

Original Research



Multimorbidity, polypharmacy and health seeking patterns among elderly living in Kalutara District, Sri Lanka

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Abstract

Introduction: Multimorbidity and polypharmacy are common among elderly. Yet, limited evidence is available on these issues and how elderly people seek health in a community setting in Sri Lanka.

Objectives: To assess the prevalence of multimorbidity and polypharmacy and health seeking pattern among elderly aged 60-74 years living in the Kalutara District, Sri Lanka

Methods: DA descriptive cross-sectional study was conducted. Multistage cluster sampling technique was applied and *Grama Niladhari* division (GND) was considered the cluster. Eligible participants were interviewed with a judgmentally validated questionnaire, and a data extraction sheet was used to obtain clinical data. A participant having two or more diseases at least for three months period was considered as having multimorbidity while a participant on five or more types of drugs per day was considered as polypharmacy. Continuous variables were described with mean and standard deviation (SD), while categorical variables were described using absolute numbers and percentages.

Results: A total of 922 participants were interviewed (response rate of 94.1%) and the mean age was 66 years (SD=4.0). The prevalence of multimorbidity was 56.9% (95% confidence interval (CI): 53.7, 60.1). The prevalence of polypharmacy was 19.4% (95% CI: 16.9, 22.1). The majority of participants (n=503; 54.6%) sought health from state allopathic medical institutions, while 52.1% (n=480) of them identified doctors in state allopathic medical institutions as their main health information provider. Also, 42.9% (n=395) of elderly sought health information from general practitioners in private sector.

Conclusions & Recommendations: More than half of the study sample and about one fifth of them had multimorbidity and polypharmacy, respectively. Majority of elderly rely on state health services to obtain both care and health related information. It is recommended to strengthen geriatric friendly health services in state sector health institutions and ensure coordination between state and private healthcare providers.

Key words: Multimorbidity, Polypharmacy, Health seeking pattern, Elderly, Sri Lanka

Introduction

Multimorbidity is highly associated with ageing and adversely affects overall health related quality of life among older people (1). The condition is defined as an individual suffering from two or more chronic diseases at the same time (2). As people age it is inevitable to develop more chronic diseases and these coexisting conditions impact on older people in a complex manner including diagnosis, treatment, overall management, and their daily activities. Multimorbidity is closely related to polypharmacy which is another common condition among older people which further complicates their health status (3). Both multimorbidity and polypharmacy increase the risk of hospitalization, healthcare costs, and functional decline among older people that also exert an additional burden to the health system (4).

In the presence of current global trend of population ageing, both multimorbidity and polypharmacy among older people incur large financial costs on health budgets across the world (5). Situation is expected to worsen in the coming years since proportion of older people is rising in trend in most parts of the world including low- and middle-income countries (LMIC) (6). According to the results of a systematic review, the pooled prevalence of multimorbidity accounted for 51% (95% CI: 44.1, 58.0) among people aged 60 years or more (7). The value is even higher in another systematic review conducted by Salive in 2013 as median prevalence of multimorbidity among older people was 63% (8). Types of chronic diseases have also varied in different settings. A study conducted in Germany revealed three multimorbidity patterns among older people in relation to cardiovascular and metabolic disorders, anxiety and depression disorders, and pain and neuropsychiatric disorders (9). Similarly, degenerative and digestive diseases, metabolic diseases and cardiovascular diseases were three

specific multimorbidity patterns identified in a study conducted among Chinese older people (10).

Polypharmacy often occurs alongside multimorbidity, and evidence shows high correlation between these two constructs especially among older people (11). Experts have emphasized the significance of implementing an age-friendly care paradigm that would be helpful to accommodate the needs of long-term conditions of older people including ascertainment of frailty and medical optimisation (12). Many countries have started discussions between health policy planners and clinicians to provide optimal care for the older people who are diagnosed with multiple chronic diseases (13-15).

Similar to other settings, Sri Lanka reports a high percentage of older people and population ageing is expected to become a major public health concern in near future. According to the census data in 2012, people aged 60 and above accounted for 12.4% of the total population, yet projection shows that it will reach about 25% by year 2050 (16). In this context, multimorbidity and polypharmacy will be constant challenges among Sri Lankan elderly. Thus, clear understanding of the existing situation including how they seek healthcare is of paramount significance for future planning. Despite the substantial elderly population, little is known about multimorbidity and polypharmacy status among older people living in the Sri Lankan context and their health-seeking patterns using current health services. Therefore, the present study was conducted to determine the prevalence of multimorbidity and polypharmacy and the health seeking patterns among community dwelling elderly aged 60-74 years in Kalutara District, Sri Lanka. Findings of the present study provides comprehensive account of chronic diseases, polypharmacy status and health seeking pattern that would be helpful to implement necessary reforms in Sri Lankan health care system to cater elderly health needs.

Methods

A community-based cross-sectional survey was conducted among older people aged 60-74 years who were permanent residents in Kalutara District in Sri Lanka. The minimum sample size was calculated (17) considering an anticipated prevalence of multimorbidity of 51% based on previous evidence (7), standard normal deviate of 1.96 and level of precision of 5%. Since the multistage cluster sampling method was applied, the calculated sample size was multiplied by a design effect of 2 (18). The final sample size was further readjusted using 10% non-response rate.

Table 1: Summary of sampling stages

Stage	Activity
Stage 1	Stratified the total elderly population into urban and rural strata
Stage 2	Divided clusters into urban and rural strata proportionate to the elderly population in each stratum
Stage 3	Selected clusters within the strata, probability proportional to the size
Stage 4	Identified participants within a cluster

Data collection was conducted by two trained investigators who were MBBS qualified pre-intern medical graduates. Inter-rater consistency was ensured during pre-testing conducted in GND situated in Moratuwa DS area. Older people aged 60-74 years and permanently living in the selected households were included in the study. Older people diagnosed to have psychiatric disorders were excluded. Ample information was provided for all eligible participants and written consent was obtained. Judgmentally validated questionnaire was used to ascertain sociodemographic data and information related to health seeking pattern. In addition, a data extraction sheet was used to obtain information related to morbidities and treatments of the participants using their clinical records. Both allopathic and alternative written clinical records were taken into consideration.

A participant on treatment for two or more diseases at least for three months period was considered as having multimorbidity (2), while a participant being

Multi-stage, stratified, probability-proportionate-to-size (PPS) cluster sampling technique was adopted (Table 1). A GND was taken as a cluster with cluster size of 14, which was the number that could be interviewed each day based on a feasibility study. From a list of GNDs and cumulative populations of adults aged 60-74 years, six and 64 GNDs were selected from urban and rural sectors, respectively using PPS. Within the selected GND, one junction was selected randomly using the area map and investigators visited consecutive households situated in a predetermined direction.

on five or more types of drugs per day was considered as polypharmacy (19). Statistical Software for the Social Sciences (SPSS) version 23 was used in data analysis (20). Continuous variables were presented using mean and standard deviation (SD), while categorical variables were presented using absolute numbers and percentages.

Results

A total of 922 participants were successfully interviewed accounting for a response rate of 94.1%. The mean age of participants was 66 years (SD=4 years). The majority of participants were of Sinhala ethnicity and Buddhist religion while the male-to-female sex ratio was 81:100. Only 14.6% (n=135) were employed and more than half did not have any source of monthly income. Results of the socio-demographic characteristics are summarized in Table 2.

Table 2: Socio-demographic characteristics of the participants (N=922)

Demographic characteristics	No.	%
Sex		
Female	509	55.2
Male	413	44.8
Ethnicity		
Sinhala	701	76.0
Tamil	108	11.7
Muslim	111	12.0
Burgher	2	0.2
Religion		
Buddhist	620	67.2
Hindu	103	11.2
Islam	113	12.3
Catholic/ Christian	86	9.35
Marital status		
Married/ Living together	585	63.4
Never married	57	6.2
Widowed	251	27.2
Divorced/ Separated	29	3.1
Number of living children		
None	81	8.8
One	463	50.2
Two	194	21.0
Three	107	11.6
Four or more	77	8.3
Permanent monthly income		
Yes	422	45.8
No	500	54.2

Out of the total participants, 525 were on treatment for two or more chronic diseases, giving a prevalence of multimorbidity of 56.94% (95% CI: 53.72, 60.11). The most prevalent chronic disease was hypertension followed by chronic musculoskeletal problems and type II diabetes mellitus (Table 3). Prevalence of polypharmacy was 19.4% (95% CI: 16.98, 22.08) among the participants. About 7% did not consume any regular medication while the majority of participants consumed 1-4 types of drugs per day (Table 3).

About 55% (n=503) sought their health needs from state health institutions while a significant portion of them fulfilled their health needs from private sector (44.5%). More than half of the participants have mentioned doctors in state allopathic medical institutions as their main health information provider, while general practitioners in the private sector were considered major health information providers by 43%. Most of the participants did not use any form of media as a source of health information (91%) while about 9% used television to receive health information (Table 4).

Table 3: Distribution of chronic diseases and poly pharmacy status of the participants (N=922)

Characteristic	No.	%
Presence of chronic disease		
At least 1 chronic disease	780	84.6
Only one disease	255	27.7
More than one disease	525	56.9
Disease condition*		
Hypertension	407	44.1
Type II diabetes mellitus	290	31.5
Ischemic heart disease	119	12.9
Bronchial asthma and other chronic respiratory diseases	170	18.4
Chronic muscular skeletal problems	354	38.4
Cancer	13	1.4
Stroke	29	3.1
Chronic renal failure	36	3.9
Hypercholesterolemia	7	0.8
Hypothyroidism	6	0.7
Prostate enlargement	11	1.2
Eczema	1	0.1
Lymphoedema	1	0.1
Psoriasis	2	0.2
Migraine	3	0.3
Benign postural vertigo	11	1.2
Number of drugs per day		
Not on any drug	62	6.7
1 - 4 types of drugs	681	73.7
≥5 types of drugs	179	19.4

*Percentages were not mutually exclusive

Discussion

The proportion of elderly population in Sri Lanka has been in a rising trend and is expected to have the largest elderly proportion among South Asian countries by 2030 (21). In the context of population ageing, health requirements of the elderly have also increased. Thus, sufficient resources need to be allocated towards them as many of them suffer from several morbidities. Both multimorbidity and polypharmacy are common among older people which encounter a large share of the health budget which will be a major challenge in the current economic context (5). Considering this situation, the health system needs to be reformed to cater to the growing health needs of the elderly in a cost-effective

manner while ensuring optimum usage of limited resources. However, information scarcity has been a limiting factor for evidence-based reforms. In this context, findings of this study will be helpful to make necessary modifications in Sri Lankan health system towards elderly.

As shown in the study, the prevalence of multimorbidity among older population was 56.94%, which is consistent with the pooled 95% CI of 44.1-58.0 of the systematic review conducted by Chowdhury et al. in 2023 (7). However, variations in the prevalence can be observed across studies due to differences in case definitions and in data collection processes as some studies included self-reported

conditions as chronic diseases. In the current study, only written clinical records were taken into consideration which enhanced the validity of these results. A relatively low prevalence of multimorbidity was observed in other LMICs when compared to findings of the present study (22-23). One probable reason is older people in LMICs are less likely to seek treatment for diseases; thus, actual values may be underestimated in some of the settings. Furthermore, the lower reported prevalence of multimorbidity in LMICs may be attributable to several other factors, including higher overall mortality and low life expectancy, which limit survival into older age when multiple chronic conditions are more likely to accumulate. Additionally, limited access to healthcare facilities, and constrained health system

resources for diagnosis and clinical detection may contribute to underestimation of multimorbidity in these settings. However, as reflected in the health seeking pattern, most of the Sri Lankan elderly have access to healthcare from either state or private sectors which was helpful to obtain written clinical evidence during this study. Hypertension, musculoskeletal diseases and type II diabetes mellitus were common morbidities among study participants, and similar disease patterns have been observed in other settings across the world (10, 24-25). Nevertheless, we excluded participants with psychiatric diseases that could underestimate our prevalence of multimorbidity as patients with psychiatric illnesses tend to have complex treatment needs.

Table 4: Description of main health seeking institution and perceived health information provider (N=922)

Characteristics	No.	%
Main health seeking institution		
State western medical hospital or dispensary	503	54.6
State ayurvedic hospital	8	0.9
Private western dispensary or clinic	410	44.4
Private ayurvedic clinic	1	0.1
The main health information provider		
Doctor in the state western hospital/dispensary	480	52.1
Nurse in the state western hospital/dispensary	11	1.1
Doctor in the state ayurveda hospital	8	0.9
Public health inspector	2	0.2
General practitioner(western) in a private clinic	395	42.8
Specialist doctor (western) in the private hospital or clinic	25	2.7
Doctor in the private ayurveda clinic	1	0.1
Media usage for health information*		
Newspaper/ printed media	44	4.8
Television/ radio	81	8.8
Internet	7	0.7

*Percentages are not mutually exclusive

The prevalence of polypharmacy was 19.4% in present study, which is consistent with the results of other community-based studies conducted among older people (26-27). In contrast, high prevalence of polypharmacy among older people were revealed in studies conducted in Canada (28) and Spain (29)

which amounted to 64% and 49%, respectively. According to the findings of a systematic review, polypharmacy among older people has ranged from 2.6% to 86.6% across the studies (11). High heterogeneity across these studies reflects

methodological differences and inconsistencies of reporting and medications used during the surveys.

According to the latest Asian Development Bank Report, most Sri Lankan elders tend to rely on the state health sector which is in concurrence with this study (30). Additionally, most of the participants in the present study considered doctors working in state allopathic hospitals as their main health information providers. However, since a significant proportion of older people utilized private medical clinics and relied on general practitioners in private clinics, it is important to strengthen both arms to cater to the future demands. Limited number of participants used media to obtain health related information. Thus, providing health information targeting older people via media platforms may be beneficial only to a certain extent.

Robust scientific methods were applied throughout the study to ensure high scientific validity of the findings. Since participants diagnosed with psychiatric conditions were excluded in the present study, psychiatric diseases and treatments were not

considered. This may have led to an underestimation of both multimorbidity and polypharmacy status.

Conclusions & Recommendations

Multimorbidity is a common condition among more than half of the older people while polypharmacy was observed in about one fifth of them. Majority of elderly people rely on state health services to obtain both services and health related information. This information among elderly people can be used to take policy decisions and health reforms as part of a solution of population ageing in Sri Lanka. Further, we recommend establishing elder-friendly hospital settings which include geriatric clinics and frailty wards in near future. General practitioners in private sector also play a key role in service provision for the older people in Sri Lanka. Thus, a collaborative approach between private and government sectors will be a way forward to cater the high demand of health needs among rising elderly population in Sri Lanka.

Public Health Implications

- The study provides a comprehensive account of both multimorbidity and polypharmacy among elderly living in the Sri Lankan context. It further provides evidence on health seeking pattern among them.
- Findings of the present study will be useful to implement necessary reforms toward expanding elderly population in Sri Lanka.

Author Declarations

Competing interests: The authors declare that they have no competing interests.

Ethics approval and consent to participate: Ethics clearance was granted by the Ethics Review Committee of the Faculty of Medicine Colombo. Informed written consent was obtained from each participant prior to data collection.

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