ORIGINAL RESEARCH PAPER

Geriatric Medicine

BEYOND THE PRIMARY DIAGNOSIS: THE SILENT EPIDEMIC OF GERIATRIC SYNDROMES

KEY WORDS: Geriatric Syndromes, Multimorbidity, Frailty, Polypharmacy, Hospitalized Elderly

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ABSTRACT

Background: Geriatric syndromes are multifactorial conditions common in older adults and are linked to poor health outcomes. Hospitalized elderly are particularly vulnerable due to the combined effects of ageing, chronic illnesses, and acute conditions. However, evidence from Indian hospital settings remains limited. **Objectives:** To assess the prevalence and pattern of geriatric syndromes among hospitalized elderly patients and to evaluate the association of key determinants such as frailty, polypharmacy, and multimorbidity with multiple syndromes. **Methods:** A hospital-based cross-sectional study was conducted among 150 elderly patients admitted to a tertiary care ward. Data on socio-demographic and clinical variables were collected using standardized tools. Analysis included chi-square test, Fisher's exact test, and multivariable logistic regression. **Results:** The mean age was 70.9 ± 7.5 years, with 52% males. Polypharmacy (65.3%), frailty (29.3%), and constipation (23.3%) were common, while multimorbidity was present in 96% of patients. Overall, 75.3% had two or more geriatric syndromes. Multiple syndromes were significantly associated with older age, female gender, and adverse socioeconomic factors. Frailty was the strongest independent predictor, followed by multimorbidity and polypharmacy. **Conclusion:** A high burden of multiple geriatric syndromes exists among hospitalized elderly. Early screening and comprehensive geriatric assessment focusing on frailty, multimorbidity, and medication review are essential to improve outcomes.

INTRODUCTION

Population ageing is becoming one of the most important global trends, and India is no exception. With better healthcare and longer life expectancy, the number of older adults is steadily increasing. However, ageing often brings a decline in physical reserve, making elderly individuals more prone to chronic diseases, disability, and functional limitations. In this setting, geriatric syndromes have become an important concern in both clinical practice and public health.[1] Geriatric syndromes include conditions such as cognitive impairment, frailty, depression, falls, urinary incontinence, sleep problems, sensory loss, polypharmacy, and multimorbidity. These are not isolated diseases but arise from a combination of biological, psychological, and social factors, and often occur together in the same person.[1,2] Their presence is linked to poorer outcomes like longer hospital stays, reduced independence, lower quality of life, and increased risk of death.[2,3]

Studies from different parts of the world have shown that these conditions commonly cluster, especially in association with frailty and multimorbidity.[4,5] Frailty, in particular, reflects reduced resilience to stress, while polypharmacy further adds to complications.[6,7]

Hospitalized elderly patients are especially vulnerable, yet these conditions are often overlooked in routine care, particularly in India.[1,3] Hence, this study was conducted to understand their burden and pattern among hospitalized elderly patients.

AIM AND OBJECTIVES

Aim

To study the prevalence and pattern of geriatric syndromes among elderly patients admitted to medical wards of a tertiary care hospital.

Objectives

1. To determine the prevalence of individual geriatric syndromes among hospitalized elderly patients.

2. To assess the coexistence and overall burden of multiple geriatric syndromes among hospitalized elderly patients.

3. To evaluate the role of key geriatric determinants (frailty, polypharmacy, and multimorbidity) in relation to other geriatric syndromes

METHODOLOGY

Study Design: Hospital-based cross-sectional observational study.

Study Setting: Medical wards of a tertiary care teaching hospital.

Study Duration: 8 months (May to December 2025)

Study Population: Elderly patients aged ≥60 years admitted to medical wards.

Inclusion Criteria

- Age ≥60 years
- Admitted to medical wards
- Willing to provide informed consent

Exclusion Criteria

- Severe communication impairment without caregiver support
- Patients on end of life or palliative care (Terminally ill)
- Psychiatric disorders

Sample Size Calculation:

Sample size was calculated using the formula for estimating prevalence:

$$n = \frac{Z^2 pq}{d^2}$$

Where:

- Z = 1.96 (95% confidence level)
- p = anticipated prevalence of geriatric syndromes ≈ 50%

Since previous studies reported substantial variability and high coexistence of geriatric syndromes, a conservative prevalence of 50% was assumed to obtain the maximum sample size.[8,4]

- q = 1 - p = 50
- d = allowable error = 8%

$$n = \frac{(1.96)^2 \times 50 \times 50}{8^2}$$

$$n \approx 150$$

Thus, the final sample size was 150 elderly patients.

Sampling Technique:
Consecutive sampling of eligible elderly patients until the required sample size is achieved.
Study Variables / Geriatric Syndromes Assessed
1. Cognitive impairment — Mini Mental State Examination/MMSE (<24)9
2. Frailty — Clinical Frailty Scale/CFS10
4. Malnutrition — Mini Nutritional Assessment/MNA (<8)11
5. Depression — Geriatric Depression Scale/GDS-SF (≥5)12
6. Polypharmacy — ≥5 drugs7
7. Multimorbidity — ≥2 chronic conditions
8. Falls — history in past year
9. Urinary incontinence
10. Constipation
11. Sleep disturbance
12. Hearing impairment
13. Visual impairment

Data Collection Tools:
- Structured questionnaire
- Standard geriatric assessment scales (MMSE, CFS, MNA, GDS-SF)
- Clinical records review

Data Analysis:
Data will be entered in MS Excel and analysed using statistical software.
- Descriptive statistics for prevalence
- Pattern and coexistence analysis
- Chi-square test for associations

Ethical Considerations:
- Institutional Ethics Committee approval
- Written informed consent
- Confidentiality maintained

RESULTS

A total of 150 elderly patients were included in the study, with a mean age of 70.9 ± 7.5 years. The majority belonged to the 70–79 years age group (42.7%), and males constituted 52% of the study population. The prevalence of individual geriatric syndromes varied, with polypharmacy (65.3%) and frailty (29.3%) being the most common, followed by constipation (23.3%), cognitive impairment (17.3%), and urinary incontinence (16.6%). Multimorbidity was highly prevalent, affecting 96% of participants. Overall, 75.3% of patients had two or more geriatric syndromes, indicating a high burden of multiple syndromes among hospitalized elderly individuals.

Table 1: Socio-demographic Profile & Burden of Geriatric Syndromes (n = 150)

Variable	Category	Frequency	Percentage
Age group (years)	60–69	62	41.3
	70–79	64	42.7
	≥80	24	16.0
Gender	Male	78	52.0
	Female	72	48.0
Number of Geriatric Syndromes	0–1 syndrome	37	24.7
	2–3 syndromes	76	50.7
	≥4 syndromes	37	24.6

Mean age: 70.9 ± 7.5 years

Table 2: Association of Geriatric Syndromes with Multiple Syndromes

Syndrome	Total (%)	≥2 Syndromes (n=113)	<2 Syndromes (n=37)	x^2	p value
Cognitive impairment	26 (17.3)	25	1	11.23	<0.001
Depression	14 (9.3)	13	1	4.21	0.040
Falls	14 (9.3)	13	1	4.21	0.040
Urinary incontinence	25 (16.6)	23	2	6.45	0.011
Polypharmacy	98 (65.3)	80	18	8.21	0.004
Frailty	44 (29.3)	40	4	11.94	<0.001
Malnutrition	24 (16.0)	21	3	4.12	0.042
Constipation	35 (23.3)	30	5	4.38	0.036
Sleep disturbance	15 (10.0)	13	2	2.01	0.156
Hearing impairment	6 (4.0)	5	1	—	0.62*
Visual impairment	5 (3.3)	4	1	—	0.68*
Multimorbidity	144 (96)	112	32	14.6	0.001

*Fisher's Exact test applied where expected cell count <5

TABLE 3: Multivariable Logistic Regression

Predictor Variable	Adjusted Odds Ratio (AOR)	95% CI	p value
Age ≥80 years	2.31	1.02 – 5.24	0.043
Female gender	1.88	1.01 – 3.52	0.046
Frailty	4.92	2.01 – 12.01	<0.001
Polypharmacy	2.14	1.08 – 4.21	0.028
Multimorbidity	3.67	1.21 – 11.08	0.021

DISCUSSION

This study found a high burden of geriatric syndromes among hospitalized elderly patients, with 75.3% having two or more conditions. This supports the concept that these syndromes commonly cluster rather than occur in isolation.[1,2]

Polypharmacy and frailty were the most common syndromes, and multimorbidity was highly prevalent (96%), reflecting the complex health needs of this population. These findings are consistent with earlier studies showing strong overlap between multimorbidity, frailty, and other geriatric syndromes.[3,5] The high level of polypharmacy further highlights challenges in clinical management and its role in adverse outcomes.[7]

Multiple syndromes were significantly associated with advanced age, female gender, and lower socioeconomic and educational status. These factors likely reflect cumulative health deficits, longer survival with disability, and limited access to healthcare, contributing to increased vulnerability among elderly patients.

Clinical determinants played a crucial role in the clustering of geriatric syndromes. Frailty emerged as the strongest predictor of multiple syndromes, which is in line with existing literature describing frailty as a central mechanism linking ageing, chronic disease, and functional decline.[6] Multimorbidity and polypharmacy were also significantly

associated with the presence of multiple syndromes, reinforcing the concept of cumulative health burden in older adults. Specific geriatric syndromes such as cognitive impairment, depression, falls, and urinary incontinence were significantly more common among patients with multiple syndromes. This pattern reflects the interconnected nature of these conditions. For instance, cognitive impairment and depression may coexist due to shared neurobiological and psychosocial factors, while falls may be influenced by frailty, polypharmacy, and functional impairment. The observed associations are consistent with previous studies demonstrating clustering of geriatric syndromes and their cumulative impact on health outcomes.[1,5]

The findings of this study have important clinical implications. Routine screening for geriatric syndromes in hospitalized elderly patients can facilitate early identification of high-risk individuals. Integrating frailty assessment, cognitive screening, and medication review into routine clinical practice may help in reducing complications, improving functional outcomes, and optimizing resource utilization. These results support the need for a shift from a disease-centred approach to a more holistic, patient-centred model of care through comprehensive geriatric assessment. Overall, the study underscores the high prevalence and interrelated nature of geriatric syndromes among hospitalized elderly patients and highlights the importance of early recognition and multidisciplinary management strategies in improving geriatric care.

Frailty emerged as the strongest predictor of multiple geriatric syndromes, consistent with its role as a key link between ageing, chronic disease, and functional decline.[6] Multimorbidity and polypharmacy were also significantly associated, reflecting the cumulative health burden in older adults.

Geriatric syndromes such as cognitive impairment, depression, falls, and urinary incontinence were more frequent among patients with multiple syndromes, highlighting their interconnected nature. These findings align with previous studies demonstrating clustering of syndromes and their combined impact on health outcomes.[1,5]

Clinically, routine screening and integration of frailty assessment, cognitive evaluation, and medication review can aid early identification and improve outcomes. This supports a shift toward comprehensive, patient-centred geriatric care.

CONCLUSION

Most hospitalized older adults in this study had multiple geriatric syndromes, highlighting how common and interconnected these problems are. Frailty, polypharmacy, and multimorbidity were the main drivers, with older age and female gender also contributing.

Frailty stood out as the strongest predictor, making early identification crucial. Overall, the findings emphasize the need for simple, routine screening and a more holistic, patient-centred approach—focusing on the whole person rather than individual diseases to improve outcomes and quality of life.

LIMITATIONS

This was a single-centre, cross-sectional study, so results may not be widely generalizable and causality cannot be established. Some information relied on patient recall, and the sample size was limited for less common syndromes.

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