Assess the Variables Impacting Elderly Individuals' Utilization of Primary Health Care Services at Makkah Healthcare Cluster 2024

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ABSTRACT

Background: In recent years, the proportion of older adults in emerging nations has dramatically increased.Makkah, as a religious and healthcare hub in Saudi Arabia, is home to a significant elderly population. The Kingdom of Saudi Arabia (KSA) has seen rapid demographic shifts in recent years, with a growing proportion of elderly individuals. This poses new challenges for the healthcare system, particularly in primary health care (PHC), which is the first point of contact for individuals in need of medical attention.

The study aim: To investigate the Variables influencing the elderly population's use of PHC services in the Makkah Healthcare Cluster (MHC)in the past 1, 3, and 6months.

Method: A cross-sectional study design was used to collect data from 190 older adults in the MHC, KSA from January to July 2024.

Results: Primary health care services were used by less than half of the participants in the past 1 month, by 68.4% in the past 3 months, and by 73.8% in the past 6 months. PHC services use was associated with age, education level, tobacco use, chronic illnesses, perceived general health status today, a physical component summary score, employment, and perceived general health status in the past 3 and 6 months. The primary predictor of PHC services use at 1, 3, and 6 months was chronic illnesses (OR = 13.32), (OR = 19.63), and (OR = 17.91), respectively.

Conclusion: Although many factors were associated with PHC service utilization, the strongest predictor of PHC service utilization was chronic illnesses. This study recommended that develop more specialized services for elderly individuals within PHC centers, ensuring comprehensive care for chronic conditions and functional disabilities.

Keywords: system, particularly, centers, ensuring, education level, tobacco use, chronic illnesses.

INTRODUCTION

In practically every country in the world, the proportion of elderly adults is steadily rising[1]. In practically every country in the world, the proportion of elderly adults is steadily rising. It is anticipated that this will rise to 21.1% by 2050, having risen to 11.7% in 2013 [1]. One the proportion of senior individuals (those over 60) in the Kingdom of Saudi Arabia (KSA) is roughly 5.2% [2]. It is anticipated that this percentage will rise to 8.1% by 2025 and 21.8% by 2050 [3]. The combination of the declining fertility/birth rate and the advancements in health, nutrition, and health care services has led to an increase in the population and the percentage of persons in this age group [4]. This demographic move to elder adults has significant implications for health, society, economics, and epidemiology[5-7].

The aging demographic shift is linked to a rise in the prevalence of age-related chronic diseases (like diabetes, heart disease, hypertension, rheumatic diseases, and dementia) as well as other aging-related conditions like fall-related fractures, osteoporosis, digestive issues, insomnia, depression, and so forth. These conditions are all

significantly more common in older adults[8]. Furthermore, a variety of ailments create pain for many older persons, which limits their range of motion[9]. Reduced activity levels cause other physical and cognitive functions to deteriorate more quickly, and older persons frequently have a variety of psychosocial difficulties as a result[10, 11].

Numerous research have revealed that the Saudi population has a high prevalence of common chronic conditions, including diabetes mellitus, hypertension, overweight and obesity, heart disease, and metabolic syndrome. Some of these studies have also found that the prevalence rises noticeably with age[12-21]. This rise in prevalence is mostly due to a mix of genetics, rich nutrition, and a sedentary lifestyle[18, 22]. Programs aimed at managing chronic diseases and health education were found to be ineffective and difficult to access in Saudi primary care services, according to an analysis of treatment quality[23].

The majority of preventive care, screening, and chronic illness management occur at PHCCs, which are regarded as the foundation of the healthcare system. A toolkit has been created by the World Health Organization to make PHCC evaluation easier. This toolkit offers questions that enable assessment of the availability of counseling services, health care services, accessibility, and user-friendliness[24].Although there were some studies that studied health status of older adults in KSA[12-21], a comprehensive literature review revealed a dearth of research regardingfactors that influence PHC service use among older adults in KSA. Hence, this study aimed to examine patterns and factors associated with PHC utilization by aged 50 years and older living in the Makkah, KSA.

MATERIALS AND METHODS

A cross-sectional study design was used to examine PHC services utilization patterns and to identify factors associated with and predictive of health care utilization/non-utilization in the past 1, 3, and 6 months. The study was conducted in the catchment areas associated with three comprehensive PHC centers which provide services from 8 a.m. to 4 p.m., and most of these health centers serve large numbers of people and offer many preventive and curative health care services situated in Makkah, KSA.

Adequate sample size needed for binary logistic regression[25] was determined using the formula proposed by Peduzzi et al., (1996)[26]. They suggested a minimum N that is at least 10 times K, where K is the number of predictors in the model. Using their criteria, the minimum sample size needed for this study was 190 participants.A proportional convenience sample of 190 older adults, aged 50 and older, participated in this study.

Dependent Variables: PHC service utilization in the past 1, 3, and 6 months.Participants were asked the following. Did you visit the primary health care center in your region during the past month? Past 3 months? Past 6 months?

Independent Variables: Based on Anderson's behavioral model, predisposing, enabling, and need factors were included as follows[27]: predisposing factors included age (years), gender (male or female), health behavior measuring tobacco use (smoker or nonsmoker), employment status (unemployed, retired, and employed), education level (no education, primary school, and secondary), and marital status (married, single, separated or divorced, and widowed). Enabling factors included monthly income and health insurance coverage (insured or not insured). Need factors included chronic illness self-reports (have/do not have a chronic illness).

Additionally, cognitive impairment was measured by using the Elderly Cognitive Assessment Questionnaire (ECAQ)[28]. Perceived general health was measured in two ways: (1) on a scale of 1 to 10, with a 1 representing the "worst I have ever felt" and a 10 representing the "best I have ever felt." What number would best represent your general healthtoday? 3 months ago? 6 months ago? And (2) perceived general health status in the past 1-month period was measured using the 12-Item Short Form Health Survey version 2 (SF- 12v2)[29].

SF-12v2 measures eight health domains: physical function, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, and mental health. These domains are summarized as physical component summary (PCS) and mental component summary (MCS) scales and use norm-based scoring. When the scores are transformed, the general population has a mean of 50 and a standard deviation of 10. So, when compared to the general population, health related quality of life (HRQOL) is considered to be lower than the norm if PCS or MCS scores are calculated to be lower than 50[29].

Descriptive statistics were used to describe study variables. Chi-square associations with categorical variables and Pearson correlations were conducted to establish associations between independent and dependent variables and to identify which variables would enter logistic regression model. Correlation tests included were Spearman's rho, Point Biserial r, Phi coefficient (ϕ), and Cramer's V and was used depending on the level of measurement for each variable. Three binary logistic regression models were developed for utilization/non-utilization of PHC services during the past 1, 3, and 6 months. The probability ($P< 0.05$) was taken as minimum level of significance.

Permission for conducting study was obtained from Ministry of Health Ethical Committee. All participants were notified that the data collected would be treated with anonymity and confidentiality. In addition, personal informed verbal consent was obtained from all participants.

RESULTS

Table (1) shows participants' characteristics. The mean age of participants was 64.6 years (SD = 9.7). There were more male (57.4%) participants, and the majority of participants were married (88.4%). About 36.8% of participants had no formal education, although 42.1 percent of the participants received a primary school education and 21.1 percent received a secondary education or higher. Most of the participants were unemployed (55.3%) and nonsmokers(71.1%). The majority (93.7%) had some type of health insurance coverage.

Additionally,about 72.1% of participants had chronic illnesses and 96.8% showed no evidence of cognitive impairment. For perceived general health status on the SF-12v2 for the past 1 month, the mean physical component summary (PCS) score was 41.28 (SD = 11.0) and 50.46 (SD= 7.3) for the mental component summary (MCS) score. Forperceived general health status today, in the past 3 and 6 months, the means were 6.61 (SD = 1.3), 6.46 (SD = 1.3), and6.64 (SD = 1.3), respectively.

In the past 1, 3, and 6 months, 41 percent of participants used medical services in the past 1 month. In the past 3 months, 68.4 percent of participants had used medical services, and in the past 6 months, 73.8 percent of participants had used medical services.

Table 1: Descriptive statistics of the predisposing, enabling, and need variables of elder adult participants ($n = 190$).

Variables	%	Mean (S.D.)
Predisposing variables		
Age (in years)		64.6(9.7)
Gender		
Male	57.4	
Female	42.6	
Marital status		
Married	88.4	
Widow	11.6	
Education level		
No education	36.8	
Primary school education	42.1	
Secondary and higher education	21.1	
Employment status		
Unemployed	55.3	
Retired	41.1	
Employed	3.7	
Tobacco user		
Nonsmoker	71.1	
Smoker	28.9	
Enabling variables		
Health insurance		
Uninsured	6.3	
Insured	93.7	
Need variables		
Chronic illnesses		
No chronic illnesses	27.9	
Have chronic illnesses	72.1	
Cognitive impairment		
No cognitive impairment	96.8	
Have cognitive impairment	3.2	
Perceived general health status today		6.61 (1.3)
Perceived general health status in the last 1 month		
PCS score		41.28 (11.0)
MCS score		50.46 (7.3)
Perceived general health status in the past 6 months		6.46 (1.3)
Perceived general health status in the past 12 months		6.64 (1.3)

Table (2) shows that factors Associated with Elder Adults' PHC Services Utilization. In the Past 1-Month Period: Participants who used significantly more PHC services in the past month were those who (a) had no formal education or had a primary school education, (b) were nonsmokers, (c) had a chronic illness,(d) had perceptions of poorer health status, and (e) had symptoms or poor physical health (lower SF-12v2 PCS score).

In Past 3-Month Period: Factors significantly associated with increased use of PHC services were (a) increasing age, (b) being unemployed or retired, (c) having no formaleducation or only a primary school education, (d) being nonsmokers, (e) having a chronic illness, (f) those havingpoor self-rated general health status today, and (g) those having a poor self-rated general health status in the past 3 months (**Table 2**).

In Past 6-Month Period: Significantly greater use of PHC services was associated with (a) increasing age, (b) being unemployed or retired, (c) having no formal education or only a primary school education, (d) being nonsmokers(e) having a chronic illness, (f) those having poor self-rated general health status today, and (g) those having poor self- rated general health status in the past 6 months (**Table 2**).

Table 2: Factors associated with PHC services utilization of elder adults in the past 1, 3, and 6 months.

Variable	Utilization 1-month	Utilization 6-months	Utilization 12-months
Predisposingvariables			
Age	0.134	0.229**	0.205**
Gender	−0.093	−0.105	−0.100
Maritalstatus	0.129	0.069	0.017
Educationlevel	−0.220**	−0.200**	−0.240**
Employmentstatus	0.158	0.178*	0.218**
Tobaccouse	−0.162*	−0.166*	−0.145*
Enablingvariables			
Healthinsurance	0.087	0.056	0.002
Income	−0.135	−0.073	−0.111
Needvariables			
Health insurance	0.087	0.056	0.002
Need variables			
Chronic illnesses	0.453**	0.663**	0.650**
Cognitive impairment	-0.030	0.058	0.034
Perceived generalhealth status today	-0.272**	-0.355**	−0.373**
Perceived generalhealth status in last 1-month			
PCS score	-0.377**	-	-
MCS score	-0.106		
Perceived generalhealth status in last 6-months	-	−0.409**	-
Perceived generalhealth status in thelast 12-months	-	-	−0.306**
*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).			

Table (3)showsfactor that predicted PHC Service Utilization. The variable associated with PHC services utilization in the past 1-, 6-, and 12-month period was chronic illness(OR 13.324, 95% CI 3.614–49.128), (OR 19.634, CI 7.679–50.203), and (OR 17.915, 95% CI 6.974−0.023), respectively.

Table 3: Binary logistic regression analysis of predictors of PHC service utilization of elder adults in the past 1, 3, and 6 months

	PHC service utilization in the past 1 month			**PHC service utilization in the past 3 months**			**PHC service utilization in the past 6 months**		
	OR	**CIs**		**OR**	**CIs**		**OR**	**CIs**	
Predisposingfactors		Lower	Upper		Lower	Upper		Lower	Upper
Age	0.98	0.94	1.02	1.00	0.95	1.05	0.97	0.92	1.03
Educationlevel Noeducation	1.37	0.37	5.03	0.76	0.14	4.00	3.26	0.56	18.80

Primary education	0.66	0.24	1.82	0.45	0.13	1.51	1.50	0.44	5.07
Secondary and higher education	1.00	-	-	1.00	-	-	1.00	-	
Employment status									
Unemployed	1.49	0.11	19.59	1.99	0.20	19.5	2.62	0.23	29.02
Retired	1.40	0.11	17.40	1.82	0.20	16.1	4.57	0.44	47.19
Employed	1.00	-	-	1.00	-	-	1.00	-	-
Tobacco use	0.78	0.34	1.77	0.78	0.30	2.03	0.83	0.30	2.30
Need factors									
Chronic illnesses	13.3**	3.61	49.12	19.6**	7.67	50.2	17.9**	6.97	0.02
Perceived general health today	0.92	0.67	1.26	1.03	0.61	1.75	0.65	0.42	1.03
PCS score	0.97	0.93	1.02						
Self-perceived general health in the past 3 months				0.66	0.37	1.17			
Self-perceived general health in the past 6 months							0.96	0.62	1.48

OR: odds ratio.

CIs: 95% confidence interval.

∗∗OR statistics is significant at the 0.001 level.

DISCUSSION

This study aims to investigate the Variables influencing the elderly population's use of PHC services in the Makkah Healthcare Cluster (MHC) in the past 1, 3, and 6 months for elder adults. Data on medicalservices utilization in the past 1, 3, and 6 months were notconsistent. The findings showed that rate of medical servicesuse by elder adults in the past one month was less than 50%,which was consistent with a study in Hong Kong[30]. In thepast 3 months, the findings showed that two-thirds of olderadults used PHC services for medical health services, whichdiffered from rates reported by Chou and Chi[31] study.

In thepast 6 months, the findings indicated that three-quarters offolder adults used PHC services for medical health services,which is close to the Estonian study [32]. The high rate ofmedical service utilization in past 6 months compared with rate of utilization in the past 3-month and 1-month periods in the present study can be accounted for by the use of alonger time period. This would have increased the chancesof including those who rarely used PHC services. Furtherstudies need to be conducted on theutilization of more anddifferent types of health care service in the changing healthcare context.

In the present study, older agewas not associated with PHC service utilization in the past1 month, similar to that found in Spain [33]; however, olderage was positively associated with PHC service utilization inthe past 3 and 6 months. In contrast, older age in Thailandwas associated with fewer health care services use in the pastyear [34]. Lower education level was associated with greaterPHC service utilization in the past 1, 3, and 6 months,which was also found in other studies [33, 34]. Those whowere unemployed or retired used more PHC services thanthose employed in the past 3 and 6 months. As limitedPHC literature includes older adults, employment status wasamong the factors not included in many studies. However,similar results were observed in Ghana[35]. Nonsmokingolder adults used more PHC services in the past 1, 3, and 6 months compared with smokers. This result was consistentwith a previous study [33].

Chronic illness was significantly associated with PHC service utilization in the past 1, 3, and 6 months, consistent with studies in Thailand and Spain [33, 34]. Cognitive impairment was not associated with PHCservice utilization in the past 1, 3, and 6 months whichis in contrast to earlier findings [35, 36]. This disagreementmay be attributed to the fact that only 3.2% of the samplehad cognitive impairment in this study and due to differentmeasures being used across studies. The perceived generalhealth status factors were found to be negatively associatedwith PHC service utilization, indicating that participantswho perceived that they were in poor health on the dayof the interview tended to use more PHC services duringthe past 1, 3, and 6 months. One explanation may be thatelder adults, especially those who have chronic illnesses, tendto go to health centers mainly to obtain their prescribedmedication. Also, both aging and many chronic illnessesare associated with

disabilities and complications that aredifficult to manage without utilizing health services. Also,chronicity does not portend improvement over a 1-year timeperiod.

Further studies need to be conducted to confirm thatperceived general health status today correlates with PHCservice utilization of elder adults. Also, those older adultswho perceived that they were in poor health, in particular,poorer physical health (PCS score) in the past 1 month,tended to use more PHC services in the past 1 month. Thisresult disagrees with previous studies [33, 35]. Elder adultswho perceived that they were in poor general health statusin the past 3 and 6 months used more PHC services in thosetime periods and this has been found previously [33].

Age was not a significant predictor of PHC servicesutilization in the past 1, 3, and 6 months, in contrast to astudy in Ghana [35], and education level was not a significantpredictor of PHC services utilization in the past 1, 3, and 6 months, which was similar to a South Korean study [36], andneither was employment status a significant predictor of PHCservices utilization in the past 1, 3, and 6 months, consistentwith the findings by [35]. Likewise, tobacco use was not asignificant predictor of PHC services utilization in the past1, 3, and 6 months, similar to a Spanish study [33].

Chronic illness was the strongest significant predictor ofPHC services utilization in the past 1, 3, and 6 months.Multivariate analysis indicated that older adults who hadchronic illnesses were 13.3, 19.6, and 17.9 times more likelyto use PHC services than those who did not have chronicillnesses in the past 1, 3, and 6 months, respectively. Thisfinding is consistent with another study [31]. The findingsin this study can be explained by the fact that the majorityof the elder adults who used PHC services in the past1, 3, and 6 months had at least one chronic illness, andchronic illnesses need continuous treatment. These data areimportant for planning purposes for the PHC service centersand suggest that patients with one or more chronic illnessesshould be identified so that the PHC can be responsive totheir continuous needs.

CONCLUSION

About three-fourths of older adults in this study reportedhaving at least one chronic illness. Hence, there was an unusually high rate of chronic illness among the participants in thisstudy. In terms of utilization patterns, the findings reflectedhigh utilization rates of PHC services among older adultsover a one-year period. The present study identified severalpredisposing and need factors that were associated with PHCservice utilization. However, the strongest predictor of PHCservice utilization was a medical history of chronic illnesses.The results of this study add to the body of knowledgein geriatric nursing regarding older adults' health seekingbehavior which will help in developing an effective nursingcare programs to promote well-being in elderadults. Good health care planning requires an understandingof PHC service use, and the approach used in this study couldbe replicated throughout KSA. As such, it would enable theMinistry of Health in KSA to gather relevant data necessaryto provide appropriate health care services for elder adultsthat are both efficient and cost-effective.

REFERENCES

1. United Nations. World Population Ageing 2013. New York (NY): United Nations; 2013.
2. Central Department of Statistics and Information. Population and housing characteristics in the Kingdom of Saudi Arabia (KSA), Demographic survey 1428h. Riyadh (KSA): Central Department of Statistics and Information; 2007. [Google Scholar]
3. United Nations. World Population Prospects: The 2012 Revision. New York (NY): United Nations; 2013. [Google Scholar]
4. Arai H. Geriatrics in the most aged country, Japan. Arch GerontolGeriatr. 2009;49(Suppl 2):S1–S2. doi: 10.1016/S0167-4943(09)00302-1. [DOI] [PubMed] [Google Scholar]
5. De Luca d'Alessandro E, Bonacci S, Giraldi G. Aging populations: the health and quality of life of the elderly. Clin Ter. 2011;162:e13–e18. [PubMed] [Google Scholar]
6. United Nations. World Population Prospects: The 2008 Revision. New York (NY): United Nations; 2009. [Google Scholar]
7. Murray CJ, Lopez AD. Alternative projections of mortality and disability by cause 1990-2020: Global Burden of Disease Study. Lancet. 1997;349:1498–1504. doi: 10.1016/S0140-6736(96)07492-2.
8. Jacelon CS. Maintaining the balance: older adults with chronic health problems manage life in the community. RehabilNurs. 2010;35:16–22. doi: 10.1002/j.2048-7940.2010.tb00026.x.
9. Takai Y, Yamamoto-Mitani N, Okamoto Y, Koyama K, Honda A. Literature review of pain prevalence among older residents of nursing homes. Pain Manag Nurs. 2010;11:209–223. doi: 10.1016/j.pmn.2010.08.006.
10. Ussher M, Ibrahim S, Reid F, Shaw A, Rowlands G. Psychosocial correlates of health literacy among older patients with coronary heart disease. J Health Commun. 2010;15:788–804. doi: 10.1080/10810730.2010.514030.
11. Perlmutter MS, Bhorade A, Gordon M, Hollingsworth HH, Baum MC. Cognitive, visual, auditory, and emotional factors that affect participation in older adults. Am J Occup Ther. 2010;64:570–579.doi:

10.5014/ajot.2010.09089.

12. Elkhalifa AM, Kinsara AJ, Almadani DA. Prevalence of hypertension in a population of healthy individuals. Med Princ Pract. 2011;20:152–155. doi: 10.1159/000321217.

13. Almajwal AM, Al-Baghli NA, Batterham MJ, Williams PG, Al-Turki KA, Al-Ghamdi AJ. Performance of body mass index in predicting diabetes and hypertension in the Eastern Province of Saudi Arabia. Ann Saudi Med. 2009;29:437–445. doi: 10.4103/0256-4947.57165.

14. Al-Baghli NA, Al-Ghamdi AJ, Al-Turki KA, El-Zubaier AG, Al-Ameer MM, Al-Baghli FA. Overweight and obesity in the eastern province of Saudi Arabia. Saudi Med J. 2008;29:1319–1325.

15. Salman RA, Al-Rubeaan KA. Incidence and risk factors of hypertension among Saudi type 2 diabetes adult patients: an 11-year prospective randomized study. J Diabetes Complications. 2009;23:95–101. doi: 10.1016/j.jdiacomp.2007.10.004.

16. Al-Qahtani DA, Imtiaz ML. Prevalence of metabolic syndrome in Saudi adult soldiers. Saudi Med J. 2005;26:1360–1366.

17. Abolfotouh MA, Daffallah AA, Khan MY, Khattab MS, Abdulmoneim I. Central obesity in elderly individuals in south-western Saudi Arabia: prevalence and associated morbidity. East Mediterr Health J. 2001;7:716–724.

18. Warsy AS, el-Hazmi MA. Diabetes mellitus, hypertension and obesity--common multifactorial disorders in Saudis. East Mediterr Health J. 1999;5:1236–1242.

19. Al-Turki YA. Overview of chronic diseases in the Kingdom of Saudi Arabia. Saudi Med J. 2000;21:499–500.

20. Al-Mahroos F, al-Roomi K. Overweight and obesity in the Arabian Peninsula: an overview. J R Soc Promot Health. 1999;119:251–253. doi: 10.1177/146642409911900410.

21. Al-Turki YA. The prevalence of overweight and obesity amongst hypertensive and diabetic adult patients in primary health care. Saudi Med J. 2000;21:340–343.

22. Al-Shoshan AA. The affluent diet and its consequences: Saudi Arabia--a case in point. World Rev Nutr Diet. 1992;69:113–165. doi: 10.1159/000421668.

23. Al-Ahmadi H, Roland M. Quality of primary health care in Saudi Arabia: a comprehensive review. Int J Qual Health Care. 2005;17:331–346. doi: 10.1093/intqhc/mzi046.

24. World Health Organization. Age-friendly Primary Health Care Centers Toolkit. Geneva (CH): World Health Organization; 2008.

25. Warner, R. M. Applied Statistics: From Bivariate Through Multivariate Techniques, Sage, Thousand Oaks, Calif, USA, 2008.

26. Peduzzi P., Concato, J., Kemper, E., Holford, T. R., and Feinstem, A.R. "A simulation study of the number of events per variable in logistic regression analysis," Journal of Clinical Epidemiology, 1996;49 (12): 1373–9.

27. Andersen, R. A behavioral Model of Families' Use of Health Services, vol. 25 of Research Series, Center for Health Adminis- tration Studies, University of Chicago, Chicago, Ill, USA, 1968.

28. Kua E. H. and Ko,S. M. "A questionnaire to screen for cognitive impairment among elderly people in developing countries," Acta Psychiatrica Scandinavica, vol. 85, no. 2, pp. 119–122, 1992.

29. Ware J. E., Kosinski,M. and Keller, S. D. "A 12-Item Short- Form Health Survey: construction of scales and preliminary tests of reliability and validity," Medical Care, vol. 34, no. 3, pp. 220–233, 1996.

30. Yam,H.-K.,Mercer,S. W., Wong,L.-Y. Chan, W.-K. and Yeoh, E.-K. "Public and private healthcare services utilization by non-institutional elderly in Hong Kong: is the inverse care law operating?" Health Policy, vol. 91, no. 3, pp. 229–238, 2009.

31. Chou K. L. and Chi,I. "Factors associated with the use of publicly funded services by Hong Kong Chinese older adults," Social Science and Medicine, vol. 58, no. 6, pp. 1025–1035, 2004.

32. Po˜lluste, K.,Kalda, R. and Lember,M. "Accessibility and use of health services among older Estonian population," Central European Journal of Public Health, vol. 17, no. 2, pp. 64–70, 2009.

33. Ferna´ndez-Olano,C., Hidalgo,J. D. L.-T., Cerda´-D´ıaz R. et al., "Factors associated with health care utilization by the elderly in a public health care system," Health Policy, vol. 75, no. 2, pp. 131– 139, 2006.

34. Villacorta, M. F. Health Services Utilization Among the Thai Elderly: Findings from the Kanchanaburi Project Demographic Surveillance Survey, Mahidol University, 2003.

35. Exavery,A. Determinants of Health Care Utilisation Among The Elderly Population In Rural Ghana, University of the Witwatersrand, Johannesburg, South Africa, 2010.

36. Park,J. M. "The determinants of long-term care utilization and equity of access to care among older adults in Dong-Ku of Incheon Metropolitan City, South Korea," Asia-Pacific Journal of Public Health, vol. 17, no. 2, pp. 104–109, 2005.