PUBLIC HEALTH RESEARCH

Factors Associated with Non-Participation in a Health Screening Programme and its Barriers: Findings from the Community Empowers the Nation Programme (KOSPEN), Malaysia 2016

Lim Kuang Kuay,[1] Hasimah Ismail,[1] Nur Liana Ab Majid,[1] Thamil Arasu Saminathan,[1] Rosnah Ramly,[2] Chan Ying Ying,[1] and Tahir Aris,[1]

[1] Institute for Public Health, Ministry of Health, Malaysia.
[2] Disease Control Division, Ministry of Health, Malaysia.

**For reprint and all correspondence: Lim Kuang Kuay, Institute for Public Health, Ministry of Health Malaysia, Jalan Setia Murni U13/52, Seksyen U13 Setia Alam, 40170 Shah Alam, Selangor.*
E-mail Address: limkk@moh.gov.my

ABSTRACT

Received 16 May 2019
Accepted 24 March 2020

Introduction The Ministry of Health, Malaysia had introduced the community based action programme (KOSPEN) to improve the early detection of non-communicable diseases (NCDs) in the population. This study aims to identify factors associated with non-participation in screening activities and its barriers.

Methods This cross sectional study was conducted from May to June 2016 in KOSPEN localities. A total of 2354 adults aged 18 years and above were selected using a two-stage stratified cluster sampling design. The data were obtained through face-to-face interviews using validated questionnaires. Multiple logistic regression analysis was used to determine the sociodemographic factors associated with non-participation in health screening.

Results Out of 2156 respondents interviewed (response rate of 91.6%), approximately 75% (n=1624) of the respondents did not participate in the KOSPEN health screening programme. Multivariable logistic regression analyses revealed that, males (aOR: 2.35, 95% CI 1.21, 4.55) and those working in private sector (aOR: 2.11, 95% CI 1.21, 3.67) were more likely to not participate in health screening. While, age, ethnicity, level of education, marital status and household income were not significantly associated with non-participation in health screening. The barrier for not participated were "did not know health screening was conducted in their localities" (39.3%) and had no time to attend the programme (18.2%).

Conclusions The study findings are of public health concern as about three quarters of the respondents failed to participate in this programme because they didn't know that there were health screening activities conducted in their localities beside the time constraint problems. Thus, KOSPEN health screening activities should be made known to the community especially males who are mostly working in the private sector.

Keywords Non-communicable diseases - KOSPEN - health screening - Malaysia.

INTRODUCTION

Non-communicable diseases (NCDs) continue to be an important public health problem worldwide. The burden of NCDs not only affects high-income nations, as approximately 80% of premature NCD deaths occur in low and middle-income countries.[1] The future burden of NCD will not be reversed unless inequities in lifestyle habits and health care access within country borders are remedied.[2] The shift of burden from predominantly communicable diseases to NCDs was due to changes in demographic, environmental and the economy of the countries.[3] According to World Health Organization (WHO), more than 36 million people die annually from chronic diseases, such as cardiovascular diseases, cancers, chronic respiratory diseases and diabetes. Furthermore, it is postulated that this mortality impact will increase to 55 million by 2030.[4] NCDs affect all age groups and the risk factors are mainly due to modifiable behaviours, such as unhealthy diet, inadequate physical activity, tobacco and alcohol use.[5]

In Malaysia, NCDs are considered to be the leading cause of death. The current Malaysian National Health and Morbidity Survey (NHMS) reveals an increasing trend of NCD and NCD risk factors in the adult population aged 18 years and above.[6,7] The prevalence of diabetes had increased from 15.2 % in 2011 to 17.5% in 2015 and the prevalence of adults with increased blood cholesterol levels was noted to be 47.7% in 2015, compared to 35.1% in 2011. Furthermore, the percentage of overweight/ obese adults was also increased from 15.1% in 2011 to 30.6% in 2015.[6,7] Despite all the efforts that have been undertaken by local health authorities towards further improving the health status of the population and expanding the scope of NCD prevention and control, the prevalence of NCD and NCD risk factors continues to rise.[8] Cardiovascular diseases are responsible for most of the NCD deaths, followed by cancer, respiratory diseases, and diabetes. These four groups of diseases account for about 73% of NCD deaths with 35% of them comprising deaths of individuals aged less than 60 years.[7,9] In addition, children and adolescents are also a vulnerable risk group for NCDs due to exposure to unhealthy diets, lack of exercise as well as active or passive smoking and excessive alcohol consumption.[10]

The risk factors associated with these diseases can be effectively reduced by training or retraining health care providers to prevent and treat NCDs.[11] However, this effectiveness can be further enhanced by introducing interventions, such as, community approaches to improve early detection and timely treatment.[4] The principles of community-based action is, not only to target the community to initiate behavioural change, but also to empower the community, encourage it to act as an agent of change and prompt it to use its own resources for action.[10] Following the success of this community based action programme in many countries,[12,13,14] the Ministry of Health (MOH) Malaysia introduced a new community participation programme known as KOSPEN in 2013. Its goal is to prevent and reduce the occurrence of NCDs as well as related risk factors in the population. Briefly, KOSPEN consists of training community members as health volunteers who will act as the health agents of change towards positive behavioural changes in the community. The programme integrates health promotion and education, advocacy for a healthy environment and risk factors screening. This programme focuses on five scopes, namely healthy eating, active lifestyle, body weight management, quit smoking initiative and smoke free environment as well as conducting health screening such as blood pressure check, blood glucose level and body mass index in the community.[15]

Since the KOSPEN programme was implemented in 2013, no study has evaluated its effectiveness in terms of the level of community participation elicited nor of individual programme components. This study aims to identify factors associated with non-participation in screening activities and its barriers.

METHODS

This nation-wide cross-sectional survey was conducted from May to June 2016 in selected KOSPEN localities (localities in all the states in Malaysia which had implemented KOSPEN before 01 July 2015). A two-stage stratified cluster sampling method was used in this survey. Based on this design, states were considered as primary stratum. The secondary stratum was made up of KOSPEN localities, which had started the screening programme before 1st July 2015. Simple random sampling method was used to select all adults aged 18 years and above residing in 103 KOSPEN localities. Sample size was calculated based on a 5% expected prevalence (p), margin error (e) of 2%, 95% confidence interval. To ensure the optimum sample size, few adjustments were made to the total number of target population, design effect (deff) and n(complex) taking account the expected non response rates of 30%. Thus, the final sample size required for the community was 2,600 respondents.[16]

A structured interviewer-administered questionnaire was used to obtain information from the respondents. This questionnaire was developed by a panel of experts and pre-tested prior to the study. It was administered as a bilingual questionnaire in Malay, the national language, and English using mobile devices. All interviewers were trained on the questionnaire administration and mobile device usage. The first part of the module assessed the socio-demography characteristics, including household income[7] of the respondent. The

second part of the module was on participation in the health screening at KOSPEN programme, which was measured by the following question: Have you ever undergone the health screening under KOSPEN programme? The choices of answers were (a) Yes, (b) No. While, the barriers for non-participation in the health screening was measured by the following item: Do you face any barriers or challenges to undergo health screening under KOSPEN ? (multiple answers accepted). The choices of answers were (a) 'No time', (b) 'No companion, (c) 'No mode of transportation' (d) 'Not interested'. (e) 'Embarrassed', (f) 'Scared' (g) 'Have already undergone health screening', (h) 'Did not know health screening is conducted, and (i) 'Politic'.

Data were analysed using SPSS version 23.0. The respondents' demographic profile was presented in frequency and percentage. Bivariate analysis was done to examine associations between sociodemographic background and participation as the dependent variable. Crude odds ratio (cOR) was used to examine the strength of association between dependent and independent variables. Mutivariable logistic regression model was fitted to determine factors associated with participation. The adjusted OR (aOR), with *p*-value <0.05 was considered significant in the full logistic regression model.

This study was approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia (NMRR-16-524-30085). Permission to undertake the study was obtained from every relevant authority. Respondents participation was voluntary and written informed consent was obtained prior to participation in the study. All individual information was kept confidential and specific identification code was given to each respondent to make sure the study was anonymous.

RESULTS

A total of 2156 respondents were interviewed with a response rate of 91.5%. Only a few respondents refused to answer one or other component, hence, we had a small number of missing data. About 56% of the respondents were females, 76% were Malays and most of them had attained up to secondary level of education (42.1%). In terms of marital status, 69.8% were married and about 34% were homemakers or unemployed. In terms of KOSPEN's screening programme, about three quarters (*n*=1624) of the respondents did not participate in the health screening. Among respondents who did not participate, majority of them were of Malay ethnicity (76.1%) and married (67.2%). In terms of occupational and household income status, about 34% of the respondents were homemakers/unemployed and 26.6% of them were from the middle income group (quintile 3). (Table 1)

Table 1 Socio-demographic characteristics of respondents

Characteristics	Participation					
	No		Yes		Total	
	n	%	*n*	%	*n*	%
Gender						
Male	761	46.9	201	37.8	962	44.6
Female	863	53.1	331	62.2	1194	55.4
Age (year)						
18-29	340	21.0	38	7.2	378	17.6
30-39	310	19.2	71	13.4	381	17.7
40-49	310	19.2	133	25.1	443	20.6
50-59	288	17.8	145	27.4	433	20.2
≥ 60	370	22.9	143	27.0	513	23.9
Ethnicity						
Malays	1232	76.1	396	74.9	1628	75.8
Other Bumiputra (Sabah and Sarawak Bumiputra)	197	12.2	107	20.2	304	14.2
Others	190	11.7	26	4.9	216	10.1
Education level						
None	182	11.3	66	12.6	248	11.6
Primary	418	25.9	174	33.1	592	27.7
Secondary	680	42.1	222	42.3	902	42.1
Higher	336	20.8	63	12.0	399	18.6
Marital status						
Never Married	317	19.6	34	6.4	351	16.4
Married	1084	67.2	411	77.7	1495	69.8
Divorcee/widow/widower	213	13.2	84	15.9	297	13.9

Occupation						
Government/semi-goverment	214	13.3	71	13.5	285	13.2
Private Sector	377	23.4	66	12.4	443	20.7
Self-employed	345	21.4	162	30.7	507	23.7
Homemaker/Unemployed	550	34.1	184	34.9	734	34.3
Others	125	7.8	44	8.3	169	7.9
Household income						
Quintile 1 (poorest 20%)	312	21.1	147	29.4	459	21.2
Quintile 2	256	17.3	78	15.6	334	16.9
Quintile 3	394	26.6	129	25.8	523	26.4
Quintile 4	226	15.2	66	13.2	292	14.7
Quintile 5 (richest 20%)	294	19.8	80	16.0	374	18.9
Overall	1624	72.6	532	27.4	2156	100.0

The bivariate associations between socio-demographic variables and non-participation in KOSPEN health screening programme were statistically significant across gender, age, marital status and occupation. Males (cOR: 1.61, 95% CI 1.03, 2.52) and those from younger age groups were significantly more likely to be non-participants compared to females and those aged 60 years or more, respectively. Non-participation was also higher among those who were never married (cOR: 3.10, 95% CI 1.60, 6.00) compared with divorcee/widow/widower. In addition, respondents who were private-employed (cOR: 2.78, 95%CI 1.68, 4.62) were more likely to be non-participants compared to respondents who were government/semi-government-employed. Ethnicity, education level and household income of the respondents were not associated with non-participation in KOSPEN health screening programme. However, in multivariate logistic regression analysis, only two factors were found to be significantly associated with non-participation in the screening programme; gender and occupation of the respondents, after adjusting for other variables. Being male (aOR:2.35, 95% CI 1.21,4.55) and private-employed workers (aOR 2.11; 95% CI 1.21,3.67) were approximately twice more likely to be non-participants compared to their respective counterparts (Table 2).

Table 2 Socio-demographic factors associated with non-participation in the health screening programme

Characteristics	*n*	Odds Ratio (95% CI) Crude	*p*-value	Adjusted	p-value
Gender					
Female	863	1	0.036	1	0.012
Male	761	1.61 (1.03, 2.51)		2.35 (1.21, 4.55)*	
Age (years)					
≥ 60	370	1		1	
50-59	288	0.59 (0.34, 1.05)	0.001	0.61 (0.34, 1.08)	0.093
40-49	310	0.73 (0.45, 1.18)		0.65 (0.37, 1.16)	
30-39	310	1.59 (0.97, 2.61)		1.04 (0.51, 2.14)	
18-29	340	3.81 (1.97, 7.34)		2.11 (0.82, 5.40)	
Ethnicity					
Malays	1232	1		1	
Other Bumiputra (Sabah and Sarawak Bumuputra)	197	0.99 (0.32, 3.03)	0.136	0.86 (0.30, 2.44)	0.108
Others	190	2.31 (0.95, 5.61)		2.36 (0.92, 6.05)	
Education level					
None	182	1		1	
Primary	418	0.62 (0.37, 1.03)	0.052	0.73 (0.38, 1.38)	0.763
Secondary	680	0.84 (0.43, 1.63)		0.64 (0.27, 1.48)	
Higher	336	1.14 (0.50, 2.59)		0.63 (0.20, 1.93)	
Marital status					
Divorcee/widow/widower	213	1		1	0.133
Married	1084	077 (0.51, 1.16)	0.001	1.01 (0.58, 1.76)	
Never Married	317	3.10 (1.60, 6.00)		2.41 (0.87, 6.66)	

Occupation					
Government/semi-goverment	214	1		1	
Private Sector	377	2.78 (1.68,4. 62)	0.001	2.11 (1.21, 3.67)*	0.001
Self-employed	345	0.66 (0.41, 1.08)		0.55 (0.23, 1.31)	
Homemaker/Unemployed	550	1.24 (0.78, 1.98)		1.84 (0.88, 3.84)	
Others	125	0.66 (0.22, 1.92)		0.47 (0.14, 1.58)	
Household income					
Quintile 1 (poorest 20%)	312	1		1	
Quintile 2	256	1.40 (0.72, 2.71)	0.244	1.46 (0.72, 2.97)	0.198
Quintile 3	394	1.16 (0.63, 2.13)		1.01 (0.49, 2.04)	
Quintile 4	226	0.90 (0.44, 1.86)		0.88 (0.44, 1.75)	
Quintile 5 (richest 20%)	294	1.63 (0.86, 3.08)		1.79 (0.89, 3.62)	

*Significant at $p<0.05$

Out of 1624 respondents who reported failure to participate in the KOSPEN health screening programme, only 1092 respondents (67.2%) were willing to reveal their barrier of non-participation. The majority of the respondents reported that they "did not know health screening is conducted' in their areas (39.3%). Almost 20% of the respondents reported they had "no time" to attend the programme and 5.4% declared they had "already gone for health screening" (Table 3).

Table 3 Barrier for non-participation in KOSPEN health screening programmes

Barrier	Non participation	
	n	%
Did not know health screening is conducted	638	39.3
No time	296	18.2
Have already gone for health screening	88	5.4
Not interested	52	3.2
No companion	18	1.1
Total	1092	67.2

DISCUSSION

The WHO has identified that community screening involving local communities as one of the strategies in harm reduction and management of NCDs in terms of lives saved, diseases prevented and heavy costs of treatment.[17] Our study which assessed the factors associated with non-participation in screening activities and its barriers in KOSPEN community areas in Malaysia showed that almost three quarter of them failed to participate in screening activities despite the high acceptance of KOSPEN programme among the community.[18] In 2014, a study to evaluate the effectiveness of the KOSPEN programme implemented in Malaysia revealed that approximately two-thirds (65.5%) of the respondents were aware of KOSPEN. In addition, majority of them (82.3%) managed to highlight that the main activities of KOSPEN were health screening programmes.[18] It is noteworthy that the high participation rates are important for maximizing the effects of a health screening programme. For those whose screening results were not good, preventive actions such as changes in lifestyle activities are likely to improve their health status, and for those whose screening results indicated no health risk, knowing their current health status can be useful.[19]

Our findings of non response rate is higher compared to several other health screening studies which are ranging from 23% to 45%.[20,21] A study conducted in Ockelbo, Sweden to determine the non-participants in a preventive health examination for cardiovascular diseases and their reasons for not participating revealed that about a quarter of the respondents failed to participate in screening activities and the main barrier was lack of times or hindrances at work (52%)[20] and the other study conducted on lifestyle intervention in Dutch primary care showed that nearly half of the respondents failed to participate in screening activities.[21]

Improving the attendance rate in health screening programme is a challenging task that needs new strategies[22]. The barrier for non-participation in the health screening were 'Did not know health screening is conducted', 'No time' to involve in this activities or "Have already gone health screening". Thus, more concerted efforts should be targeted towards awareness and behaviour change in these groups through both mass and interpersonal communication approaches. The mass media (television, radio, newspapers etc.) are more effective in creating awareness. While, interpersonal communication channels (small group meetings, house-to-house visits) tend to be more useful in changing attitudes and behaviours.[5]

With regard to socio-demographic characteristics, respondent's gender was one of the factors that was significantly associated with non-

participation in the health screening. The non-participation in the health screening was two times higher among males compared with females. Since screening programmes were conducted during the day and only during weekdays, males may face time constraints, which may hinder their participation in the screening programme.[23] Differences in the behavior between gender with respect to their participation in health screening highlighted that the male participants who normally visited hospital for treatment might felt not needed the basic health screening a feature not seen in women[24]. The other reason that influenced the male participation in the health screening could be due to their concerns regarding privacy, and healthcare volunteer's competence.[25]

In this study, it was noted that the likelihood of the respondents who failed to participate in screening activities was higher among those working in private sectors (compared to their counterparts in government/semi government sectors. It is not surprising as the government/semi government employees are generally more supportive to the government policies, commonly associated with a higher participation in government health screening programmes.[26] However, those working in private sectors may find it difficult to participate during office hours due to their work setting. For example, a tight working schedule and time constraints. In addition, their employers are less likely to offer paid-time off, which could be a barrier to attend health screening.[21] It would be necessary to work more closely with this group to determine the most appropriate times for these sessions in order to maximize participation. As the employees spend a greater part of their time in a workplace than in the community, screening at the work place can be considered to increase their participation in health screening.[26]

The major strength of this study was that the survey method used took into account the complex sample design which provides unbiased population estimates. The high response rate and the large sample size also permitted us to test the associations with sufficient statistical power. In addition, the questionnaire used in this study had been undergone field-testing prior to the study. Furthermore, an intensive training for interviewers was conducted to reduce bias in administering the questionnaire. However, this study has several limitations that should be considered while interpreting its results. First, there is a possibility that the results are prone to response bias due to self-reported responses, in which the accuracy of the response outcomes cannot be assessed. Second, information on awareness and perception toward KOSPEN programme was not gathered, which might have an impact on the respondent's participation in the programme. Finally, the study is of cross-sectional design; thus, no causal inference can be made.

CONCLUSION

The study findings are of public health concern as about three quarters of the respondents failed to participate in this programme because they didn't know that there were health screening activities conducted in their localities beside the time constraint problems. Several measures; such as the promotion of KOSPEN health screening activities should be made known to the community especially males who are mostly working in the private sector. In addition, health volunteers should disseminate information on the NCDs and important of NCDs risk factor screening.

ACKNOWLEDGEMENT

We would like to thank the Director General of Health Malaysia for his permission to publish this article. Special thanks to the staff of Disease Control Division, Health Education Division, Institute for Medical Research, Institute for Health Behavioural Research and all State Health Directors, Ministry of Health Malaysia for their assistance in the conduct of the study. Our sincere appreciation also goes to all respondents who had participated in the study.

AUTHOR DISCLOSURES

The authors declare that they have no conflicting of interests.

ETHICS APPROVAL

Approved by the Medical Research and Ethics Committee Malaysia (NMRR-16-524-30085). Permission to undertake the study was obtained from every relevant authority. Respondents participation was voluntary and written informed consent was obtained prior to participation in the study. All individual information was kept confidential and specific identification code was given to each respondent to make sure the study was anonymous.

REFERENCES

1. Catherine PB, Gregory AR, Andrew EM. The Global Burden of Disease Study and the Preventable Burden of NCD. *Global Heart*. 2016;11(4):393-97.
2. Murray CJ, Vos T, Lozano R, Maghavi M, Flaxman AD, Michaud C, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012; 380(9859):2197–223.
3. Samira HH, Soma S. Burden of non-communicable disease:Global overview.

Diabetes & Metabolic Syndrome: Clinical Research & Reviews. 2010; 4:41–47.
4. World Health Organization (WHO). Global action plan for the prevention and control of non-communicable diseases 2013-2020. Geneva: World Health Organization, 2013.
5. Krishnan A, Ekowati R, Baridalyne N, Kusumawardani N, Suhardi, Kapoor SK, Leowski J. Evaluation of community-based interventions for non-communicable diseases: experiences from India and Indonesia. Health Promotion Int. 2010; 26(3):276-89.
6. Institute for Public Health (IPH). National Health and Morbidity Survey 2011 (NHMS 2011). Vol. II: Non-Communicable Diseases. Kuala Lumpur: Ministry of Health Malaysia; 2011.
7. Institute for Public Health (IPH). National health and morbidity survey 2015 (NHMS 2015). Vol. II: non-communicable diseases, risk factors & other health problems. Kuala Lumpur: Institute for Public Health, 2016.
8. Ministry of Health (MOH). National strategic plan for non-communicable disease. Kuala Lumpur: Ministry of Health, 2010.
9. World Health Organization (WHO). Noncommunicable diseases in the Western Pacific Region: a profile. Geneva: World Health Organization, 2012.
10. Roura LC, Arulkumaran SS. Facing the noncommunicable disease (NCD) global epidemic e The battle of prevention starts in utero-The FIGO challenge. Best Practice & Research Clinical Obstetrics and Gynaecology. 2015:29; 5-14.
11. Benziger CP, Roth GA, Moran AE. The global burden of disease study and the preventable burden of NCD. Global Heart. 2016:11(4): 393-397.
12. Denman CA, Belly ML, Cornejo E, de Zapieny JG, Carvajaly S, Scott Carvajaly S, Rosalesy C. Changes in Health Behaviors and Self-Rated Health of Participants in Meta Salud : A Primary Prevention Intervention of NCD in Mexico. Global Heart. 2015;10(1): 55-61.
13. Gaziano TA, Abrahams-Gessel S, Denman CA, Montano CM, Khanam M, Puoane T, Levitt NS. An assessment of community health workers' ability to screen for cardiovascular disease risk with a simple, non-invasive risk assessment instrumentin Bangladesh, Guatemala, Mexico, and South Africa: an observational study. Lancet. 2015; 3:556–63.
14. Checkley W, Ghannemx H, Irazolak V, Kimaiyo S, Rabadán-Diehl C, Ramirez-Zea M, Rubinsteink A, Sigamani A, Smith R. Management of NCD in low- and middle-income countries. Global Heart. 2014; 9(4): 431-43.
15. Ministry of Health (MOH)/Community Development Department (KEMAS). Healthy Community Empowers the Nation (KOSPEN) project. Kuala Lumpur: Ministry of Health, 2013.
16. Institute for Public Health (IPH). Technical report evaluation of the implementation of "Komuniti Sihat Perkasa Negara" programme in Malaysia (KOSPEN) 2016. Kuala Lumpur: Institute for Public Health, 2016.
17. World Health Organization (WHO). 2008-2013 Action plan for the prevention and control of non-communicable diseases. Geneva: World Health Organization, 2008.
18. Institute for Public Health (IPH). Technical report evaluation of effectiveness of implementation of "Komuniti Sihat Perkasa Negara" (KOSPEN) programme in Malaysia- phase 1. Kuala Lumpur: Institute for Public Health, 2015.
19. Noguchi R, Shen J. Factors affecting participation in health checkups: Evidence from Japanese survey data. Health Policy. 2018 (in press).
20. Wall M, Teeland L. Non-participants in a preventive health examination for cardiovascular disease: characteristics, reasons for non-participation, and willingness to participate in the future. Scandinavian J Primary Health Care. 2004; 22(4):248-51.
21. Vermunt PW, Milder IE, Wielaard F, Van Oers JA, Westert GP: An active strategy to identify individuals eligible for type 2 diabetes prevention by lifestyle intervention in Dutch primary care: the APHRODITE study. Fam Pract. 2010; 27:312–19.
22. Burioni R, Contucci P, Fedele M, Vernia C, Vezzani A. Enhancing participation to health screening campaigns by group interactions. Scientific Reports. 2015;5: 9904.
23. Engebretson J, Mahoney JS, Walker G. Participation in community health screenings: a qualitative evaluation. J Community Health Nursing. 2005;22(2):77–92.
24. Funahashi H, Nishida T, Okamura Y, Sakakibara H. Attributes of non-participants aged 40-59 years in specific health check-ups. Japanese J Public Health. 2013;60(3):119-27.

25. Harte E, MacLure C, Martin A, Saunders CL, Meads C, Walter FM, Griffin SJ, Mant J, Usher-Smith BJ. Reasons why people do not attend NHS Health Checks: a systematic review and qualitative synthesis. Br J Gen Pract. 2018; 68 (666): 28-35.

26. Tagbo BN, EkeCB Omotowo BI, Onwuasigwe CN, Onyeka EB, Mildred UO. Vaccination coverage and its determints in children aged 12-23 months in an urban district of Nigeria. World J Vaccine 2014; 4:175-83.