

## ORIGINAL ARTICLE

# Targeted Dementia Screening Performance, Its Barriers and Associated Factors Among Primary Care Doctors at Public Primary Healthcare Clinics in Malaysia

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## ABSTRACT

**Introduction:** Targeted dementia screening is recommended for early recognition of dementia. However, many persons with dementia were not identified and managed in timely manner. This study aimed to determine the proportion of performing targeted dementia screening, its barriers and associated factors among primary care doctors in public primary healthcare clinics. **Methods:** A cross sectional study was conducted at 4 public healthcare clinics, Putrajaya from December 2018 – February 2019. All primary care doctors who fulfilled the eligibility criteria were recruited. We collected data using a pre-tested self-administrated questionnaire comprised socio-demographic, medical information, healthcare experience and training, knowledge on dementia, awareness of dementia screening tool availability and barriers to dementia screening. The outcome was the performance of targeted dementia screening. Descriptive, Chi-square and independent t-test analyses were performed. **Results:** A total of 106 primary care doctors participated in this study. The proportion of primary care doctors who performed targeted dementia screening was 11.3%. Most participants were family medicine trainee (42.9%), with duration of service between 5 and 10 years (15.0%), had professional caring experience of dementia patients (21.4%), and had undergone dementia training (36.2%). Many of the participants perceived barriers to perform targeted dementia screening that included lack of time (72.6%) and lack of knowledge (59.4%). **Conclusion:** The prevalence of performing targeted dementia screening was low with modifiable barriers. Strategies to improve the performance of targeted screening such as creating awareness among primary care doctors could be done for a start.

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## INTRODUCTION

Dementia is characterized as a decline in cognition involving one or more cognitive domains (learning and memory, executive function, language, complex attention, perceptual-motor, and social cognition) according to the Diagnostic and Statistical Manual (DSM)-V (1). World Alzheimer's Report 2016 reported 47 million people were affected with dementia worldwide. This number is expected to rise to more than 131 million by 2050 (2). However, majority of those with dementia have not been recognised in most countries, with the mean rate of diagnosis in United Kingdom at 48% (ranging from 39% to 78%) (3). According to the Alzheimer Disease International report 2014, the

estimated people living with dementia in Malaysia was 123,000 of the projected population and it is expected that this number will increase to 261,000 and 590,000 of the projected population with dementia in 2020 and 2050, respectively (4). Besides that, Malaysia is 4th in the world in terms of projected percentage growth of older persons, defined as aged 65 years and over (5). This expansion of the elderly population can foresee a rise in the number of dementia cases in Malaysia.

Based on the 2018 National Health and Morbidity Survey, the prevalence of dementia in Malaysia was 8.5% that increased with age, and with higher prevalence among women, those with lower educational level and lower income levels (6). Majority of people with dementia remained undiagnosed due to the fact that most family members viewed Alzheimer Disease's symptoms as part of normal aging. Hence, they do not seek for any medical treatment. Thus, many people with dementia in Malaysia did not receive a formal diagnosis of dementia

or have contact with specialist dementia services (2,7). It is important for early recognition of dementia as this produces marked proven benefit if active therapy could be initiated accordingly which subsequently reduces the entry to nursing home as well as the possibility of misdiagnosis and inappropriate management (8). Failure to diagnose dementia will eventually challenge a proper support meant for people with the disorder, their families and caregiver (5, 9–11).

The Malaysia Clinical Practice Guideline for Dementia 2014 recommends to screen people who are at risk of developing dementia (12). Targeted dementia screening is case finding focused on high-risk groups. The U.S Preventive Service Task Force has made recommendation for screening among those associated with risk factors of developing dementia (13). These high-risk individuals can be identified based on risk factors like age, cardiovascular risk factors and family history of dementia. Other circumstances with high prevalence of dementia include post delirium, post stroke, post-first onset depression after 65 years, and entry into a nursing home (14). A study done by Boustani et. al.(2005) showed that mass screening is not beneficial as it is not only costly, but require substantial time (15). Besides that, a study done in Taiwan showed that targeted dementia screening captured a higher proportion (24.1%) of suspected dementia among patients in outpatient department of a hospital as compared to the general population (16).

At present, no studies have assessed the prevalence of targeted dementia screening and its associated factors among primary care doctors. Thus, little is known with regards to targeted dementia screening among primary care doctors. This study aimed to determine the proportion of doctors performing targeted dementia screening, its barriers and its associated factors among primary care doctors in Wilayah Persekutuan, Putrajaya, Malaysia.

## MATERIALS AND METHODS

### Study Design and Participants

A cross-sectional study was conducted in 4 public primary healthcare clinics in Wilayah Persekutuan, Putrajaya, Malaysia. The data was collected between December 2018 and February 2019. This study included all primary care doctors who practised at health clinics during the study period under Health Department Wilayah Persekutuan, Putrajaya. Our exclusion criteria were those whom were away during the study period including for attachments, long leaves and locum doctors from other Health Departments. The sample size estimated was 108 participants after considering significant level at 5% and 20% of non-response rate. It was calculated using one sample proportion formula (17) based on the proportion of primary care doctors who performed dementia screening (24.5%) by

Gaboreau et al., 2014 (18). A list of the primary care doctors practicing during the study period was obtained from each clinic.

### Data Collection Instrument and Procedure

A pre-tested questionnaire was used and it includes 6 sections. The sections consisted of socio-demographic information (age, gender, and ethnicity), health care experiences and training (professional status, duration of service in years, professional caring experiences in managing dementia patients, dementia training and other dementia training), medical information (family history of dementia, personal caring experiences of dementia patients), knowledge on dementia, self-reported performance of targeted dementia screening at practice and lastly barriers for targeted dementia screening. For the professional status, three groups of professionals were included which were the Family Medicine Specialist, Family Medicine trainee and medical officer. A Family Medicine Specialist was defined as a clinical specialist who had a degree in Master of Family Medicine or equivalent according to the Malaysian National Specialist Register. A Family Medicine trainee was defined as a doctor who is undergoing training in the Master of Family Medicine or its equivalent parallel pathway for the Family Medicine specialty. A medical officer was defined as a doctor who had completed housemanship and was working in the primary healthcare clinic during this study but did not have or was not pursuing a postgraduate specialty degree. In this study, dementia training was defined as had undergone a structured or formal course training on dementia with the memory clinic of the local hospital, while other dementia training included had undergone informal self-training or courses defined as information obtained via internet or going through booklets related to dementia.

The Dementia Knowledge Assessment Tool Version Two (DKAT 2 tool) was used to measure the dementia knowledge. The tool has 21 items. It has an internal consistency reliability estimates (Cronbach's alpha) of 0.79 (19). The response to each item were either "agree", "disagree" or "don't know". Items no. 5, 6, 7, 8, 12, 16, and 20 in this questionnaire contained incorrect statements, hence, were given a reverse score. The participants should ideally disagree with those statements to score a mark. Participants who provided the correct response will be awarded "1 mark" and no marks for incorrect response. Participants who answered "don't know" will not be given a mark as it was assumed that they lacked knowledge on that particular item. The score ranged from 0 to 21, with higher scores indicating greater dementia knowledge. The questionnaire underwent content validity with dementia experts, a leading geriatrician with a national referring tertiary public hospital and two experienced primary care physicians holding academic positions with special interests in geriatrics and four medical officers since they

were the target group for this study.

The performance of targeted dementia screening was based on three questions based on Dalziel, et. al. who described ‘rule of two’ to identify high risk patients for dementia (14). The first question was: “Do you perform any dementia screening for patients?” The answer option was either ‘Yes’, ‘No’, or ‘Sometimes’. If the participants answered ‘Yes’ or ‘Sometimes’, they were required to answer the following two questions. The second question was: “Which of the patients as listed you have likely screened for dementia in your practice? (can choose more than one option”. The list had six multiple choice options to determine their practice of targeted dementia screening. The options listed were:

- i. Age 65-79 years old with no co-morbid
- ii. Age more than 65 with well controlled diabetes without any target organ damage and with no changes in memory or functional ability (20)
- iii. All patients with controlled hypertension and hypercholesterolemia (23)
- iv. Post stroke/ history of stroke (8)
- v. All patients with first onset of depression (21)
- vi. Age more than 80 years old patient (22)

Options (ii), (iv) and (vi) represented patients who are at risk for dementia based on the expert panel during content validation process for this questionnaire as well as from literature on risk of dementia. The third question was an open-ended question: “What are the tool(s) that you use for dementia screening at your practice?”. The Modified Mini-Mental State Examination, Elderly Cognitive Assessment Questionnaire, and Clock Drawing Test are the recommended and commonly used tools for dementia screening in the Health Screening for the Elderly module (23) in the public primary healthcare clinics across Malaysia. Any of these tools that the participants wrote were considered as a correct response. The performance of targeted dementia screening was reported as either performed targeted dementia screening or did not perform. A participant who answered the first question as either ‘yes’ or ‘sometimes’, chose all three correct answers for the second question and provided one of the three recommended tools for the third question, hence, the participant was categorized/considered as having performed targeted dementia screening.

The list of possible barriers for dementia screening at primary care clinic were based on previous studies (24,25). The participants were required to select options as the most likely reason(s) for not performing targeted dementia screening at their settings. The barriers listed included lack of time, lack of knowledge, unsuitable working conditions, no proven benefit, insufficient technical resources, forgetting to screen, insufficient motivation, dementia screening was of no interest, usually obvious without screening, and unfamiliarity with community resources. An additional column for

the participants to state any other reasons which were not listed. Participants were allowed to select more than one perceived barrier.

Questionnaires were distributed to primary care doctors who work in public primary healthcare clinics in Putrajaya. The medical officer in charge of each primary health clinic was approached to distribute the questionnaires. The questionnaires were collected on the very same day to prevent response biases. In the case of primary care doctors whom were not around during the distribution of the questionnaire, the participants were approached again on another day until all the participants were approached.

### Data Analysis

Data was analysed by using Statistical Package for Social Science (SPSS) version 22.0 software. The categorical variables were reported as frequencies and percentages, and mean and standard deviation (SD) were described for the continuous variables. There was no missing data except for the duration of service variable (less than 1% missing data). The dependent variable or the study outcome was recategorized as performed targeted dementia screening and did not perform targeted dementia screening. The associations between performing targeted dementia screening and socio-demography, medical information, healthcare experiences and training, and knowledge on dementia were determined using Chi-square test and independent t-test analyses. P-value <0.05 was considered as statistical significant.

### Ethical considerations

Ethics approvals from the Ethics Committee University Putra Malaysia and Medical Research Ethics Committee (MREC), Ministry of Health, Malaysia (NMRR-18-2116-42790 (IIR)) were obtained. All participants were provided with participant information sheet about the study and a written consent was taken from participants. The participants were assigned with non-identifiable identification codes for data entry and data analysis. All the consent forms, and questionnaires were stored in a locked filing cabinet accessible only by the researcher team for 5 years. After this time information will be shredded and disposed in secure bins. The participants were not identified individually in publications or report writing.

### RESULTS

A total of 115 primary care doctors who fulfilled the eligibility criteria were approached to participate in this study. However, only 106 primary care doctors agreed to participate making the response rate of 92.2% as summarised in Figure 1 .

Table I summarises the socio-demographic factors, medical information, health care experiences and

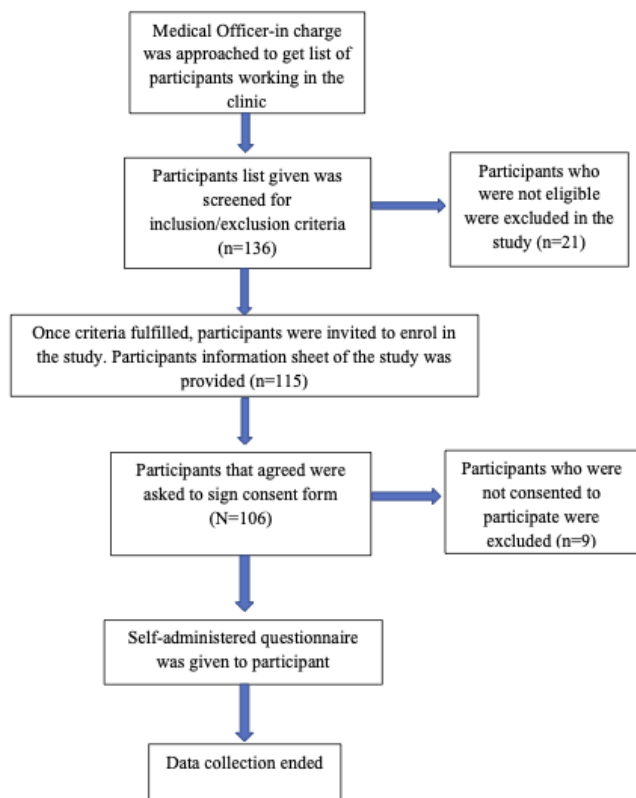


Figure 1: Flowchart of study participants

training of the participants, and performance of targeted dementia screening. The participants' mean (SD) age were 33 (5.96) years old and mean (SD) duration of service was 8 (4.59) years. More than half of the participants were within the age group of 30-40 year-old (56.6%). Majority of the participants were women (86.8%), of Malay ethnicity (77.4%), worked as medical officers (90.6%), did not have any family history of dementia (89.6%) and did not have any personal (91.5%) or professional caring experience for dementia patients (86.8%). About 39% of the participants had working experience of 5 years and less and only 10.4% had formal dementia training, and 38.7% of the participants had informal dementia training. The overall mean (SD) score of dementia knowledge was 14.19 (3.06). Only 28.3% of the participants were aware of the presence of a screening tool for dementia in their clinic.

The proportion of participants who performed targeted dementia screening was 11.3%. Participants who performed targeted dementia screening were generally family medicine trainees (42.9%), with duration of service between 5 and 10 years (15.0%), had professional caring experience of dementia patients (21.4%), and had undergone dementia training (36.2%) (Table I). The factors associated with the performance of targeted dementia screening were professional status of the participants (p=0.010) and those who had dementia training (p=0.021).

About 88% of the participants perceived barriers to

Table 1: Characteristics of the study participants and performance of targeted dementia screening

Factors	Total, n (%)	Performed targeted dementia screening, n (%)	Did not perform targeted dementia screening, n (%)	P-value
<b>Age (N=106), years</b>		<b>n=12</b>	<b>n=94</b>	0.792
• ≤ 30	35 (33.0)	5 (14.3)	30 (85.7)	
• >30 ≤ 40	60 (56.6)	6 (10.0)	54 (90.0)	
• >40	11 (10.4)	1 (9.1)	10 (90.9)	
<b>Gender (N=106)</b>		<b>n=12</b>	<b>n=94</b>	0.507
• Male	14 (13.2)	1 (7.1)	13 (92.9)	
• Female	92 (86.8)	11 (12.0)	81 (88.0)	
<b>Ethnicity (N=106)</b>		<b>n=12</b>	<b>n=94</b>	0.471
• Malay	82 (77.4)	10 (12.2)	72 (87.8)	
• Chinese	4 (3.8)	0 (0)	4 (100.0)	
• Indian	17 (16.0)	1 (5.9)	16 (94.1)	
• Others	3 (2.8)	1 (33.3)	2 (66.7)	
<b>Professional status (N=106)</b>		<b>n=12</b>	<b>n=94</b>	<b>0.010*</b>
• Family medicine specialist	3 (2.8)	1 (33.3)	2 (66.7)	
• Family medicine trainee	7 (6.6)	3 (42.9)	4 (57.1)	
• Medical officer	96 (90.6)	8 (8.3)	88 (91.7)	
<b>Duration of service (N=105), years</b>		<b>n=12</b>	<b>n=93</b>	0.656
• ≤ 5 years	41 (39.0)	4 (9.8)	37 (90.2)	
• >5year and ≤ 10 years	40 (38.1)	6 (15.0)	34 (85.0)	
• >10 years	24 (22.9)	2 (8.3)	22 (91.7)	
<b>Family history of dementia (N=106)</b>		<b>n=12</b>	<b>n=94</b>	0.634
• Yes	11 (10.4)	1 (9.1)	10 (90.0)	
• No	95 (89.6)	11 (11.7)	83 (88.3)	
<b>Personal caring experience for dementia patients (N=106)</b>		<b>n=12</b>	<b>n=94</b>	0.269
• Yes	9 (8.5)	2 (22.2)	7 (77.8)	
• No	97 (91.5)	10 (10.3)	87 (89.7)	
<b>Professional caring experience of dementia patients (N=106)</b>		<b>n=12</b>	<b>n=94</b>	0.195
• Yes	14 (13.2)	3 (21.4)	11 (78.6)	
• No	92 (86.8)	9 (9.8)	83 (90.2)	
<b>Dementia training (N=106)</b>		<b>n=12</b>	<b>n=94</b>	<b>0.021*</b>
• Yes	11 (10.4)	4 (36.4)	7 (63.6)	
• No	95 (89.6)	8 (8.4)	87 (91.6)	
<b>Other dementia training (N=106)</b>		<b>n=12</b>	<b>n=94</b>	0.122
• Yes	41 (38.7)	4 (17.1)	7 (82.9)	
• No	65 (61.3)	8 (7.7)	87 (92.3)	
<b>Total Knowledge score (N=106)</b>		<b>n=12</b>	<b>n=94</b>	0.203
Mean (SD)	14.19 (3.06)	15.25 (2.83)	14.05 (3.07)	
<b>Awareness of dementia screening tool availability in practice (N=106)</b>		<b>n=12</b>	<b>n=94</b>	0.281
• Yes	30 (28.3)	2 (6.7)	28 (93.3)	
• No	76 (71.7)	10 (13.2)	66 (7)	

SD=standard deviation; \*p-value <0.05 = statistical significant; All the results were based on Chi-square tests except for Total Knowledge score, which was based on the independent t-test.

perform targeted dementia screening. Most of the participants perceived that lack of time (72.6%) and lack of knowledge (59.4%) as the perceived barriers to do screening (Table II).

**Table II: Perceived barriers to performing targeted dementia screening**

Barriers	Frequency (Percentage)	95% CI
Lack of time	77 (72.6)	63.1-80.9
Lack of knowledge	63 (59.4)	49.5-68.9
Unsuitable working condition	26 (24.5)	16.7-33.8
No proven benefit	1 (0.9)	0-5.1
Insufficient technical resources	27 (25.5)	17.5-34.9
Forgetting to screen	53 (50.0)	40.1-59.9
Insufficient motivation	13 (12.3)	6.7-20.1
Dementia screening was of no interest	3 (2.8)	0.6-8.0
Usually obvious without screening	9 (8.5)	4.0-15.5
Unfamiliarity with community resources	39 (36.8)	27.6-46.7

CI=confidence interval

## DISCUSSION

Our study revealed that only 11.3% of the participants performed targeted dementia screening and more than 80% of the participants perceived barriers to perform targeted dementia screening included lack of time and lack of knowledge. In addition, those who were family medicine trainee and those who had dementia training showed a trend of performing targeted dementia screening. However, we did not find any factors that were significantly associated with performing targeted dementia screening.

In our study the proportion of primary care doctors performing targeted dementia screening were much lower compared to previous studies. In the other studies the proportion of primary care doctors performing screening for dementia were about 24% (18,24) even though about 80% of them believed screening are needed. The factors associated with delayed diagnosis of dementia in primary care is not new and physician related factors have been associated with missed or delayed diagnosis (26). In our study, the physician related factors were lack of time and lack of knowledge. Previous studies found older primary care doctors were more likely to perform the screening compared to younger doctors (18,25). Similarly in our study generally the participants aged 30 years and less did not perform targeted dementia screening. This could be due to less experience and exposure among practitioners aged less than 30 years old. In Malaysia, most medical students complete their medical degree at the age of 24 to 26 years old, followed by 2 years of internship before being posted to the primary public health clinics. Most of them have limited exposure to dementia care as not everyone will be exposed to a geriatric rotation during their internship.

More family medicine trainees (42.9%) performed targeted dementia screening compared to 8.3% of the medical officers in our study. This could be because

these trainees have more exposure on geriatric screening during their training process. However, in the present study, the family medicine specialists did some form of screening but not all did targeted dementia screening. Similarly our study showed no significant difference between family medicine specialist and general doctors' in screening for dementia as found in previous study in the United States of America (27).

In our study those who performed targeted dementia screening had between 5 and 10 years of service. Previous study by Gaboreau et. al. (2014) reported that length of medical practice directly improves implementation of annual dementia screening with increasing years of practice (18). In our study, about 90% of the primary care doctors who had 5 years and less of service were not practising any dementia screening. This could be due to lack of exposure and awareness on targeted dementia screening.

Those who had professional caring experience with dementia patients and had dementia training performed targeted dementia screening in our study. This is similar to a study done in Australia which showed those with professional caring experience for patients with dementia, and dementia training were associated with dementia knowledge (28). This could be due to the more exposure and training they had has led them to have more awareness on targeted screening. This proves the importance of dementia training among primary care doctors, which help them to identify high risk patients and subsequently screen them. Thus, dementia training among primary care doctors would enhance our healthcare management for the care of the elderly.

According to our study, the main barriers to perform targeted dementia screening were lack of time and lack of knowledge and this concurs with previous studies (18,24). This could be due to many participants were not trained in the management of dementia. Since the prognosis of dementia is still guarded in most cases, primary care doctors may hesitate to get the targeted dementia training done on time with their limited knowledge.

At present there is no consensus on the definition of performing targeted dementia screening. Literatures defined as targeting screening of at-risk individuals of dementia (14,16). However, the risk factors for dementia are multi-factorial and some are modifiable of which many that our study have not included (29). Based on the definition used in our study, the participants may still be screening patients with risk for dementia although they did not select the three options we have provided, hence, we may have missed those that considered other risk factors of dementia. This could have led to the lower proportion of the primary care doctors performing targeted dementia screening.

There are several limitations in this study. First, the present study did not find significant associations for performance targeted screening from the multiple logistic regression that has been conducted. This could be due to the small sample size to detect the changes in some of the variables such as professional status and having dementia training which showed a large confidence interval width. In addition, our study did not represent the primary care doctors in Malaysia in view of the sampling method as it was limited by time constraints and lack of funding for a nationwide study. The targeted dementia screening information was self-reported through a self-administrated questionnaire. This could lead to response bias. In addition, as this was a cross sectional study, the causal effect relationship could not be determined. Hence, the findings of this study could not be generalised to other primary care doctors in view of the sampling method.

## CONCLUSION

The proportion of performing targeted dementia screening was low with common modifiable barriers to practice. This study did not find any factors to be associated with the performance of targeted dementia screening as it could be limited by the sample size and resources to conduct a larger study. However, modifiable factors such dementia training, knowledge on dementia and awareness of dementia screening tool have been shown to be associated with targeted dementia screening in previous study. Hence, appropriate program could be conducted to create awareness among the primary care doctors. Larger population, longitudinal study and longer duration of data collection with inclusion of both objective and subjective assessment of targeted dementia screening practice among primary care doctors are needed for further evaluation to determine the factors associated with targeted dementia screening.

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