ORIGINAL ARTICLE

Factors Associated with Knowledge of Healthy Community, Empowers Nation (KOSPEN) and its Implementation among Community Health Volunteers in Kulim District, 2017

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ABSTRACT

Introduction: The increasing burden of Non-Communicable Diseases and their prevalence has led Ministry of Health (MOH) Malaysia to introduce a community empowerment program "*Komuniti Sihat, Perkasa Negara*" acronymed as KOSPEN in July 2013. Thirty thousand community health volunteers have been trained nationwide up to May 2015. **Objective:** To identify the factors associated with knowledge on KOSPEN and its implementation among community health volunteers in Kulim District. **Methods:** A cross-sectional study based on simple random sampling was conducted among community health volunteers Kulim District. Volunteers participated in this study were 194. Data collected using self-administered questionnaire. All data collected were analysed using IBM SPSS version 22 involving descriptive and inferential statistics with significance level set at 0.05. **Results:** The study found that level of knowledge on KOSPEN is associated with employment status ($p=0.02$) and awareness level ($p<0.001$) among the community health volunteers. The level of implementation is associated with age ($p=0.025$), education level ($p=0.007$) and employment status ($p=0.017$) of the community health volunteers. Employment status (aOR=2.133, 95% CI=1.056-4.306, $p=0.035$) and awareness level (aOR=6.119, 95% CI=2.701-13.867 $p<0.001$) were predictors of level of knowledge on KOSPEN. Level of implementation of KOSPEN by the community health volunteers could be predicted by education level (aOR=4.085, 95% CI=1.299-12.851 $p=0.016$). **Conclusion:** Generally the KOSPEN volunteers had good knowledge on KOSPEN and implementation of KOSPEN program. However, there are still misconceptions among the KOSPEN volunteers regarding their functions and role. Therefore it is important to empower the volunteers with awareness on their roles, functions and good knowledge.

Keywords: KOSPEN, *Komuniti Sihat Perkasa Negara*, knowledge, implementation, community health volunteer

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INTRODUCTION

Background

Recent National Health Morbidity Survey (NHMS) 2015 revealed that the overall prevalence of two out of three major risk factors contributing to non-communicable disease (NCD) which are diabetes mellitus and hypercholesterolemia remained high. Whereas the prevalence of high blood pressure has shown a decreased 2.4% in the study done nationwide(1). The current prevalence of hypertension in Malaysia is 30.3%, which is lower than the prevalence in 2011 (32.7%) and 2006 (32.2%). However the proportion of "undiagnosed hypertension" remains high at 17.2%, which is the similar ratio to 2011. The prevalence of hypercholesterolemia in Malaysia also increased to 47.7% from 32.6% in 2011(1). Managing the risk factors early, as well as early

detection of the disease can prevent non-communicable diseases. The necessary skills and tools are already available in our health clinics. However these skills need to be transferred to the community level. It is not possible to transfer our doctors, nurses and assistant medical officers to work at the community level, outside of the health clinics or hospitals since they are already providing essential services to an increasing number of clients accessing our healthcare services. Therefore, we need to identify "new" agents of change and through community-based interventions there is hope to create more and more agents of change to enable us to adopt the "whole-of-community" approach more effectively(2). As non-communicable diseases burden and their prevalence is still increasing Ministry of Health (MOH) Malaysia has introduced a community empowerment initiative program "*Komuniti Sihat, Perkasa Negara*" acronyms as KOSPEN in July 2013. This is an initiative triggered by the Honorable Minister of Health Malaysia Datuk Seri Dr S. Subramaniam to empower self-care among Malaysians to combat and reduce the burden

of non-communicable diseases in Malaysia, with the existing government mechanism at the grassroots level. The community empowerment is initiated with the collaboration with Malaysian Ministry of Rural and Regional through their Community Development Department (KEMAS). Additionally, it is also part of National Blue Ocean Strategy between MOH and other government agencies which already have existing programs in grassroots level(3). Ever since July 2013, the nationwide embarkation of KOSPEN nationwide has 30,000 trained volunteers in 5,000 KOSPEN localities. Number of adults screened for high blood pressure, at risk of high blood sugar level, overweight and smokers has reached 300,000 as per May 2016(4). Among this screened adults, 70% have been referred for diabetic confirmatory test at the health clinics, 36% for high blood pressure and 6.5% of them for class II obesity. By the year 2022, the Malaysian Ministry of Health is estimating almost six million Malaysians would benefit from this community empowerment program by achieving 10,000 KOSPEN localities and 50,000 trained volunteers(4).

The community empowerment program KOSPEN has been introduced and embarked nationwide since July 2013 (3,4). The indicator mainly used to monitor and evaluate the progression of the program has been the number of volunteers trained and the number of adults screened by these trained volunteers.

The volunteers are trained at their starting point and monitored thereafter. This training and monitoring is handled by the district's Intervention for Non-communicable Diseases (iNCD) team. The team is made up by one Medical Officer, one Assitant Medical Officer, one Staff Nurse and one Assistant Environmental Health Officer. This team of five members are solely responsible for the KOSPEN program in the district.

The target of KOSPEN program is to perform health screening for at least 80% of their community member aged 18 and above. Among the KOSPEN localities in Kulim district, 17 out of 53 localities has low performance in achieving the targeted KOSPEN health screening program (5). This is due to lack of knowledge on KOSPEN and the implementation among the volunteers. Success of KOSPEN program lies upon the active participations of the volunteers. Active participation would be derived from good knowledge towards KOSPEN among these volunteers.

Institute of Public Health Malaysia (IPH) has done a cross-sectional study to evaluate the effectiveness of implementation of KOSPEN in Malaysia. The study was conducted in October to December 2014 among the population was the implementers group (District Health Officer, District iNCD team, KEMAS Distric Officer, KEMAS staff), volunteers and community in three southern states of Malaysia Johor, Melaka and Negeri

Sembilan. Generally the study found that the volunteers had good knowledge, acceptance and practice of KOSPEN program. However the study did not include the factors associated and predictors of knowledge of the Community Health Volunteers. These predictors would be useful in future for recruitment of more effective Community Health Volunteers.

METHODOLOGY

Study location, study design, sampling method, variables

This study was conducted in Kulim district, Kedah. A cross-sectional study design was used in this study. A simple random sampling method was used to sample from the registration census of KOSPEN volunteers in Kulim District. Two sample proportions formula was used to estimate the sample size(6). The sample size was 242 after additional adjustment in computing the sample size multiply by two and accounting for a 20% refusal rate or dropouts calculated. All KOSPEN volunteers in Kulim district registered from the year 2014 till 2016 were included. Those who refuse to participate were excluded. The dependent variables were knowledge and practice of KOSPEN program. The independent variables were socio-demographics (age, gender, education level, marital status and employment status), awareness and training.

Instruments

Questionnaire
A knowledge and practice on KOSPEN program questionnaire in the Malay language was adapted from Institute of Public Health for data collection(7). The validity and reliability of the questionnaire were carried out for content validity, face validity, and internal consistency. The questionnaire was divided into five sections consist of a section for sociodemography, awareness, knowledge, practice and training.

Content Validity
The questionnaire was translated to English language and also back translated to ensure that the meaning of both English and Malay version was the same and to warrant reliability.

Face validity
The face validity was evaluated by giving the questionnaire to the respondents KOSPEN volunteers registered in Kulim District for the year 2017, who answered the questionnaire to determine whether they understood each section. Comments were noted, and necessary corrections were made.

Internal consistency of Questionnaire (Cronbach's alpha value)
The questionnaire were answered by the respondents

who were KOSPEN volunteers registered in Kulim District for the year 2017. With that the magnitude of reliability and internal consistency of the study was determined by Cronbach's alpha, and it had given an alpha of 0.74. Alpha values above 0.7 were considered as acceptable(8).

Data Analysis

Data were analysed using IBM Statistical Package for Social Sciences (SPSS) version 22.0. A descriptive characteristic of the respondents was obtained as percentage and frequencies in all variables studied. Chi square test was used to determine an association between two categorical variables. The level of significance of 0.05 with confidence interval 95% was used. Simple logistic regression was first carried out to determine the crude odds ratio. All the variables with p value smaller than 0.25 were entered into multiple logistic regression models. The level of significance used for the above analysis was 0.05(9).

Ethical Consideration

Permission to conduct the study was obtained from Ethic Committee for Research Involving Human Subjects Universiti Putra Malaysia, Faculty of Medicine and Health Sciences. Written informed consent was obtained from the respondents before the data collection.

RESULTS

Response rate

Out of the 242 respondents selected, 194 participated in this study, giving an overall response rate of 80.2%. 48 respondents were those who dropped due to incomplete answering their questionnaire.

Sociodemography factors

Table 1 shows the sociodemographic characteristics of the repondents. Majority of the respondents were female (72.2%), aged 36 to 55 years (62.9%), had at least education up to secondary school (77.3%), and married

Table I. Sociodemographic factors of respondents(N=194)

Variables	Frequency	Percentage (%)
Gender		
Male	54	27.8
Female	140	72.2
Age		
18 to 35 years	20	10.3
36 to 55 years	122	62.9
56 years and above	52	26.8
Ethnicity		
Malay	194	100.0
Education level		
Primary school	17	8.8
Secondary school	150	77.3
Certificate or diploma	20	10.3
Degree or master	7	3.6
Marital status		
Single	11	5.7
Married	165	85.1
Separated	2	1.0
Widow or widower	16	8.2
Employment		
Public servants	12	6.2
Private sector	35	18.0
Self-employed	44	22.7
Housewives	68	35.1
Unemployed	13	6.7
Pensioner	22	11.3

Table II. Distribution of training attendance among KOSPEN volunteers(N=194)

Training	Frequency	Percentage (%)
Attended	172	88.7
Never attended	22	11.3

(85.1%). One third of the respondents were housewives (35.1%). And all the respondents were of Malay ethnic.

Training
Table 2 shows the distribution of training attendance among KOSPEN volunteers. Majority of the respondents has attended the KOSPEN training program. As many as 172 respondents (88.7%) had attended training program on KOSPEN. Whereas the remaining 22 respondents (11.3%) had never attended any training program on KOSPEN.

Awareness level
All the respondents reported that they were aware of their appoinment as KOSPEN volunteer and they are all aware of their role and functions as well. Total maximum score by respondents were 7 and total minimum score by respondents were 4. The mean for awareness level score was 5.98 and the median were 6. The shapiro-wilk test gave *p value* 0.086, therefore the data is normally distributed. Therefore based on the mean, the cut off point for good ond poor awareness level were 6. Majority of the respondents had good awareness level (78.4%) on their role and functions as KOSPEN volunteers. The remaining 21.6% of the respondents had poor awareness level.

Knowledge level on KOSPEN
Total maximum score by respondents were 13 and total minimum score by respondents were 4. The mean for knowledge level score was 8.78 and the median were 9. The shapiro-wilk test gave *p value* 0.056, therefore the data is normally distributed. Therefore based on the mean, the cut off point for good ond poor knowledge level were 9.

Table 3 shows the knowledge level among the KOSPEN volunteers. Level of knowledge on KOSPEN program among majority (68%) of the respondents were good. Whereas the remaining 32% (n=62) of the respondents had poor knowledge on KOSPEN program.

Implementation level of KOSPEN
Total maximum score by respondents were 9 and total minimum score by respondents were 6. The mean for implementation level score was 7.64 and the median were 8. The shapiro-wilk test gave *p value* 0.062, therefore the data is normally distributed. Therefore based on the mean, the cut off point for good ond poor implementation level were 8.

Table 4 shows the implementation level of KOSPEN program by the KOSPEN volunteers. More than half of the respondents (53.6%) had good level of implementation of KOSPEN program. Whereas the remaining 46.4% of the respondents had poor level of implememtation.

Factors associated with level of knowledge on KOSPEN
Good knowledge level on KOSPEN were higher among males (72.2%) compared to females (66.4%) but there is no significant association between gender of respondents and level of knowledge on KOSPEN (*p*=0.495).

Adults aged 18 to 55 years had higher percentage (69.2%) good knowledge level on KOSPEN compared to elderly aged 56 years and above (67.6%), however there is no significant association between adults or elderly age of respondents and level of knowledge on KOSPEN (*p*=0.469).

Table III. Prevalence of knowledge level on KOSPEN among KOSPEN volunteers(N=194)

Knowledge level	Frequency	Percentage (%)
Good	132	68.0
Poor	62	32.0

Table IV. Prevalence of implementation level of KOSPEN among KOSPEN volunteers(N=194)

Implementation	Frequency	Percentage (%)
Good	104	53.6
Poor	90	46.4

In this study all the respondents were of Malay ethnicity. Therefore the association is not measurable statistically.

Good knowledge level on KOSPEN were higher among higher educated respondents (74.1%) compared to lower educated respondents (67.1%) but there is no significant association between education level of respondents and level of knowledge on KOSPEN (p=0.495).

Compared to ever married respondents (67.8%), good knowledge level on KOSPEN were higher among single respondents (72.7%). However there is no significant association between marital status of respondents and level of knowledge on KOSPEN (p=0.731).

Employment status has a significant association with good level of knowledge on KOSPEN (p=0.020). Good

Table V. Simple Logistic Regression Model and Multiple Logistic Regression Model of factors associated with knowledge level on KOSPEN among KOSPEN volunteers

Factors	Simple logstic regression			Multiple logistic regression		
	p	COR	95% C.I.	p	aOR	95% C.I.
Age						
18 to 55 years		1				
≥ 56 years	0.830	0.928	0.467, 1.841			
Gender						
Female		1				
Male	0.439	1.314	0.658, 2.623			
Education level						
Higher education		1				
Lower education	0.470	1.403	0.560, 3.518			
Marital status						
Single		1				
Ever married	0.732	0.788	0.202, 3.079			
Employment status						
Working		1			1	
Not working	0.021*	2.156	1.122, 4.144	0.035**	2.133	1.056, 4.306
Training						
Attended		1			1	
Never attended	0.154*	1.923	0.782, 4.730	0.399	1.551	0.559, 4.306
Awareness level						
Good/fair		1			1	
Poor	<0.001*	6.941	3.291, 14.642	<0.001**	6.119	2.701, 13.867
Implementation level						
Good		1				
Poor	0.318	1.361	0.743, 2.493			

COR: crude odds ratio
aOR: adjusted odds ratio
*Significant at p <0.25
**Signinficant at p<0.05

Table VI. Simple Logistic Regression Model and Multiple Logistic Regression Model of factors associated with implementation level of KOSPEN among KOSPEN volunteers

Factors	Simple logstic regression			Multiple logistic regression		
	p	COR	95% C.I.	*p*	aOR	95% C.I.
Age						
18 to 55 years		1			1	
≥ 56 years	0.027*	2.077	1.088, 3.965	0.067	2.177	0.946, 5.009
Gender						
Female		1				
Male	0.761	1.103	0.588, 2.068			
Education level						
Higher education		1				
Lower education	0.010*	3.542	1.361, 9.220	0.016**	4.085	1.299, 12.851
Marital status						
Single		1				
Ever married	0.949	0.961	0.283, 3.260			
Employment status						
Working		1			1	
Not working	0.018*	2.096	1.138, 3.858	0.051	1.886	0.997, 3.566
Training						
Attended		1				
Never attended	0.320	0.627	0.250, 1.572			
Awareness level						
Good/fair		1			1	
Poor	<0.056*	1.968	0.982, 3.944	0.364	1.440	0.656, 3.163
Knowledge level						
Good		1				
Poor	0.318	1.361	0.743, 2.493			

COR: crude odds ratio
aOR: adjusted odds ratio
*Significant at p <0.25
**Signinficant at p<0.05

knowledge level on KOSPEN were higher among working respondents (75.8%) compared to non-working respondents (59.3%) .

In comparison to those who had never attended training (54.5%), good knowledge level on KOSPEN were higher among respondents who have attended training (69.8%) but there is no significant association between education level of respondents and level of knowledge on KOSPEN (*p*=0.149).

Good knowledge level on KOSPEN were higher among respondents who had good awareness level (77.6%) compared to respondents who had poor awareness level

(33.3%) and there is significant association between awareness level of respondents and level of knowledge on KOSPEN (p<0.001).

Good knowledge level on KOSPEN were higher among respondents who had good implementation level of KOSPEN program (71.2%) compared to respondents who had poor implementation level (64.4%) but there is no significant association between implementation level of respondents and level of knowledge on KOSPEN (p=0.318).

Factors associated with implementation of KOSPEN program
Good implementation level of KOSPEN were higher among females (54.3%) compared to males (51.9%) but there is no significant association between gender of respondents and level of implementation of KOSPEN (p=0.761).

Majority of elderly respondents (58.5%) has good implementation level of KOSPEN compared to adult respondents aged 18 to 55 years (40.4%) and it was found that there is a significant association between age group of respondents and level of implementation of KOSPEN (p=0.025).

In this study all the respondent were of Malay ethnicity. Therefore the association is not measurable statistically.

It was found that there is a significant association between education level of respondents and level of implementation of KOSPEN (p=0.007), with good implementation level of KOSPEN were higher among higher educated respondents (77.8%) compared to lower educated respondents (49.7%).

Good implementation level of KOSPEN were higher among single respondents (54.5%) compared to ever married respondents (53.6%) but there is no significant association between marital status of respondents and level of implementation of KOSPEN (p=0.949).

There is a significant association between employment status of respondents and level of implementation of KOSPEN (p=0.017). Good implementation level of KOSPEN were higher among working respondents (62.6%) compared to non-working respondents (44.4%).

Good implementation level of KOSPEN were higher among respondents who had never attended training (63.6%) compared to respondents who had attended training (52.3%) but there is no significant association between education level of respondents and level of implementation of KOSPEN (p=0.316).

Between awareness level of respondents and level of implementation of KOSPEN there is significant

association (p=0.054). Good implementation level of KOSPEN were higher among respondents who had good awareness level (57.2%) compared to respondents who had poor awareness level (40.5%) and

Good implementation level of KOSPEN were higher among respondents who had good knowledge level on KOSPEN program (56.1%) compared to respondents who had poor knowledge level (48.4%) but there is no significant association between knowledge on KOSPEN and level of implementation of KOSPEN (p=0.318).

The predictors of knowledge level on KOSPEN

Simple and multiple logistic regression (enter method) was run to predict knowledge from gender, age, ethnic, marital status, employment status, training, awareness and implementation level. Table 5 shows the variables analysis by simple logistic regression and multiple logistic regression. By simple logistic regression, employment status (COR=2.156, p=0.021), training (COR=1.923, p=0.154) and awareness level (COR=6.941, p<0.001) were found to be significant variables towards knowledge at significance level 0.25. These variables were proceed for multiple logistic regression. Employment status (aOR=2.133, p=0.035, 95% CI:1.056-4.306) and awareness level (aOR=6.119, p<0.001, 95% CI:2.701-13.867) were significant as predictor of knowledge at significance level 0.05. The Hosmer and Lemeshow goodness of fit test gave a *p value* of 0.089, so the model were a good fit. And Nagelkerke R^2 were 0.202. Therefore the logistic regression equation for knowledge is :

Logit(p)= -1.622 + 0.757(employment status) + 1.811(awareness)

The predictors of implementation of KOSPEN
Simple and multiple logistic regression (enter method) was run to predict practice from gender, age, ethnic, marital status, employment status, training, awareness level and knowledge level. Table 6 shows the result of the logistic regression. By single logistic regression, age (COR=2.077, p=0.027), education level (COR=3.542, p=0.010), employment status (COR=2.096, p=0.018) and awareness level (COR=1.968, p=0.056) were found to be significant variables towards knowledge at significance level 0.25. These variables were then proceed for multiple logistic regression. And only education level (aOR=4.085, p=0.016, 95% CI:1.299-12.851) were significant as predictor of implementation at significance level 0.05. The Hosmer and Lemeshow goodness of fit test gave a *p value* of 0.873, so the model were a good fit. And Nagelkerke R^2 were 0.144. Therefore the logistic regression equation for practice is :

Logit(p)= -1.928 + 1.407(education level)

DISCUSSION

Sociodemographic distribution

The respondents in the study were all of Malay ethnicity as KOSPEN program was initially started of with collaboration with KEMAS in the villages where these villages are resided by Malay ethnics only. And majority of the respondents were females. Most the respondents had at least secondary school education. One third of the respondents were housewives. These findings are all similar with the descriptive cross-sectional study by Institute of Public Health (2014), which was conducted in the southern states of Peninsular Malaysia (7).

Prevalence of knowledge level on KOSPEN program

Knowledge level of large number of respondents were good (68%), the poor knowledged respondents were 32% (n=62). However 93.8% of the respondents agreed to incorrect statement about iNCD team should perform the health screening among the KOSPEN community (n=182, 95% CI:0.59-1.08). This percentage is higher than the finding in the previous study in the southern states of Peninsular Malaysia (84.6%) by Insitute of Public Health (7). And also more than half of the respondents incorrectly agreed that trained KOSPEN volunteer can provide treatment to the community (52.6%, n=102, 95% CI: 0.42-0.62). This could be due to misconception that KOSPEN volunteers are the health clinic's representative at ground level therefore they also have the role of providing treatment. Whereas in real the role of the volunteers are limited to detection of abnormalities during health screening conducted by the volunteers themselves.

Prevalence of implementation of KOSPEN program

A total of 90 respondents (46.4%) had poor level of implementation of KOSPEN program. The remaining 104 respondents had good level of implementation of KOSPEN program. Most of the respondents had distributed health diaries during health screening activities (92.3%, n=179, 95% CI: 0.91-1.45) which is higher than the finding in the previous study (72.6%) by Institute of Public Health (6). This could be due to continous supply of the health diaries from District Health Office. Health screening is the main core activity of the KOSPEN program. Therefore the amount community been screened by the KOSPEN volunteers is being monitored through data input from the volunteers. In place currently is the online data key-in system, MySihat Online Evaluation System (MOVeS). This requires computer with internet connection to key-in the datas recorded by the KOSPEN volunteers. Therefore computer literacy is also required to adhere to this requirement. This leaves the burden to be set on the coordinator of KOSPEN program in health office to do the data key-in.

Training

Majority of the respondents has attended the KOSPEN training program. As many as 172 respondents (88.7%) had attended training program on KOSPEN. Whereas the remaining 22 respondents (21.3%) had never attended any training program on KOSPEN. Similar finding were obtained from the year 2014 study by Institute of Public Health, in which 84.5% had ever attended a KOSPEN training (7).

Awareness level

More than three quarter of the respondents had good level of awareness (78.4%, n=152). All the respondents (100%, n=194) were aware of their appointment as community health volunteer for KOSPEN program and claimed they knew their function and role as a volunteer. But then, 35.1% of them had misperception that treating community with risk for non communicable disease as part of their function. Similarly in the previous study by Institute of Public Health (6), 96.5% were aware of their appointment as volunteer and 94.2% claimed they knew their role and function as a volunteer for KOSPEN program. However, they had the similar misperception regarding treating community with risk for non-communicable disease (43.4%). It is important for the community health volunteers to understand their role and function clearly besides being aware of their appointment as KOSPEN volunteers. This would clear their mind that KOSPEN program is not an extra burden for them besides their personal life, but it is a self-caring and social responsible program to benefit their own health and of the community living around them.

Factors associated with level of knowledge on KOSPEN

In this study the factors which had association with level of knowledge on KOSPEN was employment status (p=0.02) and awareness level (p<0.001). This finding is in contrast to the finding by Maretha (2011) where there were no association between awareness (p=0.126) and knowledge on maternal health among community health volunteers in Puskesmas Jatimulya, Indonesia. Also study by Acharya et al found that there were association between education level and knowledge on maternal and child health services among the community health volunteers in rural Nepal (aOR=5.2, CI:2.2-12.2) (10). The same study found that age has no association with knowledge among community health volunteers in rural Nepal. The United Nations Education, Scientific and Cultural Organization (UNESCO) Institute for Statistics shows in year 2010, Nepalese has literacy rate of nearly 50%, whereas Malaysia's literacy rate is 93% in the same year. Therefore the difference between the education levels does not significantly interfere with knowledge of KOSPEN. And also that KOSPEN program materials is tailored to cater the community need with simple understandable language command.

Factors associated with implementation of KOSPEN program

In this study, the age group (p=0.034), education level (p=0.007) and employment status (p=0.017) had

significant association with level of implementation of KOSPEN program by the community health volunteers in Kulim district. A well educated and employed person has more sense of responsibility to understand the program and adhere to the instructions as per the guidelines. This is similar to the study done on factors associated with practice of community health volunteers in Palasari health clinic, Indonesia (11). Their study found that education level of the volunteers is associated with the practice of the health program (OR=3.357, p=0.032). Employed volunteers would also have their own constraints especially in managing time for voluntary service and work.

The predictors of level of knowledge on KOSPEN program

This study found that awareness level (aOR=6.119, $p<0.001$) and employment status (aOR=2.133, p=0.035) could predict the knowledge level of community health volunteers. The odd of poor awareness leveled community health volunteers to have poor level of knowledge on KOSPEN program is 6.1 times. And the odd of not working community health volunteers to have poor level of knowledge on KOSPEN program is 2.1.

The predictors of implementation of KOSPEN program

This study found that education level could predict the implementation of KOSPEN program by community health volunteers (aOR=4.085, p=0.016). The odd lower educated community health volunteers to have poor implementation of KOSPEN program is 4.

Strength and limitation of this study

The strength of this study is that it had been able to establish factors associated with knowledge and practice of KOSPEN program among the community health volunteers.

Being a cross-sectional study design, the study could not establish a causal relationship. This is due to the fact that the temporal sequence, outcome and exposure is unknown since the data were collected in a certain period of time. Therefore, the study could not determine the temporal sequence of knowledge on KOSPEN program and its implementation by the community health volunteers in Kulim district. The study did not include the interest, willingness, participation in health screening and expectations of the respondents in being community health volunteers. And also that the respondents were not asked for their suggestion for improvement of the KOSPEN program.

CONCLUSION

In conclusion the study has found that the knowledge level among KOSPEN volunteers are associated with employment status and awareness. And also employment status and awareness predicts the knowledge level. Whereas, the implementation of KOSPEN by the volunteers are associated with volunteer's age, education level, employment status, and awareness. However only education level predicts the implementation level.

Community empowerment has to start from the community understanding the need to address the issue in their own community. Such as in KOSPEN program, the need to address the increase in non-communicable disease should be made understood to the volunteers and the community receiving this program. Even though KOSPEN program is collaboration between ministries and departments, the issue of financially governed by the health department has always been an issue. The volunteers prefer to handle the provided financial budget on their own rather then being held by the health department. Same goes to the other departments involved, their officers find it difficult to run the program as they do not have allocated budget for KOSPEN program. Besides that the success of the KOSPEN volunteers also lies in the willingness to accept the program voluntarily. Community empowerment goes beyond mere involvement, participation or engagement of communities; it implies community ownership and action that explicitly aims to change the conditions that affect health and health equity. It seeks to build partnerships with other sectors in addressing the social, cultural, political and economic determinants that underpin health. The instrumental work of community empowerment faces a variety of challenges; including gaps in institutional capacity, relationships with communities most affected, and engagement in complex systems with diverse communities. Therefore these challenges need to be addressed as the community health volunteers are the agent for change in health among the community.

Further study is recommended to be carried out to measure the participation in health screening, willingness and acceptance of KOSPEN among the community health volunteers. It is also recommended that focus must be given to straighten up the misperceptions among community health volunteers on their role, function and about non-communicable disease itself. The current guideline for KOSPEN does spell out the functions and role of a volunteer. however guideline is 16 pages and therefore a more concise version of guideline for volunteers is recommended for easy reference. And volunteers based intervention or namely routine refresher training is recommended to further increase the understanding among community health volunteers. Besides that a pre-test and post-test during the training sessions would be usual in dealing with the misconception on their role.

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