Primary health care providers knowledge of dementia and cognitive assessment tools for elderly populations in Southeast Nigeria: A pilot survey

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Abstract

Objectives: Primary health care remains the widely available first point of medical care in Nigeria and in other low- and middle-income countries. Recognizing the rising prevalence of dementia in these settings, primary healthcare providers should be trained on cognitive assessment. However, little is known about the current Nigerian primary healthcare providers' knowledge of dementia, cognitive assessment tools, and use in elderly populations. The aim of this study was to evaluate primary healthcare providers' knowledge of dementia and cognitive assessment tools in Southeast Nigeria in preparation for the introduction of digital tablet-based assessment tool.

Methods: This is a cross-sectional mixed method descriptive pilot survey carried out in a comprehensive healthcare center affiliated with Nnamdi Azikiwe University Teaching Hospital. Fifty healthcare workers participated. Convenience sampling was employed involving all consenting primary healthcare providers in comprehensive healthcare center-Nnamdi Azikiwe University Teaching Hospital. A structured questionnaire was distributed for generation of both qualitative and quantitative data.

Result: The mean age of the 50 primary healthcare providers was 36.6 years, with females constituting 80%. Mean practice duration was 10.8 years. Their response on the mean age at which patients may need a cognitive assessment was reported as 52.8 years. Primary healthcare providers reported that dementia is associated with memory loss and can be genetically inherited. None of the respondents were familiar with Montreal cognitive assessment, or any form of tablet-based cognitive assessment tool. Most (86%) knew about the mini mental state examination.

Conclusion: Primary healthcare providers are deficient in knowledge of dementia Alzheimer's or cognitive assessment tools, and so they do not routinely carryout cognitive screening in elderly patients during clinic visits. It is important to train all cadres of primary healthcare staff on the use and benefit of cognitive assessment using culturally validated user-friendly tool to improve quality of care for the elderly population.

Keywords

Primary healthcare, dementia, cognitive assessment tool, elderly, Nigeria

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Introduction

Primary healthcare (PHC) as the bedrock of medicine remains the widely available first point of medical care in Nigeria and other low- and middle-income countries (LMICs). They are situated all over Nigeria to ensure access to healthcare of its citizens.[1] Most of these PHCs offer basic healthcare services that span from treatment of childhood illness, counseling, and immunization services, through adulthood to old age with few specialized services.[2]

The common feature in dementia may vary depending on the type and may include memory loss, poor judgment, confusion, difficulty speaking, understanding, and expressing thoughts, or reading and writing, with functional impairment. Alzheimer's dementia is a specific type of dementia not yet fully understood, but probably caused by a combination of age-related changes in the brain. Persons living with dementia have various health and social care needs and expectations, most of which are not fully met by health providers, including primary care clinicians even when they present in these PHCs.[3] Recognizing the rising prevalence of dementia in these settings, PHC providers should be trained on cognitive assessment and recognizing dementia. About 5% of Nigeria's population are aged 60 years and above; by 2050, individuals in this age group are expected to reach 25 million. Many Nigerians still believe that dementia is part of a normal process of aging. This thinking leaves people suffering from dementia in a disadvantageous position and is made worse if PHC providers lack skills for cognitive assessment. Training when provided will improve dementia diagnosis, treatment, and care of patients and families, as well as driving social change, reducing stigma, and improving optimism and dignity for elders. The training would facilitate the development of dementia friendly hospitals and create safe space for people living with dementia (PLWD) to interact and have a voice. Elderly patients with features of cognitive impairments are stigmatized and often risk violence when they display that in the public. Moreover, the changing demographics will translate to more persons aging and would require healthcare providers preparedness to assess aging brain to improve care or referral. The need to introduce cognitive assessment tool in PHCs is becoming crucial especially in LMICs where there are no defined policies for their aging populations. So, the pilot survey was meant to be a good starting point to future interventions regarding aging brain health, and by seeking to increase the knowledge of primary care practitioners on cognitive impairment, we hope to deploy a tool for use in PHCs. This will soon set the stage for the scientific understanding of dementia especially in climes where it is still perceived as a normal form of aging or an ancestral curse when healthcare providers are informed.

The purpose of this study was to evaluate PHC providers knowledge of dementia and cognitive assessment tools for early detection of cognitive impairments in the elderly.

Methodology

Study area: This study was carried out in a comprehensive healthcare center (CHC) affiliated with Nnamdi Azikiwe University Teaching Hospital (NAUTH) Nnewi. NAUTH is in Southeast Nigeria, and with other healthcare facilities provide medical care to more than 35 million inhabitants. The CHC runs a daily clinic with dedicated days for the aging adult population who most times comes from the rural communities for treatment.

Study design and population

A cross-sectional mixed method descriptive pilot survey was used, and the study population comprised of 50 healthcare workers who voluntarily participated in the study that lasted 3 months (1 September–30 November 2022). The research team ensured compliance to consolidated criteria for reporting qualitative research techniques; and reflexivity was mainly male and female medical doctors who were trained in psychometry. The drafted questionnaire was pretested by four senior medical doctors (60% of daily medically qualified clinic work force), who formed the expert review and validation panel. The questionnaire was validated using face (relevance and appropriateness), content (coverage of all relevant parts of the construct), construct (extent of accuracy), and criterion (accuracy measures of the outcome) culminating in approval of eight structured questions. It took them less than 10 min to complete the survey. Relationship was established prior to study commencement, and participants told the reason for doing the research. The results were analyzed using SPSS version 26 by the research team biostatistician. The theoretical framework methodological orientation was stated to underpin the study with method of approach being face-to-face interview. Data were collected in the clinic and all healthcare workers approached willingly participated in the study.

Sampling technique

Convenience sampling was employed involving all consenting PHC providers in CHC-NAUTH which formed more than 80% representative of all the PHC staff in the facility. Participants were recruited during routine clinic office hours.

Data collection and analysis

A self-administered structured questionnaire developed in English was distributed for generation of both qualitative and quantitative data. The interviewers were senior residents in the department of community health, who had basic medical doctor (MD) degree with additional master's degree in public health (MPH). The interviewers briefly introduced themselves during the interview and shared research

objectives with participants who prior had given consent. Data saturation was considered for the qualitative outcome of the study, hence the enrollment of more than 80% of the staff in the study. The themes generated out of the qualitative data obtained were (a) definition of cognitive impairment, (b) cognitive assessment tool and benefits, and (c) usage of any tool and types of cognitive impairments. Multistage sampling technique was employed to provide deep information and representativeness of the participants understanding on cognitive impairment in PHCs using face-to-face interview session during routine clinics.

Ethical consideration

Ethical approval was obtained from NAUTH Research Ethics Committee reference number NAUTH/CS/66/VOL.15/VER.3/108/2022/079. Written informed consent was obtained from the respondents before *the questionnaire was administered*. All information sought were handled with the utmost confidentiality.

Inclusion criteria

– All consenting primary healthcare workers employed by NAUTH assigned to the clinic as at the time of the study.
– All primary healthcare workers who consult in the CHC clinic in NAUTH.

Exclusion criteria

– All primary healthcare workers who do not encounter patients such as the cleaners, the security personnel, etc.

Results

A total of 50 PHC providers participated in the study. The response rate was 90%. The mean age of the 50 PHC providers was 36.6 years more than three-quarters of respondents ($N = 40$; 80%) were aged between 21 and 40 years, and 40 (80%) of the respondents were female. The highest medical qualification in the clinic was Fellowship (post part 2 residency certificate/consultant), comprising 26 (52%) of participants. This is followed by Senior Registrars 12 (24%) of respondents. The least was High School Diploma 1 (2.0%), Master's Degree 1 (2.0%) and B.Pharm 1 (2%), respectively, while Bachelors in Medicine and Surgery (MBBS) were 5 (10%), and Bachelor of Science degree 4 (8%). More than half of the respondents ($N = 26$; 52%) had practiced for more than 11 years and above with mean practice duration of 10.8 years. Participants years of academic training ranged from minimum of 3 years to maximum of 12 years post high school depending on profession and certification by the different professional bodies.

Most of the participants 50 (100%) reported that they did not know about available cognitive assessment tools, and 19 (38.8%) of them stated that 50 years was the age one would need cognitive assessment with mean age as 52.8 years. In the study, it was found that none of the health workers were familiar with Montreal cognitive assessment (MoCA),[4] or any form of tablet-based cognitive assessment tool (TabCAT). However, only 43 (86%) of them knew about the mini mental state examination (MMSE).[5]

Most participants (50 (100%)) reported that dementia was about chronic memory loss. More than half, 28 (56%) of respondents, responded that Alzheimer's involves chronic memory loss with misplacing of things. A total of 50 (100%) respondents reported that dementia or Alzheimer's can be inherited. None had any knowledge (50 (100%)) on biomarkers used in diagnosis of Alzheimer's disease, and in which disease condition where amyloid plaque and synuclein protein was found.

Themes

Definition of cognitive impairment. Consultant: I am aware that cognitive impairment as a disease of the brain is mostly memory loss and is when someone starts forgetting things with occasional difficulty in carrying out daily functions, but I have never checked or examined any patient for memory deficit since I started working here using any tool!

Senior registrar: I do not have any tool for examining cognitive function in any patient who visits the clinic, even though I learned MMSE in med school, but it cannot be applied in PHC settings like ours because of patient load!

Cognitive assessment tool and benefits. Medical officer: Dementia is memory loss. I don't commonly assess for cognitive impairment in elderly patients except if it is overtly manifested. Even then, I refer to mental health clinic. I have not really paid any detailed attention as to the biomarkers and how it relates to Alzheimer's and dementia!

Nurse: I know that dementia is when someone forgets a lot. I believe that dementia is an inherited illness but do not know the pattern of inheritance and the cause or duration of the disease. I have not used any tool to check on any patient!

Pharmacist: I understand that dementia has to do with memory issues which is common in old age, but I don't know in detail what causes it and the pathology. I also believe that it will be a good idea to evaluate our patient!

Usage of tools and types of cognitive impairments. CHEW: I don't know what dementia or Alzheimer's is, but I see a lot of elderly patients who has memory problems especially the way they're brought in by their relatives. Many of them must wait for their relatives without which they cannot go back home. I don't know what causes it or any tool or types of impairments! (CHEW = Community Health Extension Worker).

Table 1. The socio-demographic distribution of study participants (*N* = 50).

Variables	Frequency	Percent
Age (years)		
⩽20	—	—
21–40	40	80.0
⩾41	10	20.0
Mean ± STD	36.62 ± 5.36	
Min	28	
Max	50	
Sex		
Female	40	80.0
Male	10	20.0
Highest educational qualification		
B.Pharm	1	2.0
BSc	4	8.0
Fellowship	26	52.0
MSc	1	2.0
MBBS	5	10.0
SR	12	24.0
WEAC	1	2.0
Years of practice		
1–10	24	48.0
11–20	26	52.0
Mean ± STD	10.8 ± 3.26	
Min	3	
Max	18	
Classification in PHC cadre		
CHEW	1	2.0
CNO	1	2.0
PNO	1	2.0
SNO	3	6.0
Consultant	23	46.0
MO	5	10.0
Pharmacist	1	2.0
Senior registrar	15	30.0

B.Pharm: bachelors in pharmacy; BSc: bachelor of science; Fellowship: consultant; MSc: master of sciences; MBBS: bachelor in medicine and bachelor in surgery; SR: senior registrar; WAEC: West African Examination Council; CHEW: community health extension worker; CNO: chief nursing officer; PNO: principal nursing officer, SNO: senior nursing officer; MO: medical officer.

Discussion

The study assessed PHC providers knowledge of dementia and cognitive assessment tools. The rising prevalence of cognitive impairment such as mild cognitive impairment (MCI) and dementia including Alzheimer disease is becoming a worldwide concern.[6] In this study, most of the health workers are within 21–40 years age range with majority as females shown in Table 1 and Figure 1. The age range pattern validates the current age-structure in Nigeria were people aged 15–64 years constitutes 55.9% of the total population.[7] Majority of our study participants were females, which is similar to the study by Nwosu et al.[8] among Nigerian
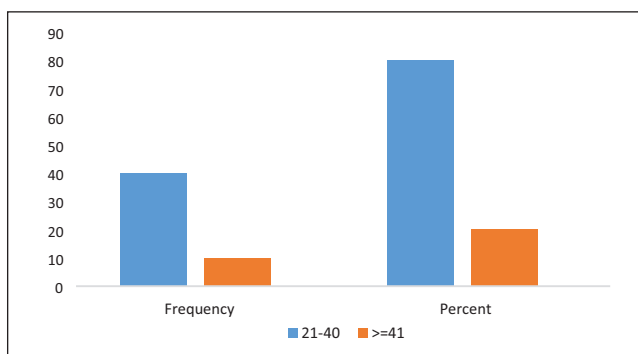
Figure 1. Bar chart for age.
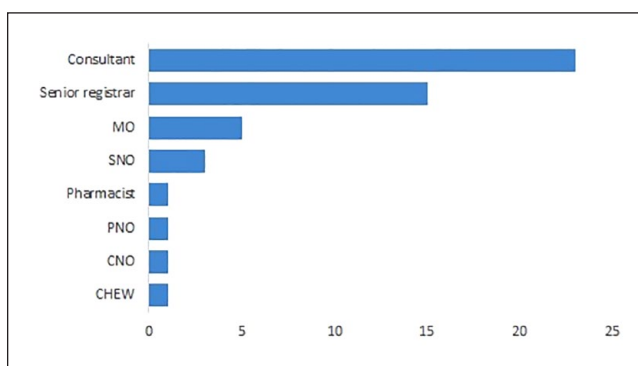
Figure 2. Classification of PHC cadre.

health workers. This group constitutes the productive part of the population and therefore any healthcare capacity building investment would have a huge impact. On the contrary, the age range varies with the findings of Dugani et al.[9] systematic review that reported an average age range of 26.4–47.4 years.[9] On educational level, majority are those with Fellowship (post-residency training certification) which constituted 52% of the study participants as shown in Table 1 and Figure 2. This finding corroborates the adult literacy level of 59.6% in Nigeria. This concurs with the average adult literacy rates in most African countries irrespective of the various disparities that affects literacy.[10] Those who had practiced between 11 and 20 years were 52% and were more than when compared with those who practiced below 11 years as reported in Table 1. The findings from our study were closely related to Nwosu et al.[8] who reported average duration of practice of 10 years (59.4%) for Nigerian healthcare workers before burned-out. In our study, many of the healthcare providers had worked for more than a decade in the facility with little knowledge of dementia and cognitive assessment tool for use in primary healthcare facilities. There is need to train healthcare workers to improve diagnosis, care and management of elderly patients as well equipped them with necessary skills to provide comprehensive brain health assessment for the increasing aging population. Their lack of knowledge was a major concern for persons living with

Table 2. Compilation of participants responses to the questionnaire.

Variable	Frequency	%
Dementia and cognitive assessment tool knowledge response (*N* = 50)		
Do not know	50	100.0
At what age do an elderly need cognitive assessment?		
35	1	2.0
40	3	6.1
45	6	12.2
50	19	38.8
55	2	4.1
60	16	32.7
70	2	4.1
Mean ± STD	52.8 ± 7.57	
Min	35	
Max	70	
Do you know Montreal Cognitive Assessment (MoCA) for dementia?		
No	50	100.0
Do you know mini mental state examination?		
Yes	43	86.0
No	7	14.0
Do you know tablet-based assessment tool?		
No	50	100.0
What is dementia?		
Chronic memory loss	50	100.0
What is Alzheimer's?		
Chronic memory loss with misplacing things	28	56.0
Don't know	22	44.0
Can dementia or Alzheimer's be inherited?		
Yes	50	100.0
Name biomarkers used in the diagnosis		
Do not know	50	100.0
Where is amyloid plaque seen?		
Don't know	50	100.0
Where is synuclein protein seen?		
Do not know	50	100.0

dementia. In the study, it was found that none of the healthcare workers was familiar with MoCA,[4] or any form of TabCAT as shown in Table 2. This is in keeping with a study in rural Southwestern Uganda on dementia assessment and diagnostic practices of healthcare workers.[11] The diagnosis of dementia should not end with history and clinical examination by any trained skilled healthcare provider but supported by a validated screening/diagnostic tool. Healthcare providers should be trained in aging brain health and the skills to utilize cognitive assessment tool efficiently. Some healthcare workers still regard memory loss as part of the normal aging process that needs no specific treatment,[11] buttressing the need for the deployment of validated cognitive assessment tool for use in those developing countries. With the technicalities associated with pen-and-paper test coupled with patient load, MoCA and MMSE[5] may not be a plausible option for use in PHCs. Healthcare workers needs to adopt a routine assessment of elderly patients in PHC facilities to detect early cognitive changes and make appropriate referrals. This would facilitate early diagnosis, improve the quality of life of PLWD, and help plan for caregiving and management options.

With aging, there is the risks that cognitive decline would be a threat to independence and quality of life of the elderly population.[12] This scenario may pose a huge health challenge in developing countries with limited health resources. The impact may be most felt in countries with little or no functional basic health plan or active primary healthcare facilities. Most of the respondents had some form of knowledge of dementia and cognitive assessment and responded that 50 years was the age that anyone would need to have cognitive assessment done in the clinic as shown in Table 2. This is contrary to the recommended age for cognitive assessment in developed climes. Even though there is no universally recommended age for cognitive assessment in the elderly, most developing countries would rather recommend 65 years as ideal. For example, the recommended age by the US preventive services task force final statement on cognitive impairment in older adults screening was 65 years.[13] This is against the backdrop that current evidence was not enough to assess the balance between benefits and harms of screening for cognitive impairment in older adults.[12] The age recommendation should be weighed against the life expectancy and other social determinants of health in the United States before adoption. The age of 65 years was also the recommended age for cognitive assessment screening among elderly Canadians with some modifications not to screen asymptomatic adults 65 years or older.[13] On the contrary, the recommendation was to screen asymptomatic community-dwelling adults 65 years of age.[14] The gap in understanding of the age of onset of dementia among the healthcare workers requires urgent intervention which would include capacity training workshops in preparation for improved service delivery at the PHCs.

The study recorded that none of the participant had knowledge of MoCA as shown in Table 2. This finding was slightly comparable to a study carried out in New Zealand which reported that 26% of some junior doctors had never carried out MoCA but a short teaching session improved their ability to conduct MoCA and identify errors in administration and scoring.[15] MoCA and MMSE remains the commonly used cognitive assessment tool and recently the Alzheimer's Disease Assessment Scale (ADAS-cog).[14] Training of study participants would likely improve conduction of cognitive assessment in the facility since it was shown to improved practice in another clime.

Culturally validate TabCAT when translated may be reliable and useful for most PHCs in developing countries because it captures nuances around local language constructs and applicable in clinic settings with large patient

turn-out. Pen-and-paper tests are complex and takes a minimum of 30 min to conduct and therefore not readily done in PHCs. It also requires specialized training to be able to use and interpret the results. There are also challenges and bias against people with poor education. TabCAT Brain Health Assessment is widely used battery of tests which was developed for the efficient detection of mild neurocognitive disorders in primary care settings.[16] This assessment evaluates cognitive skills that are commonly affected by neurocognitive disorders including memory, executive/ speed, visuospatial, and language. An optional 3-min informant survey is also available to provide information about the level of functional impairment and behavioral changes. The entire TabCAT-BHA can be administered in 10 min, and scoring is automated. It also features an automated text-based report that summarizes the performance and supports care decisions.[16]

Most of the respondents knew about the MMSE shown in Table 2; probably because it was often used in most clinical patients' neurologic management, and part of medical training curriculum. A similar study in Uganda reported that majority of healthcare workers do not conventionally use any cognitive assessment tool in making a diagnosis of dementia but would rather be focused on managing other medical problems at the expense of assessing cognitive decline and mental health.[11] It was also found that specialized training in mental health among healthcare workers is crucial for the assessment and diagnosis of Alzheimer's disease and related dementias in rural Southwestern Uganda.[11] The study reported that diagnostic practices among Ugandan healthcare workers did not differ based on age, years of experience, or gender of the healthcare worker.[11]

None of the respondents had knowledge on tablet-based assessment tool as shown in Table 2. This study is in preparation for the deployment of TabCAT for use in the PHC facility.[16] A study in Africa showed that self-rated information communication and technology (ICT) knowledge among health workers was significantly improved after learning courses on the use of ICT. This shows there is hope on learning how to carry out tablet-based assessment tool by health workers when trained.[17] Also, in another study in Uganda, majority of community health extension workers (CHEWs) expressed satisfaction with the use of tablet as a training tool; however, some reported technical issues.[18]

More than half of respondents recognized that Alzheimer's involves chronic memory loss (56%) with misplacing of things, a great percentage still do not know (44%) much about Alzheimer's disease reported in Table 2 and Figure 3. Alzheimer's can be defined as a type of dementia that affects memory, thinking and behavior which many respondents were not aware of as shown in Table 3. This finding is different from the study in Uganda where few healthcare workers could recognize signs and symptoms of dementia.[11] All the
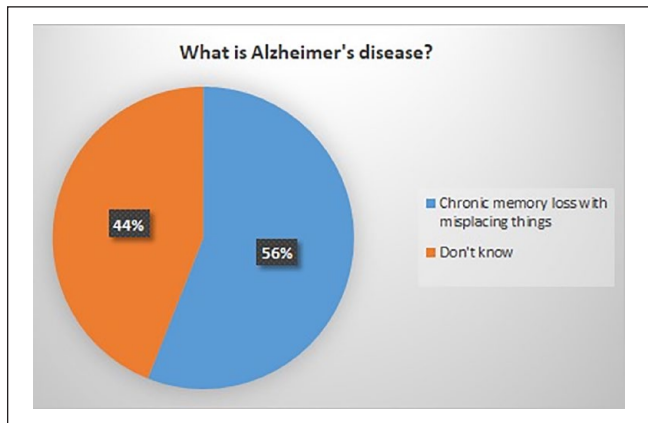

Figure 3. Response on what Alzheimer's disease was.

study participants (100%) reported that dementia or Alzheimer's can be inherited. But in a study carried out by Alzheimer's society, it was found that dementia is caused by a complex disease in which genes are only one factor. Nearly all cases of dementia are the result of a complex disease. In these cases, genes may increase the risk of developing dementia, but they do not cause it directly.[19] The levels of knowledge on Alzheimer's disease reported by the different cadres of participants reflect their course of study and may not necessarily represent a general lack of knowledge among the healthcare workers in the facility as seen in Table 3. Cognitive assessment at PHC level is important for early identification of cognitive impairment and training of healthcare workers who make diagnosis in theses facilities would improve aging brain health.[20]

Most participants were also not aware of the name of any biomarkers that can be used in diagnosis of Alzheimer's disease as shown in Table 2. No participant knew where amyloid plaque is seen. They all do not know where synuclein protein is seen. There is obvious gap in knowledge base of the participants which would require training to update their capacity in service delivery. Even though in most clinical practice, access to biomarkers facilitated differentiating the type of dementia, which must commence with accurate diagnosis. It is necessary to clinically diagnose dementia or Alzheimer's correctly at the primary healthcare. This will set the stage for biomarker studies and clinical trials for treatment options in the cohort formed from these communities.

Limitations

The likelihood of inaccurate predictions or assumptions during generation of pilot data is a possible common limitation in most pilot surveys like ours. There may have been errors arising from data contamination, as well as lack to funds which would have enable us to do a full-scale follow-up. Power analysis for sample size calculation was not done in this study, and as such is a limitation of this study.

Table 3. Crosstab (*N* = 50).

Variable	Total	Knowledge of Alzheimer's		X^2-value	*p*-Value
		Good knowledge (%)	No knowledge (%)		
Classes in PHC cadre					
CHEW	1	1 (3.6)	0 (0.0)	16.7	0.019
CNO	1	0 (0.0)	1 (4.6)		
PNO	1	1 (3.6)	0 (0.0)		
SNO	3	0 (0.0)	3 (13.6)		
Consultant	23	16 (57.1)	7 (31.8)		
MO	5	0 (0.0)	5 (22.7)		
Pharmacist	1	0 (0.0)	1 (4.6)		
Senior registrar	15	10 (35.7)	5 (22.7)		

Conclusion

The study revealed deficiency in knowledge by PHC providers on dementia and cognitive assessment tools, especially on computerized battery testing. The implication being that patients do not receive brain health assessment in PHC facilities. A primary healthcare worker who is aware of dementia screening tools will be much better equipped to detect early changes. There is need to incorporate aging brain health assessment into the conventional PHC clinical practice to facilitate early detection of MCI and institute appropriate referrals. The study succeeded in confirming a functional geriatric clinic with well-organized geriatric cohorts in Southeast Nigeria and willing healthcare workers. Aging brain health should be prioritized in PHCs to assist in graceful aging process. There is need for collaboration in genomics studies for inclusion of these elderly underserved populations in low–middle-income countries due to the increasing global burden of dementia and for better understanding of Alzheimer's disease in different communities.

Recommendation

There is an urgent need to introduce and implement cognitive assessment in PHC. This should commence by providing healthcare workers with training as well as culturally validating cognitive assessment tools. This would improve diagnosis, management, and care for cognitive impairment, as well as clinically unriddle cognitive impairment. It would improve early detection and management of MCI as well as assist in data generation for policy and advocacy. TabCAT seems to be a good option because of its simplicity.

Author contribution

CO developed the study concept and design; RU and JK designed the analysis and coordination; EO and OE contributed to manuscript writing; UO and IO distributed the questionnaires and conducted the psychometry, GC collated and analyzed the data, and OO contributed to editing the manuscript.

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