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ORIGINAL ARTICLE

Geriatric Syndromes in Older People Attending Geriatric Outpatient Department in a Tertiary Care Center in Western Nepal

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Article Info:

Received Date: Dec, 2024

Acceptance Date: Jan, 2025

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Funding sources: None

Conflict of interest: None

Access the article online

DOI: doi.org/10.70027/jrahs29

Abstract

Introduction: The aging population is rising globally, posing significant challenges to healthcare systems, particularly in low- and middle-income countries like Nepal. Geriatric syndromes, including falls, urinary incontinence, depression, and sensory impairments, are prevalent in older adults, often leading to reduced quality of life. However, limited research exists on the prevalence and interrelation of these syndromes in outpatient settings in Nepal. The study examined the prevalence and associated factors of geriatric syndromes among older adults attending a geriatric outpatient department (OPD) at a tertiary care hospital in western Nepal.

Methods: A cross-sectional study was conducted from June to December, 2024, among 160 systematically sampled individuals aged ≥60 years attending the Geriatric Medicine OPD at Rapti Academy of Health Sciences. Data were collected using semi-structured questionnaires and standardized tools, including the Geriatric Depression Scale and Mini-Cog test. Descriptive and inferential statistics were employed to analyze associations between geriatric syndromes and demographic and clinical variables.

Results: The prevalence of geriatric syndromes, including falls (22.5%), urinary incontinence (31.9%), and sensory impairments (~40%), increased with age. Falls were significantly associated with morbidity, drug count, and the number of geriatric syndromes. Individuals aged ≥80 years were most vulnerable, with steeply increasing health challenges.

Conclusion: Geriatric syndromes are highly prevalent among older adults in Nepal, emphasizing the need for integrated care models and targeted interventions, particularly for individuals aged ≥80 years. Findings underscore the importance of holistic approaches to improving geriatric health outcomes in Nepal's healthcare system.

Keywords: geriatric OPD, geriatric syndromes, ICOPE

Introduction

The aging population is rapidly increasing globally, and this demographic shift poses significant challenges to healthcare systems, particularly in low- and middle-income countries (LMICs) like Nepal. Geriatric syndromes, which are multifactorial health conditions prevalent in older adults, represent a cluster of symptoms and impairments that frequently contribute to disability, reduced quality of life, and increased healthcare utilization. These syndromes include, but are not limited to, falls, urinary incontinence, dementia, depression, hearing impairment, and vision impairment.[1] Unlike single-disease conditions, geriatric syndromes are often the result of complex interactions

Citation:

Kandel R, Gautam AR, Bhattarai B, Lamichhane B. Geriatric syndromes in older people attending geriatric outpatient department in a tertiary care center in western Nepal. J. Rapti A. Health Sci. 2024;1(2):26-30.

among multiple organ systems, chronic illnesses, and social determinants of health, making their management uniquely challenging.

Falls are among the most common and devastating geriatric syndromes, often leading to fractures, hospitalization, and long-term functional decline. Studies in other LMICs have shown a fall prevalence ranging from 20% to 30% among community-dwelling older adults.[2] Similarly, urinary incontinence and cognitive impairments like dementia and depression are frequently reported among older populations, significantly impacting their dignity, independence, and mental health.[3] Hearing and vision impairments compound these issues by increasing social isolation and hindering communication, leading to adverse health outcomes.[4]

In Nepal, research on geriatric syndromes is limited, with most studies focusing on specific conditions like falls,[5] multimorbidity,[6] polypharmacy,[7] dementia, or frailty.[5] A Few comprehensive studies[5,6] have explored the burden and interrelationship of multiple geriatric syndromes in outpatient settings, particularly in tertiary care hospitals. However, comprehensive research specifically addressing the prevalence and interrelation of multiple geriatric syndromes in outpatient settings still needs to be completed.

This study aims to fill the knowledge gap by examining the prevalence and associated factors of geriatric syndromes among older adults presenting to a geriatric OPD in a tertiary care hospital in western Nepal. The findings will contribute to evidence-based policy development and the design of comprehensive geriatric care models tailored to the unique needs of Nepal's aging population.

Methods

A quantitative cross-sectional research design was chosen because it allowed for a simultaneous snapshot assessment of participants, enabling an efficient analysis of the study objectives.

The study was conducted at RAHS, a multidisciplinary hospital in Nepal recognized for its dedicated geriatric care services, including outpatient and inpatient facilities. The high volume of geriatric patients comprised around 60% of outpatient visits and occupied 50% of inpatient beds, providing a suitable population for this research. The study population included individuals aged 60 or older who attended the Geriatric Medicine OPD. At a confidence level of 95% and a margin of error of 5%, with a prevalence of functional dependency estimated at 10.5%,[13] the sample size was calculated using the formula $S=Z^2\times[P\times(1-P)]/M^2$. Substituting the values (Z=1.96, P=0.109, and M=0.05), the sample size was determined to be 145.4, rounded to 145. To account for a potential non-response rate of 10% (equivalent to 15 participants), the final adjusted sample size was set at 160. A systematic random sampling method was used to enroll 160 participants. Every eighth eligible individual in the OPD register was invited to participate in the study.

Participants were assessed only once during the study. A semi-structured questionnaire was used to collect the data, which contained demographic details and information about morbidities, medication usage, sleep duration, falls, and urinary incontinence. Standardized tools were used to assess geriatric syndromes, including the Nepali version of the Geriatric Depression Scale (GDS-15) for depression,[8] the Mini-Cog test for cognition,[9] and the WHO ICOPE questionnaire[10] for intrinsic capacity.

The inclusion criteria for the study were individuals aged 60 years or older who attended the Geriatric Medicine OPD. At the same time, those with severe cognitive impairment or significant verbal communication difficulties were excluded. Data were analyzed using SPSS-16 software. Descriptive statistics summarized participant demographics and clinical characteristics, while inferential statistics assessed correlations between geriatric syndromes and variables such as age, gender, and comorbidities. The study was conducted from June to December, 2024 after obtaining ethical approval from the institutional review committee of RAHS (Ref: 2488; Date: 25 June, 2024), and all ethical considerations, including cultural sensitivity and participant confidentiality, were upheld.

Results

The study included 160 individuals aged 60 and above, including key variables like age, gender, morbidity (the number of diseases per individual), drug count (the number of medications), geriatric syndromes, and specific conditions such as falls, urinary incontinence, dementia, depression, hearing impairment, and vision impairment.

Table 1: Baseline characteristics of the study participants

Variables	Frequency (%)
Age category	
60-70 years	40 (25.0%)
71-80 years	68 (42.5%)
81-90 years	48 (30.0%)
90 years above	4 (2.5%)
Gender	
Males	74 (46.3%)
Females	86 (53.8%)
Multimorbidity	150 (93.8%)
Geriatric syndromes	
Urinary incontinence	116 (72.5%)
Polypharmacy	111 (69.4%)
Hearing impairment	85 (53.1%)
Falls	75 (46.9%)
Vision impairment	66 (41.3%)
Depression	65 (40.6%)
Dementia	40 (25.0%)

The mean age of the study participants was 75.19 years. Among them, 53.8% were females. The mean numbers of morbidities and geriatric syndromes were 3.64 and 2.78, respectively. The mean number of drugs taken by the study participants was 6.25. 42.5% of the individuals fell between 71 and 80 years of age. 60.2% of individuals took more than five medications per day, while 8.8% took ten or more medications per day. Only 15.6% of individuals had a single geriatric syndrome, while 19.4% had more than four geriatric syndromes. 150 participants (93.8%) had multimorbidity. Only 6.3% of the participants had only one comorbidity, while 22.6% had five or more morbidities. The participants reported an average of 3.6 comorbidities, 6.25 medications per person, and 2.7 geriatric syndromes, reflecting a high prevalence of age-related health challenges.

The most common geriatric syndrome reported among the study participants was urinary incontinence, which was present in 72.5%, followed by polypharmacy (69.4%), hearing impairment (53.1%), and falls (46.9%). Depression was observed in 40.6%, while dementia was observed in 25.0% of the individuals. Among the geriatric syndromes, urinary incontinence was the most prevalent among all the age groups, as demonstrated in Table 2.

Table 2: Association between baseline characteristics and geriatric syndromes

Variables	Urinary Incontinence	Hearing Impairment	Falls	Vision Impairment	Depression	Dementia
Age category						
60-70	16	6	14	14	6	5
71-80	56	45	30	15	35	14
81-90	40	30	21	32	20	21
90 above	4	4	0	4	4	0
P-value	(<0.001)	(<0.001)	(0.007)	(<0.001)	(<0.001)	(0.002)
Gender						
Males	58	44	44	37	25	16
Females	58	41	31	29	40	24
P-value	(0.122)	(0.136)	(0.003)	(0.037)	(0.102)	(0.360)
Polypharmacy						
Yes	89	66	66	54	43	35
No	27	19	9	12	22	5
P-value	(0.001)	(0.016)	(<0.001)	(0.004)	(0.465)	(0.004)
Multimorbidity						
Yes	112	66	73	83	61	32
No	4	19	2	2	4	8
P-value	(0.017)	(0.006)	(0.079)	(0.030)	(0.967)	(0.059)

Falls were significantly higher in older males than in older females (P=0.003), and vision impairment was also significantly higher in older males than in older females (P=0.037). Although dementia and depression occur more frequently in females than in males, the difference in their occurrence was not statistically significant (P=0.360 for dementia, P=0.102 for depression).

As demonstrated in Table 2, polypharmacy was significantly associated with the majority of geriatric syndromes. Despite depression being observed in a higher proportion of older people with polypharmacy, it was not statistically significant (P=0.465). Multimorbidity was significantly associated with urinary incontinence, sensory impairment, and falls, while it was not associated with depression.

Table 3: Association of age and gender with multimorbidity and polypharmacy

Variables	Multimorbidity	Polypharmacy
Age category		
60-70	34	20
71-80	64	41
81-90	48	46
90 above	4	4
P-value	(0.033)	(<0.001)
Gender		
Males	68	56
Females	82	55
P-value	(0.368)	(0.109)

Similarly, multimorbidity (P=0.033) and polypharmacy (P<0.001) were significantly associated with age, while not with gender, as demonstrated in Table 3.

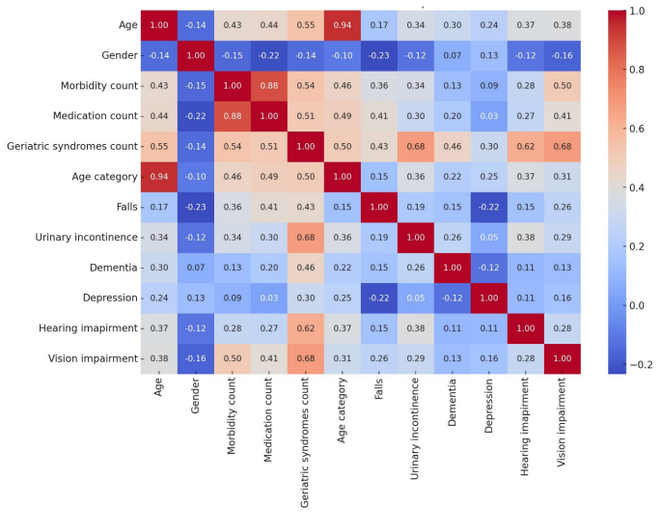

Figure 1: Correlation heatmap between various baseline characteristics and geriatric syndromes.

As demonstrated in the correlation heatmap (Figure 1), it was observed that geriatric syndromes show moderate positive correlations with drug count (r=0.51) and morbidity (r=0.54), indicating that individuals with more health conditions or syndromes are on more medications and have a higher burden of diseases. Falls correlated moderately with geriatric syndromes (r=0.43) and drug count (r=0.49), suggesting these factors contributed significantly to fall risk. Dementia also exhibited a moderate correlation with geriatric syndromes (r=0.46), aligning with its role as a prevalent syndrome in older adults. In contrast, age and gender had weak or negligible correlations with falls (r=-0.10), suggesting that individual health conditions play a more critical role than demographic factors alone. Similarly, vision and hearing impairments show weak correlations with other variables. Overall, the heatmap highlights the central role of geriatric syndromes, morbidity, and drug count in influencing falls and other health outcomes, emphasizing the need for targeted interventions in older adults.

Discussion

The study highlights the significant burden of geriatric syndromes among older adults attending the Geriatric Medicine OPD at RAHS. Geriatric syndromes, including falls, urinary incontinence, depression, cognitive decline, and sensory impairments, were prevalent, with their occurrence strongly linked to age and comorbidities. These findings align with global research emphasizing the multifactorial nature of geriatric syndromes and their association with declining physiological reserves and chronic illnesses.[1,2]

The higher prevalence of falls in the studied population, particularly among individuals aged 80 and above, mirrors similar findings from LMICs, where fall rates in community-dwelling older adults range between 20% and 30%.[2] Falls were significantly associated with increased morbidity, polypharmacy, and the number of geriatric syndromes, indicating that individuals with multiple health challenges are at a higher risk. This finding supports the need for integrated care strategies to mitigate fall risks through medication reviews, home modifications, and strength and balance training interventions.[11]

Urinary incontinence and depression were also notable geriatric syndromes in this population, highlighting the interrelation of physical and psychological health issues in older adults. The use of the Nepali version of the GDS-15 for assessing depression provided culturally relevant insights into the psychological burden of aging, a topic often under-explored in Nepal.[8] The findings call for enhanced mental health services as part of comprehensive geriatric care.

The study's use of standardized assessment tools, such as the Mini-Cog test, ensures the reliability of the data while allowing comparisons with international studies.[12] However, self-reported data on morbidities and medication use introduced potential recall bias, a limitation commonly observed in cross-sectional studies.

Limitations: The cross-sectional design restricted the ability to establish causality between geriatric syndromes and demographic factors. Future longitudinal studies could provide more robust insights into the progression of these syndromes and the effectiveness of interventions. Moreover, the study's focus on outpatients may have underrepresented the prevalence of syndromes among hospitalized or community-dwelling older adults. Expanding the research to these populations could enhance generalizability.

Future Research: Incorporating additional variables like physical activity levels, socioeconomic factors, and living conditions could improve prediction accuracy. Including more individuals aged 90+ would address model convergence issues and provide deeper insights into this vulnerable group.

Recommendation: This research underscores the critical need for geriatric-focused health policies in Nepal. With a rapidly aging population, integrating comprehensive geriatric assessments into routine care could improve health outcomes and reduce healthcare costs. The findings also suggest the need for tailored interventions targeting high-risk groups, particularly individuals aged 80 years and above, who exhibit a higher burden of syndromes and associated risks. These findings can inform future research, policy-making, and clinical practices to improve the quality of life for older adults in Nepal and similar settings.

Conclusion

As individuals age, the cumulative effects of morbidity, polypharmacy, and geriatric syndromes amplify health risks, mainly falls. The age group 71-80 years showed a critical threshold where fall risk and health challenges sharply increased, emphasizing the need for targeted interventions in this age range. The trends across age groups underscore the progressive nature of health

challenges in aging populations. Interventions aimed at early identification and management of geriatric syndromes, medication optimization, and fall prevention strategies are essential, especially for individuals aged 70 years and above.

Interventions targeting geriatric syndromes (e.g., improving vision and hearing, managing depression) may significantly reduce fall risk. Optimizing drug regimens, especially in individuals with high morbidity, may help mitigate fall risks. Age-specific screening for fall risks, particularly in individuals aged 70 years and above, is crucial for early intervention.

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