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Review Article

Factors Affecting the Utilization of Preventive Health Services by Middle-Aged Population: A Scoping Review

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Abstract

Background: Access to health care, or ultimately health care utilization, by all groups of population is a critical goal of health systems around the world. Several studies have examined factors affecting preventive health services utilization among middle-aged population none of systematic review exist. Therefore, we aimed to explore the factors affecting the preventive health services utilization by middle-aged population.

Methods: Drawing on PRISMA protocol, this scoping review explored articles in PubMed, Scopus, Web of Science, and Cochran by using combinations of relevant keywords. All studies that have investigated factors affecting health service utilization among middle-aged population (40–60 yrs. old), published from 1990 to 2024, were included. The identified studies were screened and narratively synthesized.

Results: Overall, 3314 articles were retrieved, of which 16 met the inclusion criteria. The factors were categorized into three main groups including personal, institutional and social factors. Such factors as the aboriginal status, ethnicity, age, religious salience, employment status, having chronic disease, disabilities, numeracy skill levels, knowledge regarding the services, housing insecurity, and urbanization of the residence areas affected the preventive health services utilization by middle-aged population.

Conclusion: Various factors appeared to affect the utilization of middle-aged groups from preventive services, which need to be addressed vigorously in an effort towards universal health coverage. Policymakers ought to understand and bring to the fore these correlated factors in their health system as these *de facto* signify the place on which the potentially effective interventions should focus and target.

Keywords: Middle-aged population; Service utilization; Preventive health services; Scoping review

Introduction

Access to health services is always a key issue for health systems in all countries, especially for those of the developing and underdeveloped (1, 2); as nation health is of overly high priority worldwide (3). However, the accessibility need to be accompanied by the availability of services, and more importantly, by the service utilization (4). Public health and preventive services are provided by governments mostly free of charge or at low cost, imposing remarkable expenses, in

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mostly intention that public show their highest tendency to utilization (5). Utilization is defined as 'receiving and using health services in a 'willing, capable and informed' manner according to health needs of individuals and is proposed to measure equity in health services' (6, 7). An underpinning framework for utilization is developed by Andersen and Newman (8). Three groups of factors could affect the use of health services, including; predisposing, enabling, and need factors, which more specifically consist of health basic and supplementary insurance, marital status, age, sex, education level, having chronic diseases, family size, economic status of the family, education level, employment status, satisfaction from life, and type of housing (9-12). They might have varying effect in different populations and places. This framework is modified over time (13, 14), nonetheless, it is still applicable for different contexts.

Healthcare utilization is further determined by users' awareness of the need, their willingness to take care, and the ways of users' access and care financing; including insurance (15, 16). It can be subsequently improved by different strategies in terms of various age groups (17, 18). Equity has been always a key priority of policymakers, including mainly equity in financing and in the access to services (19). WHO stated that if the financing system is inappropriate, only a limited group of people could have timely access to healthcare services. Therefore, the health system financing could affect the people' ability to access and utilize the health services and ultimately the equity in health services (20).

Age has been a key variable influencing service utilization with high effect size as compared to other demographic variables (21, 22). Therefore, our knowledge of factors that affect service utilization among each specific age group is prominent for better planning of service provision (23). Numerous studies have been conducted on the elderly (10, 24, 25), nonetheless, very few studies are published on health service utilization by middle-aged group (MG) populations. There is no strict definition of "middle-age" by international organizations and most studies have considered as the age between 40-65 yrs. (26, 27) or 45–64 yrs. (26, 28).

This age group is prominent, as it is growing in most countries and accounts for the largest proportion of their population. Usually, those more than 35 yr are no longer categorized as young populations. Middle-age years of the population is called the golden years for development and economic growth of countries, as this is a productive age and investments for the young is likely to return (29, 30). On the other hand, policy makers and managers are highly keen to know what factors are affecting the utilization of preventive services provided freely by fairly high opportunity cost.

Accordingly, a review to summarize the available evidence upon health service utilization by the MG could be of a high benefit.

There are very few systematic reviews of the utilization by specific sub-groups of populations (31-33) or that of particular health services (34, 35). Nevertheless, no review has been published on the utilization of preventive health services by the MG. Given the paucity of literature and the importance of this age range from the economic and social perspectives, we used thus the scoping review to provide a picture of existing factors affecting the MG's utilization.

Methods

This scoping review was conducted according to O'Malley and Arksey protocol (36) and PRISMA-SCR checklist, accordingly (37). This protocol consists of five stages 1) identifying research question; 2) identifying relevant studies; 3) study selection; 4) data extraction and charting the data 5) collating, summarizing and reporting the results.

Stage 1: identifying the research question

A scoping review usually starts with one or more questions. The main review question was: which factors do affect the utilization of preventive health services by the MG population?

Stage 2: Identifying relevant studies

The search covered 35 years (1990–2024). PubMed, Scopus, Web of Science, and Cochrane were searched with combinations of terms as; utilization, use, usage, utilized, access, availability, need, health, health care, primary health service, public health, preventive care and preventive service, middle-aged. Moreover, the reference list of the included papers searched for possible additional studies. In the peer-reviewed literature search, the keywords were combined using the *Boolean* term "AND" and "OR" in all the electronic databases explored. The search strategy applied to PubMed as an example: *("utilization"[Title/Abstract] OR "utilized"[Title/Abstract] OR "use"[Title/Abstract] OR "usage"[Title/Abstract] OR "access"[Title/Abstract] OR "availability"[Title/Abstract] OR "need"[Title/Abstract]) AND ((("health"[Title/Abstract] OR "health care"[Title/Abstract] OR "primary health service"[All Fields]) AND "public health"[Title/Abstract]) OR "preventive care"[Title/Abstract] OR "preventive service"[Title/Abstract]) AND "middle-aged"[Title/Abstract]*.

Inclusion and Exclusion criteria

All English language studies of a qualitative, quantitative or mixed design were eligible to include. The preventive health services encompassed screening for diabetes, blood pressure, blood cholesterol, breast cancer, cervix cancer, and similar services that require periodic check-ups. In this study, the MG was envisaged those between 40-65 yrs. old. To maximize the number of included studies, those papers that investigated particular population sub-groups- migrant, lesbian, gay, bisexual, and transgender were not excluded from search and data extraction. Studies that did not investigate factors affecting utilization of health services were excluded. Moreover, letters to editors, non-English language, interventional, theoretical, and irrelevant studies were excluded from the study.

Stage 3: Study selection

Upon the search completion, the retrieved records were imported to the EndNote (X.20), and then, duplicates were removed. EY and EJP screened the titles and abstracts. After initial screening, the full-text was obtained and screened based on the eligibility criteria. In case of no access to full-text, we also contacted the corresponding author, otherwise, the study excluded. Screening process was performed by two researchers independently and any case of disagreement was resolved by discussion or a third researcher (ZA). Critical appraisal was not performed (38).

Stage 4: Data extraction and charting the data

EY and ZA extracted the data using a designed checklist developed by the research team. The extraction form included information on study characteristics (first author, country, year of publication), study purpose, study type (qualitative, quantitative, or mixed), study method, participants and sample size, main findings on service utilization by MG population, relating factors on utilization, and not utilizing.

Stage 5: Collating, summarizing and reporting the results

A narrative synthesis approach was considered the most appropriate method of summarizing key findings (36, 39). The authors systematically combined the results using words, text, and findings of the articles to explain the correlated factors of utilization of preventive health services.

Results

Selection of sources of evidence

Overall, 3314 articles were retrieved (Fig. 1). After removing the duplicates and excluding non-eligible articles, 171 were read in full text, of which 16 fulfilled the inclusion criteria and imported into synthesis (40-53).

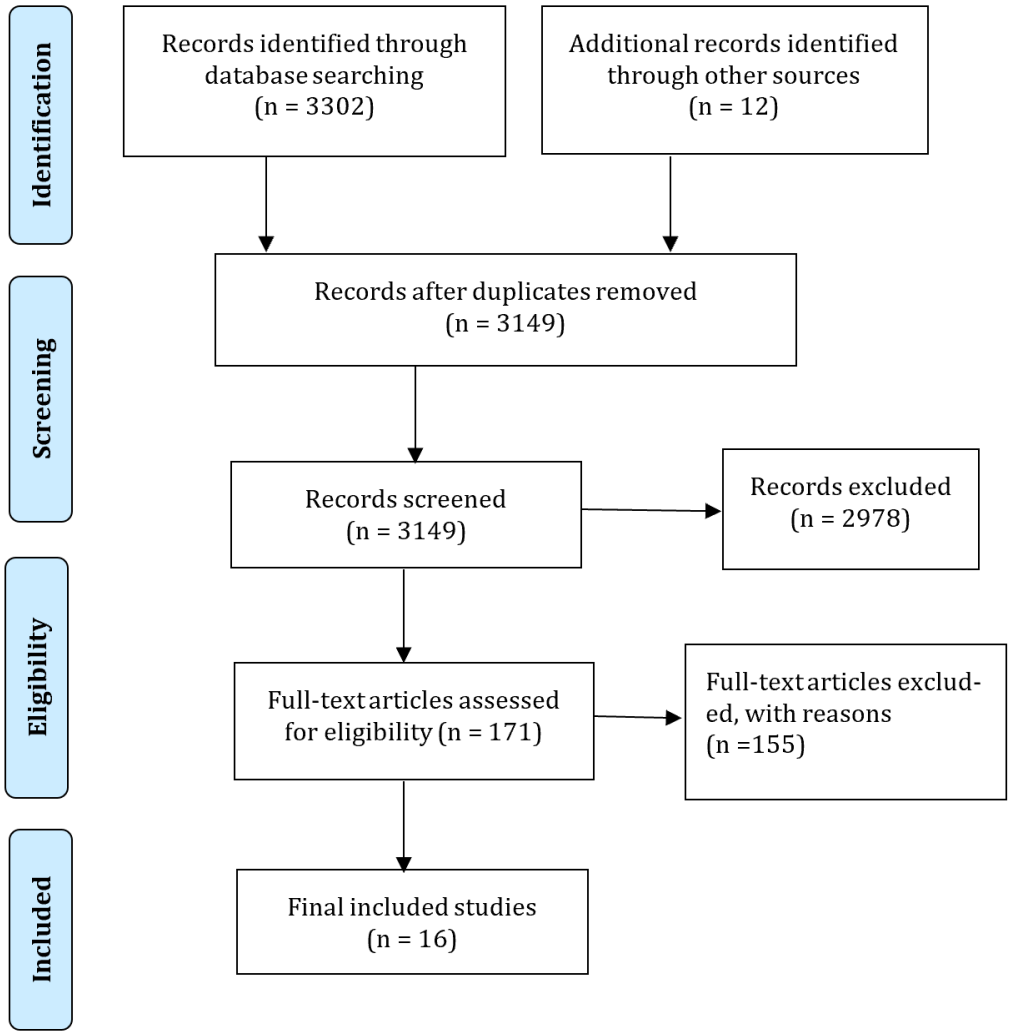

Fig. 1: PRISMA flow diagram of study selection

Characteristics of sources of evidence

Geographically, most studies were conducted in the USA (7 out of 16), South Korea and China (2 studies each). Other studies were from Mexica, Sweden, Japan, and Taiwan. Majority of the studies were quantitative (13 studies), one qualitative and one mixed method. The most commonly used design was cross-sectional and the most frequently applied data collection method was survey. The qualitative data were collected by interview. Most studies covered both genders of male and female participants published between 2013 and 2024 (11 out of 16 papers). The Summary characteristics of the included studies are shown in Table 1.

Table 1: Summary characteristics of the included studies

Authors, Year	Country	Participants	Influencing factors
Benjamins, 2007 (53)	Mexico	Adults	Religion Variables (Religious salience, Religious attendance, Religious attendance) and Preventive service use (Blood pressure screening, Cholesterol screening, Diabetes screening)
Martin et al, 2019 (40)	USA	Non-institutionalized adults	Housing Insecurity, age, sex, race/ethnicity, income, level of education, marital status, number of children, and health status
Green et al, 2018 (41)	USA	Gay man	Age cohort, race/ethnicity, education level, employment status, insurance status, sexual identity disclosure to health-care provider, HIV status, and the presence of down, depressed, or hopeless feelings
Shao et al, 2018 (42)	China	Migrants	Predisposing factors (demography and social structure), enabling factors (individual/family resources and community resources), need factors (general health condition), and health seeking behavior (e.g., do nothing, self-treatment, and go to hospital).
Kroll et al, 2006 (43)	USA	Adults with physical disabilities	Structural-environmental barriers: Facility, equipment, procedural accessibility issues, Transportation, and process barriers: Appointment scheduling, Patient-provider communication, Professional manner, Disability-specific knowledge, Personal motivation, Having a personal doctor/usual source of care, Cognitive issues, Information and self-education)
Beckman et al, 2013 (44)	Sweden	All inhabitants of the Region of Skåne	Visit to general practitioners, age, gender, and income group
Matsui et al, 2009 (45)	Japan	Urban Japanese Women	Redisposing (demographics, social status, and health beliefs), enabling (family and community resources), and need factors (perceived health status and the need for community health services)
Gorman et al, 2016 (46)	USA	National Guard soldiers	Need, enabling, and predisposing factors
Seo et al, 2019 (47)	USA	Immigrant Women	Utilization and outcome variables (having at least one doctor's visit in the past year and having an emergency room visit in the past year)
Ko et al, 2011 (48)	Korea	People with and without disabilities	Preventive health care utilizations and disabilities, socioeconomic status, health-risk behaviors, and chronic health conditions (comorbidities, psychosocial problems, and HRQOL)
Kim et al, 2018 (49)	Korea	Economically active workers	Utilization of preventive health services, employment status and uptake of preventive health services including influenza vaccination, regular medical check-up, and four types of cancer screenings
Tian et al, 2015 (50)	China	Adults with Chronic Diseases	Accessibility, essential public health services, and chronic diseases (hypertension or diabetes)
Yen et al, 2014 (51)	Taiwan	Physically disabled people	Free adult preventive health care utilization, and demographic characteristics (i.e., gender, age, marital status, education, aboriginal status); (2) socioeconomic status (i.e., monthly insured payroll); (3) health status; and 4) environmental factors
Yamashita et al, 2020 (52)	USA	Middle-aged and older adults	Dental checkup, vision screening, influenza vaccination, osteoporosis screening, and numeracy skill levels (low, moderate, and high proficiency)
Nayeb Fadaei Dehcheshmeh et al, 2022 (54)	Iran	Managers and staff of the health sector	The Context-related factors: personal, economic and sociocultural, and geographic factors. The Content factors staff and facilities. The Process factors: service quality, program management, system of information registration and follow-up, and health education and publicizing
Matthew Lee Smith et al, 2022 (55)	USA	Middle-aged and Older men	Using less primary care is common among vulnerable population groups, such as patients with low socioeconomic status. Most health-related factors differed more on age than by race/ethnicity. Younger age groups reported less preventive care, greater barriers to self-care, mental health issues, and risky behavior.

Synthesis of Results

Thirteen factors were identified and categorized into three main groups: personal factors, institutional factors, and social factors (Table 2).

Personal factors

Personal factors included aboriginal status, ethnicity, age, religious salience, employment status, having chronic disease, having disability, numeracy skill levels, and knowledge regarding the services.

Table 2: Factor affecting utilization of preventive services by the middle aged

Main category	Sub-category
Personal factors	• Aboriginal status/nativity • Ethnicity • Age • Religious salience • Employment status • Chronic disease • Disability • Numeracy skill • Knowledge regarding the services
Institutional factors	• Structural-environmental factors • Process factors
Social factors	• Housing insecurity • Urbanization of the residence area

Aboriginal status/nativity

Women of foreign-born Asian immigrant significantly had lower physician visits during the past year and less had a usual source of care compared to native-born White American women (47). Besides, the nativity significantly affects the utilization of free preventive care by the disabled adults (51).

Ethnicity

Ethnicity, along with other demographics such as age, employment status, and having chronic diseases, is a determinant of health service utilization (42, 54).

Age

Age was reported as a relevant factor for health service utilization rate among the MG (41, 42, 51). It seems a difference for homosexual men. Older men (>55 yr) have less doctor visits in last 12 months, compared to the MG (35-54 yr) and younger men (18-34 yr) (41). It was a powerful determinant of care seeking behavior (42). Age was a determinant of health service utilization among migrants in Beijing, China (42). It was also reported as a determinant among disabled population using free preventive health services in Taiwan (51). Middle-aged men with chronic illnesses reported lower utilization of preventive care services and faced greater barriers to self-care compared to older adults. In other words, the older age group demonstrated significantly higher rates of engagement in preventive health screenings, diagnostic tests, and vaccinations compared to younger middle-aged groups. (55)

Religious salience

After controlling for confounding effect of social, demographic and health-related factors, the religious salience was significantly related to the use of blood pressure and cholesterol screenings (53).

Employment status

The employment status is reported a determinant among migrants in China (42). The employment status, income level and having health insurance were related factors with utilizing mental health services (46). Non-standard workers, self-employed people, and unpaid family workers in Korea were less likely using the preventive health services compared to standard employed workers. There was a gap between the groups based on their employment type (49). Insufficient time availability due to the nature of employment and type of job is one of the key factors influencing access to healthcare services. (54)

Chronic disease

Having chronic diseases such as high blood pressure, diabetes, and chronic heart disease had an effect on the utilization of preventive health services (42, 47, 50, 51, 55). Among the migrant population in Beijing, China having chronic diseases was a determinant of health service utilization (42). A main predictor of at least one doctor visit for Asian migrant women compared to white Native Americans was having chronic disease. It was the only predictor of emergency visits among these women in America (47). People with chronic diseases are reported to have higher utilization of essential public health services (EPHS) in China and over 90% had received the EPHS (50). Chronic disease is also related to the utilization of adult preventive health services among those with disability (51).

Disability

Generally, those with disability are more likely to be physically inactive. Women age over 40 with disability had lower utilization of cervical cancer screening, breast cancer screening and gastric cancer screening compared to those without disability (51). Gender, age, education level, marital status, income level, and having chronic disease were the relevant factors to lower utilization of disabled adults (51).

Numeracy skill

Those adults with sufficient numeracy skills, compared to those with lower numeracy skills, had much utilization of preventive dental health services (52).

Knowledge of the services

Knowledge about the services along with the lack of negative attitude towards the menopausal syndromes were related to the utilization of health services. The study emphasized on the positive attitude towards menopausal syndromes (45).

Institutional factors

The category of institutional factors included structural-environmental and process barriers.

Structural-environmental factors

The structural-environmental factors such as facilities, equipment, access ways, and transportation were related to utilization. These factors are mainly related to the physical, social and economic environment in which the preventive health services are provided. Some factors are related to the centers in which the services are provided; such as inaccessibility of the center, lack of parking space for disabled people, lack of ramp, having narrow door, having spinning door, and insufficient waiting and visit rooms (43).

Process factors

These include planning the visits, patient-provider communication, disability-related knowledge, personal incentives, cognitive issues, information and self-training in the process of planning and receiving care. It is mainly related to the interactions between the consumer and the service provider during the provision of the service; for example: lack of support, insufficient interaction of providers with the clients, insufficient professional knowledge about a particular service, incorrect pre-assumptions among providers, insufficient time for responding to the needs of the clients, and generally, service quality, program management, lack of sensitivity, manner and support during physical examinations (43, 54).

Social factors

The category of social factors included housing insecurity and urbanization of the residence area.

Housing insecurity

Those suffering from housing insecurity ignored the routine care and lacked a routine source of care. Housing insecurity was associated with worse access to preventive and primary health services (40).

Urbanization of the residence area

Level of urbanization of the residence area was the other factor affecting utilization of free preventive health services among disabled adults. The evidence showed that the more urbanization of the area, the less utilization of the services (51).

Discussion

Given the importance of the middle age, as an economically productive group, and the utilization as the final and complementary stage in the end users' service seeking behavior (4), on one hand, and the underpinning role of preventive and screening care in early detection and treatment of diseases, promoting healthy lifestyle, preventing medical complications and ultimately reducing the expenses, on the other hand (56), this study sought to explore the various factors underlying the utilization at this critical group. A number of 14 studies were finally synthesized upon the factors related to the utilization of preventive health services by the MG (40-53). The key relevant factors included the aboriginal status, ethnicity, age, religious salience, employment status, numeracy skill level, knowledge regarding the services, structural-environmental and process related barriers, housing insecurity, and the level of urbanization of residence area.

This scoping review found a wide variety of factors influencing the utilization of preventive health services by the MG. The original studies in this review had investigated the subject from various viewpoints and assessed several factors. Some factors were investigated in several studies and some in few or in even only one. The factors consist of demographic characteristics and socio-economic attributes of the individuals as well as factors related to structure, process and providers of the care. The agreements and disagreements of the findings of the studies are discussed here and then some recommendations are provided for future studies.

Demographic characteristics, especially age, and socio-economic status were found creating differences in health service utilization (55, 57). The higher the age of an individual, the less utilization of preventive health services, which is surprisingly in spite of their high need (41, 42, 51). Additionally, in some studies, aging was associated with a reduced chance of utilizing outpatient health services (33, 58). This means those suffering from chronic diseases or disabilities have significantly lower utilization of the preventive health services. This might be due to the fact that the disease or disability affects the abilities of the person to seek services. The circumstances and manner in which the services are provided for the people with disability or chronic disease might have restrained their access (42, 44, 48, 50, 51, 55). Factors such as ethnicity, migration (nativity), and even religion are reported to have impact on health service utilization which was in line with previous studies that reported that the ethnic minority was associated with less health services utilization (33, 54, 59). Lower utilization by these population groups may be because they are minority and thus have less access to the services. In other cases, the behaviors of the service providers may cause them to feel uncomfortable and thus have less intention to use the services. The other possible reason for lower utilization of this group might be their lower knowledge about the available services. In this situation, one proper action will be education of the target population. The service providers be knowledgeable about users' ethnicity, race, and religion to prevent discrimination.

The cost of services might also affect the utilization. Those with steady monthly income or strong insurance coverage enjoyed a higher utili-

zation of the health services. On the other hand, unemployment, and lack of health insurance were associated with lower utilization. The next cost-related factor is the housing. Those individuals, who do not have personal house and use rent house, are less likely to utilize the health services. Furthermore, some studies have reported that living place is also have impact on service utilization so that those living in suburb or slum areas have less utilization (60, 61). Employment type have also related with utilization rate of the health services so that less utilization is observed among those with temporary, non-standard, or hard jobs (40, 42, 46, 49, 51). Moreover, having health insurance was associated with higher use of health services (62). A recent scoping review of studies on women's utilization health services showed that having a job could increase the use of health services (33).

We found that factors related to utilization of the preventive health services can be categorized in consumer-related factors, provider-related factors, and institution- or society-related factors. Governments should make adjustments in the related factors to ensure sufficient utilization of the preventive health services by the middle-aged population. Some intervention measures may be increasing the health insurance coverage, improving employment and housing conditions, reducing or eliminating race and ethnicity discriminations, and improving service provision conditions for disabled people and those with chronic diseases (54, 63-67). The middle age is a period that the years of youth are passed and individuals are probably in a stable mental and employment situation. But on the other hand, they may have responsibilities of the family and thus ignore their health needs in favor of the family members. In this regard, education is required for all age groups of the population to emphasize on proper utilization of preventive health services in an appropriate time because these services can lead to better health status and declined health costs. The educations may include how to access the services, race and ethnicity indiscrimination, and religious minorities, immigrants and refugees' indiscrimination. It is also necessary for the service providers to be aware of the potential discriminations and the barriers of service utilization (43, 68).

Strengths and limitations

With the best of our knowledge, this is the first study to review the factors related to utilization of preventive health services by the MG. Yet, it had some limitations the most important of which was that most studies on service utilization were not specific for the MG. Most studies were conducted on all age groups or a specified age range. However, we tried to synthesize the results in a way that the findings be specific to the middle-aged population. The definition of MG applied in some studies was different and this made it hard to synthesize the findings of all studies. We suggest that the future studies follow a consensus definition based on most studies to make it simple to synthesize and compare the studies. Another issue to keep in mind is that most studies were conducted in USA and other developed countries. It is necessary to conduct more studies in developing settings. Studies in developing countries may find other affecting factors or the effect size of the factors may differ.

Conclusion

Despite the prominent status of middle-age group, they are not sufficiently addressed in the health care literature, especially their use of the specified health services. This is of high importance, as this group is comparatively less likely to address their health needs because of their potentially better health status and possible work constraints. Various factors appeared to affect the utilization of this group from preventive services, which needs to be considered, in the light of universal health coverage. Policymakers ought to understand the correlated factors of middle age's health services utilization in the healthcare system as they *de facto* signify the place on which the potentially effective interventions should focus and target. Considering the paucity of literature on the inventory of factors, this study has

tried to cast some light on this issue. Future studies could examine the challenges and barriers ahead of middle age group utilization of health services.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Competing interests

None declared.

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