($p=0.662$), age ($p=0.739$), and education ($p=0.333$). Females have significantly higher practices scores compared to males ($p=0.001$). Variables of age and education level show no significant difference with $p=0.199$ and $p=0.659$, respectively.

Correlation between knowledge status with attitude and status

A Pearson correlation coefficient was computed to assess the relationship between the total knowledge score with attitude and practices score. Overall, there is a weak positive correlation between

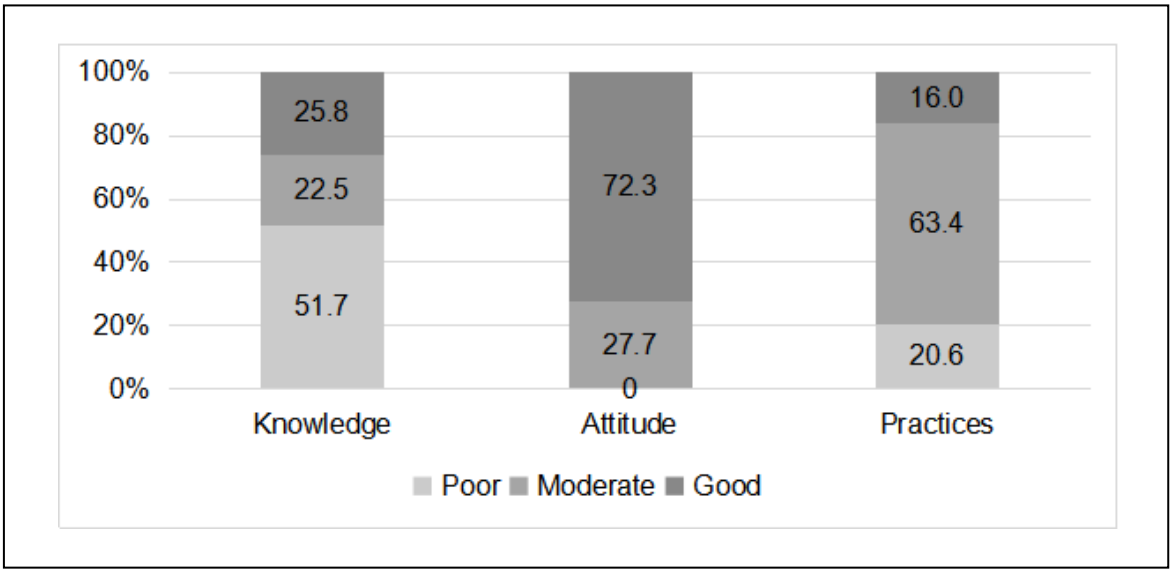

Figure 1 Knowledge, attitude and practices category among participants (n=325)

Table II Comparison of total scores of knowledge, attitude and practices regarding lifestyle-related NCDs between different socio-demographic factors (n=325)

Groups being compared	Knowledge		Attitude		Practices	
	Scores	p value	Scores	p value	Scores	p value
Gender:						
Male	13.5(19)	0.791[a]	60 (9)	0.662[a]	7 (3)	0.001*[a]
Female	13.0(20)		60 (8)		8 (2)	
Age:						
18-39	15 (19)	0.210[a]	60 (9)	0.739[a]	8 (2)	0.199[a]
40 and above	13 (20)		60 (8)		7 (2)	
Education level:						
No formal education	6 (17)	<0.001*[b]	60 (10)	0.333[b]	8 (2)	0.659[b]
Primary	13 (19)		60 (8)		7 (2)	
Secondary	18 (16)		60 (8)		7 (2)	
Tertiary	24 (7)		62 (4)		8 (2)	

Scores expressed as Median (±IQR)
p values based on comparisons between groups at a single time-point ([a] Mann-Whitney test; [b] Kruskal Wallis test)
*Significant association

knowledge and attitude scores. Increases in knowledge score correlate with increases in attitude score (r = 0.441, n = 325, p < 0.001). Both scatter plot and analysis from Pearson correlation show that there is an association between knowledge score and practices score (r=+0.153; p=0.006). The observed correlation, r is 0.153, which suggests a weak positive correlation.

DISCUSSION

Non-communicable diseases (NCDs) have become a significant problem in many developing countries as the population is experiencing an epidemiological transition from infectious to non-communicable chronic diseases, including the indigenous group.[21, 22] NCDs is a silent threat to the health of people around the world and also a significant cause of worldwide preventable morbidity and mortality.[15] Report by Malaysia National Health Morbidity Survey in 2015 also showed a worrying prevalence number of underdiagnosed NCDs among *Bumiputera Asli*, which include the *Orang Asli* group from Peninsular Malaysia.[14] The prevalence of underdiagnosed hypertension is 17.6 %, and for underdiagnosed diabetes mellitus is 8.1%.[14] As the prevalence of NCDs continues to rise not only in the general population but also to the *Orang Asli* population[23], it will burdening the community and also the Malaysian government.

Socio-demographic characteristics

Most of the participants were female as during the time of the interview, only women were mostly available and males were more reluctant to participate in the survey. The similar trends were seen in the numbers of studies conducted among the *Orang Asli* population.[10, 23-25] A proportion of the participants were younger adults, with the age range of 18-39 years. For the educational level, most of the participants only attain primary education (39.1%), and 32.0% of them have never received any formal education.

In the present education system, *Orang Asli* children attend the Malaysian public school for their formal education. The older generation did not have the same chance for schooling due to limited accessibility to the public school in the previous years. Therefore, many of the adults did not attain any formal education. The problem of dropout from primary to secondary school among *Orang Asli* children are still severe.[26] It reported that 22.09% of *Orang Asli* kids in 2014 who finished primary school did not enrol in secondary school.[2] Those with higher education were expected to have a better level of knowledge and attitude regarding lifestyle-related NCDs.

Knowledge, attitude and practices towards lifestyle-related NCDs

The lifestyle-related NCDs that explored in this study, which are cardiovascular disease, diabetes, and chronic respiratory disease, are the most common burden to healthcare worldwide due to long-term management and complication.[15] Poor knowledge regarding these diseases may result in a bad attitude and poor practices and ignorance of a healthy lifestyle. The results from this study show that the

level of knowledge regarding lifestyle-related NCDs is poor amongst the *Orang Asli* interviewed. Only 25.8% of them had a good understanding of lifestyle-related NCDs. Many of the participants failed to answer the question correctly. From the maximum score of 27, their mean total score of knowledge is 12.82(SD=9.671). Another study exploring the understanding of diabetes disease among *Orang Asli* also reported poor knowledge scores among them.[10]

The participants in this study were found to have an excellent attitude towards preventing lifestyle-related NCDs. Most of them have a good attitude with a mean attitude score of 59.81 (SD=6.237). The maximum rating is 75. Almost all of them also agreed that prevention of disease is vital. This result supports a previous study on infectious disease among *Orang Asli*, which reported a positive attitude among them.[27, 28]

Association between knowledge, attitude and practices regarding lifestyle-related NCDs with socio -demographic characteristics

In relation to the understanding of symptoms, risk factors, prevention, management and complication of NCDs, most participants failed to identify the correct answer. The results indicated that participants who had higher formal education had significantly higher knowledge scores. Similarly, a previous study also showed that the better the educational level contributes to a higher KAP level on soil-transmitted helminth infections among *Orang Asli* in rural Malaysia.[28] Several studies reported that the risk of getting NCDs was firmly related to the education background.[22, 25]

As shown from the finding of the study, the female has significantly better practices scores than the male gender. Physically active, not consuming alcohol, and not smoking are protective factors for lifestyle-related NCDs.[15] For the female respondents, they are less exposed to these unhealthy activities compared to males. Therefore, they have better practices scores than males. Hence, our finding implies that improving the level of education in the *Orang Asli* community will probably increase the ability of people to understand the diseases. Additional to that, males should be a target group in the prevention of NCDs so they will be eventually able to develop a healthy lifestyle.

Correlation between knowledge, attitude and practices regarding lifestyle-related NCDs

There was a significant, but fair, positive relationship between the total knowledge and attitude and practices score. Based on the correlation between knowledge and attitude regarding lifestyle-related NCDs among the participants, it was found that higher knowledge contributed to a better attitude and practices. This result implied that someone who knew more about the disease had a better attitude and practices towards the prevention of the disease. The finding is consistent with studies that found a significant correlation between knowledge, attitude, and practices regarding the illness of soil-transmitted helminth infections and malaria among the study population of *Orang Asli*. Even though they had poor knowledge of the disease, their attitude was positive.[27,28]

Limitation and Future Agenda

Due to the shy nature of the *Orang Asli* population and the small number of residents in each village, it is often hard to reach the people to be selected. A snowball sampling method was also applied during recruitment because the procedure is quicker to recruit subjects when compared with probability sampling. Both purposive and snowball sampling approaches are non-random sampling methods that may have limitations but generally used in *Orang Asli* research.[8,29]

The present study provides a community-based picture of the KAP on lifestyle-related NCDs among *Orang Asli* people in Jelebu, Negeri Sembilan. Poverty and underdevelopment are the predominant features of *Orang Asli* communities, and education levels still lagging compared to other communities. Hence, we believed that even though this study cannot be generalized to the whole *Orang Asli* communities, it reveals the need for future research into better methods for implementation of interventions, especially among these vulnerable populations, and to find pragmatic and innovative solutions to increase their knowledge and practices that will eventually reduce their risk of developing NCDs in the future.

CONCLUSION

From this study, several findings inferred with essential implications for lifestyle-related behaviour among the *Orang Asli* population. Firstly, the results indicate that the level of knowledge about NCDs risk factors, disease management and complication among the participants was low, and their practices on prevention of NCDs was moderate. Secondly, differences in knowledge scores influenced by their education background. Thirdly, the practices score was higher in the female gender. Hence, the findings of this survey will assist the health authorities and researchers in establishing more evident knowledge, attitudes, and practices of the population concerning NCDs. Thus, permitting the use of competent tools for health education and sustaining appropriate practices for NCDs prevention. Even though it might be challenging, educational and health programs on enhancing NCD's knowledge and practicess will be beneficial for the *Orang Asli* communities in Malaysia.

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The authors declare that there is no conflict of interest.

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