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KEY WORDS: Comorbidity, Multimorbidity, Functional Limitation, Older Adults, Activities Of Daily Living, Geriatric Assessment.

DOES MULTIMORBIDITY ALONE DEFINE OR DEFY THE FUNCTIONAL STATUS OF OLDER ADULTS: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Functional limitation is a major geriatric health problem and is closely related to chronic disease burden. Multimorbidity can adversely affect the activities of daily living, mobility, independence, and quality of life among older adults. **Objective:** to assess the association between multimorbidity and functional limitation among elderly **Methods:** A cross-sectional study was conducted among 140 older adults aged 60 years and above. Participants were classified according to number of comorbidities into 3 groups: no comorbidity, one comorbidity and 2 or more comorbidities. Functional status was categorized into independent or dependent based on the functional assessment score obtained from Barthel index. The association was analyzed using the chi-square test. A p value <0.05 was considered statistically significant. **Results:** Among participants with no comorbidity 4/16, 25% were functionally independent and 12/16, 75% were dependent. Among those with one comorbidity 12/44, 27.3% were independent and 32/44, 72.7% were dependent. Among elderly with 2 or more comorbidities 15/80, 18.8% were independent and 65/80, 81.2%, were dependent. Functional dependence increased with increasing number of comorbidities. However, the association between number of comorbidities and functional limitation was statistically insignificant, p value = 0.52. **Conclusion:** Functional dependence was more frequent among older adults with multimorbidity, but this association was not statistically significant in the present study. These findings suggest a clinically relevant trend toward greater dependency with increasing comorbidity burden but is not the sole determinant of functional limitation. Larger studies and other variables are required to determine the causal associations and establish statistical significance.

INTRODUCTION

Functional ability is an important marker of health and independence in older adults. Functional limitation affects self-care, mobility, social participation, quality of life, and need for caregiver support. Assessment of functional status is therefore a key component of comprehensive geriatric evaluation.

Comorbidity is common in later life because ageing is associated with a higher prevalence of chronic diseases such as hypertension, diabetes mellitus, cardiovascular disease, chronic kidney disease, chronic respiratory disease, arthritis, stroke, and neurocognitive disorders. When two or more chronic conditions coexist, the condition is commonly referred to as **multimorbidity**. Multimorbidity is associated with poorer health outcomes, higher healthcare use, reduced quality of life, and functional decline. A systematic review by Marengoni et al. reported that disability and functional decline are major consequences of multimorbidity in older adults.[1]

Indian data also support the relationship between chronic disease burden and disability. Studies using Longitudinal Ageing Study in India data have shown that multimorbidity and specific disease combinations are associated with activities of daily living and instrumental activities of daily living disability among older adults.[2],[3] However, the strength of association may vary depending on sample size, setting, type and severity of comorbidities, age distribution, socioeconomic factors, nutritional status, cognition, depression, and frailty.

Aim and Objective

To determine the association between multimorbidity and functional limitation among community dwelling elderly

Methodology

Study design: This was a cross-sectional observational study. Study population: The study included 140 older adults aged 60 years and above.

Study setting: The study was conducted among community dwelling older adults and residents in an assisted living centre.

Inclusion criteria: Older adults aged 60 years and above who were willing to participate in the study.

Exclusion criteria: Participants who were acutely ill.

Data collection: Semi-structured interview and Barthel Index for functional assessment (ADLs).

Study variables: The main independent variable was number of comorbidities, classified as - No comorbidity/ One comorbidity/ Two or more comorbidities (multimorbidity).

The outcome variable was functional limitation, classified as – Independent/ Dependent

Statistical analysis: Data were analysed using [insert software: SPSS/R/Excel]. Categorical variables were expressed as frequency and percentage. The association between number of comorbidities and functional limitation was assessed using the Chi-square test. A p value <0.05 was considered statistically significant.

RESULTS

A total of **140 older adults** were included in the analysis. Of these, **16 participants** had no comorbidity, **44 participants** had one comorbidity, and **80 participants** had two or more comorbidities.

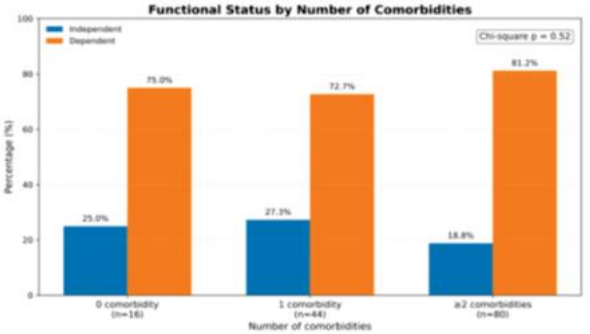
Among participants with **no comorbidity**, **4 (25%)**, were functionally independent and **12 (75%)**, were dependent. Among those with **one comorbidity**, **12 (27.3%)**, were independent and **32 (72.7%)**, were dependent. Among participants with **two or more comorbidities**, **15 (18.8%)**, were independent and **65 (81.2%)**, were dependent.

Functional dependence was highest in the group with **two or more comorbidities**. However, the association between number of comorbidities and functional limitation was **not statistically significant** by Chi-square test, **p = 0.52**.

Table: Association of number of comorbidities with functional limitation

Functional status	0 comorbidity, n = 16	1 comorbidity, n = 44	≥2 comorbidities, n = 80	p value
Independent	4, 25.0%	12, 27.3%	15, 18.8%	0.52
Dependent	12, 75.0%	32, 72.7%	65, 81.2%	

Chi-square test used.



DISCUSSION

In the present study, functional dependence was common across all comorbidity groups. Dependence was observed in **75%** of participants with no comorbidity, **72.7%** of those with one comorbidity, and **81.2%** of those with two or more comorbidities. Although the proportion of dependence was highest among participants with two or more comorbidities, the association was not statistically significant, p = 0.52.

The finding suggests that increasing comorbidity burden may have a clinically relevant relationship with functional limitation, even though statistical significance was not demonstrated in this sample.

Existing literature supports a relationship between multimorbidity and functional decline. Marengoni et al. reported that multimorbidity is commonly associated with disability, functional decline, reduced quality of life, and increased healthcare burden. [1] A large Indian study by Sharma et al. found that multiple chronic conditions were associated with functional limitations in older adults, with the relationship varying across socioeconomic and demographic groups.[2]

Similarly, a LASI-based study by Kumar et al. showed that different multimorbidity combinations were associated with ADL and IADL disability among older Indian adults.[3]

The present study differs from many larger studies because the association was not statistically significant. This may be because functional limitation in older adults is multifactorial. Even participants without documented comorbidities had high dependency, suggesting that factors other than diagnosed chronic diseases may have contributed to functional limitation. These may include sarcopenia, frailty, poor nutrition, depression, cognitive impairment, social isolation, falls, pain, sensory impairment, and environmental barriers.

The high proportion of dependence among participants with two or more comorbidities remains clinically important despite the non-significant p value. In geriatric medicine, multimorbidity should prompt careful functional assessment because older adults with multiple chronic diseases are more likely to experience reduced mobility, polypharmacy, hospitalisation, and need for caregiver support. Jindai et al. reported that increasing chronic disease burden may contribute to greater activity limitation among older adults.[4]

Therefore, the present findings support the importance of incorporating functional assessment into routine evaluation of older adults with comorbidities. Early identification of functional limitation allows timely intervention through physiotherapy, occupational therapy, fall prevention, medication review, nutritional support, assistive devices, and caregiver education.

CONCLUSION

Functional dependence was common among older adults in all comorbidity groups and was highest among participants with two or more comorbidities. However, the association between number of comorbidities and functional limitation was not statistically significant in the present study. The results suggest a clinically relevant trend toward higher dependency with increasing comorbidity burden, but larger studies with adjustment for age, sex, frailty, cognition, depression, nutritional status, and disease severity are required to attribute and determine causal association.

Limitations

This study has certain limitations. First, the cross-sectional design prevents causal inference. Second, the sample size was limited. Third, variables such as cognition, frailty, depression, nutrition, physical activity, duration and severity of chronic diseases were not assessed. Finally, the findings may not be generalisable beyond the study population.

Recommendations

Older adults with comorbidities should undergo routine functional assessment as part of comprehensive geriatric care. Future studies should evaluate the severity and duration of chronic diseases. Inclusion of frailty, cognition, depression, nutrition, and physical activity may provide a clearer understanding of determinants of functional limitation.

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