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Burden of Multimorbidity among Elderly Patients: A Cross-Sectional Analysis in a Geriatric Clinic

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Abstract
Multimorbidity, the presence of multiple chronic conditions in an individual, is prevalent among elderly populations and poses significant healthcare challenges. To assess the burden of multimorbidity among elderly patients attending a geriatric clinic. This cross-sectional study involved 180 elderly patients recruited from a geriatric clinic over a six-month period. We collected data through clinical examinations and patient interviews, focusing on chronic conditions prevalent in this demographic. The study highlighted a high prevalence of multimorbidity, with an average of 3.2 chronic conditions per patient. The most common co-occurring conditions were hypertension, diabetes and arthritis. The substantial burden of multimorbidity in elderly patients underscores the need for integrated care strategies that address multiple chronic conditions simultaneously.

INTRODUCTION

Multimorbidity, defined as the presence of two or more chronic health conditions in an individual, is increasingly recognized as a major health challenge, particularly in elderly populations. The prevalence of multimorbidity increases with age, leading to deteriorated quality of life, increased healthcare utilization, and heightened risk of mortality. This phenomenon is of particular concern in geriatric care, where patients frequently present with a complex array of coexisting diseases[1].

Research indicates that multimorbidity leads to various negative outcomes, including increased disability, higher rates of hospitalization and complex therapeutic regimens prone to drug interactions and adverse effects. This complexity necessitates a holistic approach to healthcare that can manage multiple chronic conditions in a coordinated manner, emphasizing the importance of comprehensive geriatric assessment strategies designed to optimize individual health outcomes[2].

Studies have varied in their methodology and findings, highlighting the need for continued research into the patterns and impacts of multimorbidity. For instance, Patel[3] noted that multimorbidity patterns differ significantly across geographic and demographic lines, suggesting that localized studies are crucial for understanding and managing this issue effectively within specific populations[4].

Aim and Objective

To assess the burden and characteristics of multimorbidity among elderly patients in a geriatric clinic setting.

- To quantify the prevalence of multimorbidity among the clinic's elderly clientele.
- To identify the most common clusters of coexisting chronic conditions in this population.
- To evaluate the impact of multimorbidity on patient-reported health outcomes.

MATERIALS AND METHODS

Source of Data: The data for this study were retrospectively collected from patient medical records and interviews conducted in a geriatric clinic.

Study Design: We conducted a cross-sectional analysis to assess the prevalence and patterns of multimorbidity.

Study Location: The study was conducted at a specialized geriatric clinic within a large metropolitan teaching hospital.

Study Duration: Data collection occurred from January 2022 to June 2022.

Sample Size: The study included a total of 180 elderly patients.

Inclusion Criteria: Participants were included if they were aged 65 years or older and had been diagnosed with at least one chronic condition.

Exclusion Criteria: Patients were excluded if they were under 65 years, had acute infections or conditions not classified as chronic, or were unable to provide consent.

Procedure and Methodology: Eligible patients were identified through clinic records. During routine visits, additional information on their health status and history of chronic conditions was collected through structured interviews and clinical assessments.

Sample Processing: Not applicable as the study did not involve laboratory processing of biological samples.

Statistical Methods: Data were analyzed using descriptive statistics to calculate the prevalence and patterns of multimorbidity. Chi-square tests were used for categorical variables, and logistic regression was employed to identify factors associated with higher burdens of disease.

Data Collection: Data collection was achieved using a combination of patient medical records review and direct interviews, ensuring comprehensive capture of all relevant health information.

RESULTS AND DISCUSSIONS

(Table 1) analyzes the burden and characteristics of multimorbidity among elderly patients categorized by age, gender and specific chronic conditions. The age group analysis revealed that older age groups are significantly more likely to experience multimorbidity, with individuals aged 85 and above having an odds ratio (OR) of 2.1, indicating more than double the likelihood compared to the baseline group of 65-74 years. Hypertension was the most prevalent condition affecting 66.7% of the cohort, followed by diabetes at 50%, with corresponding ORs of 1.9 and 1.5, indicating a higher likelihood of these conditions among the study population. Notably, heart disease also showed a significant correlation with multimorbidity, having an OR of 2.0. Gender differences were observed but were not statistically significant.

(Table 2) details the most common clusters of coexisting chronic conditions among the study participants. The combination of hypertension and diabetes was particularly prevalent, affecting 38.9% of the cohort, with an OR of 2.5, significantly higher than other combinations. This was followed by hypertension

Table 1: Burden and Characteristics of MulStimorbidity

Variable	n	%	OR	95% CI	P-value
Age 65-74	80	44.4%	1.0	Ref	-
Age 75-84	70	38.9%	1.5	1.0-2.2	0.05
Age 85+	30	16.7%	2.1	1.1-4.0	0.02
Female	100	55.6%	1.3	0.8-2.1	0.30
Male	80	44.4%	1.0	Ref	-
Hypertension	120	66.7%	1.9	1.2-3.0	0.006
Diabetes	90	50.0%	1.5	0.9-2.5	0.11
Arthritis	70	38.9%	1.2	0.7-2.0	0.50
Heart Disease	60	33.3%	2.0	1.1-3.6	0.02

Table 2: Common Clusters of Coexisting Chronic Conditions

Conditions Cluster	n	%	OR	95% CI	P-value
Hypertension + Diabetes	70	38.9%	2.5	1.3-4.8	0.006
Hypertension + Heart Disease	40	22.2%	1.8	0.9-3.6	0.10
Diabetes + Arthritis	30	16.7%	1.1	0.5-2.4	0.79
Arthritis + Heart Disease	25	13.9%	1.3	0.6-2.8	0.50

Table 3: Impact of Multimorbidity on Patient-Reported Health Outcomes

Health Outcome	n	%	OR	95% CI	P-value
Poor self-rated health	110	61.1%	2.1	1.2-3.7	0.01
Frequent hospital visits	100	55.6%	1.8	1.0-3.2	0.048
Reduced mobility	85	47.2%	1.5	0.9-2.5	0.12
High medication use	120	66.7%	2.3	1.3-4.0	0.003

and heart disease, which also showed a relatively high prevalence and an increased likelihood of co-occurrence (OR=1.8). However, combinations involving arthritis (diabetes and arthritis, arthritis and heart disease) were less common and did not show statistically significant associations, suggesting that while common, arthritis might not synergistically exacerbate the burden of multimorbidity as strongly as the other conditions.

Table 3 focuses on the impact of multimorbidity on patient-reported health outcomes, emphasizing the profound effects on the quality of life and healthcare utilization. A significant proportion of the patients reported poor self-rated health (61.1%), with a high odds ratio (OR=2.1), indicating a strong association with multimorbidity. Frequent hospital visits were reported by 55.6% of the patients, showing a moderate association with multimorbidity (OR=1.8). Reduced mobility and high medication use were also notably prevalent, affecting 47.2% and 66.7% of the patients, respectively, with corresponding ORs indicating a significant burden. These outcomes highlight the extensive impact of having multiple chronic conditions on daily functioning and healthcare needs.

The findings in (Table 1) particularly the increased odds of multimorbidity in older age groups (75-84 and 85+ years), align with existing studies that indicate an escalation in chronic conditions as age advances Mendoza-Quispe[5]. The significant associations of conditions like hypertension and heart disease with higher odds ratios underscore their prevalence in the elderly, consistent with literature that identifies cardiovascular diseases as common among aging populations Chan[6]. Notably, the impact of gender on multimorbidity was not significant, which varies with some studies suggesting that females are more prone to multimorbidity due to longer life expectancy and different social determinants of health Tent[7].

The clusters identified in (Table 2) particularly hypertension with diabetes and heart disease, reflect common combinations found in other studies. The high odds ratio for hypertension and diabetes is consistent with research showing these conditions often coexist due to shared risk factors such as obesity and lifestyle Seghers[8]. Although the diabetes and arthritis cluster did not show a significant odds ratio, it is clinically relevant and warrants further investigation due to the potential for these conditions to impair mobility and quality of life Stratton[9].

(Table 3)reveals significant impacts of multimorbidity on health outcomes such as poor self-rated health, frequent hospital visits and high medication use. These findings are in line with previous research indicating that multimorbidity leads to worse health perceptions, increased healthcare utilization, and greater dependence on medications Salari[10]. The association between multimorbidity and reduced mobility, while not statistically significant, is supported by literature as a critical concern affecting life quality and independence among the elderly Banstola[11].

CONCLUSION

Our cross-sectional analysis of 180 elderly patients attending a geriatric clinic clearly delineates the substantial burden of multimorbidity within this population. The findings confirm that multimorbidity increases with age, with those aged 85 and above showing significantly higher odds of experiencing multiple chronic conditions compared to younger cohorts. This study's notable associations between multimorbidity and prevalent chronic diseases such as hypertension, diabetes and heart disease underscore

the intricate interplay of these conditions, which escalates with advancing age.

The identification of common clusters of coexisting conditions, particularly hypertension with diabetes and heart disease, highlights critical combinations that contribute to the complexity of managing health in elderly patients. These clusters not only complicate clinical care but also significantly impact the quality of life and independence of the affected individuals.

Patient-reported outcomes further illuminated the real-world implications of multimorbidity, revealing a significant association with poor self-rated health, increased frequency of hospital visits, and high medication use. These factors collectively suggest a decreased quality of life and increased healthcare demands, emphasizing the need for healthcare systems to adapt to the complexities presented by multimorbid patients.

In light of these findings, it is imperative that healthcare providers and policymakers focus on integrated care strategies and comprehensive geriatric assessments to manage and mitigate the effects of multimorbidity. Future research should continue to explore the dynamics of chronic condition clusters and their impact on health outcomes to better tailor interventions that can enhance care delivery and improve life quality for the elderly. This study contributes valuable insights into the patterns of multimorbidity and serves as a call to action for more nuanced and patient-centered healthcare approaches in geriatric medicine.

Limitations of Study

- **Cross-Sectional Design:** As a cross-sectional study, it captures data at a single point in time, which restricts our ability to infer causality or track the progression of multimorbidity over time. Longitudinal studies would be better suited to understanding the dynamics of multimorbidity development and progression.
- **Sample Size and Scope:** The study was conducted with a relatively small sample size of 180 patients from a single geriatric clinic. This may limit the generalizability of the findings to other populations or settings. Larger studies encompassing multiple sites would provide more comprehensive data and enhance the external validity of the results.
- **Selection Bias:** The patients included in the study were those attending a specific clinic, which might introduce selection bias. Patients who attend a geriatric clinic might have different health profiles or socioeconomic backgrounds compared to the general elderly population or those who do not seek regular medical advice.
- **Dependence on Self-Reported Data:** A significant portion of the data, particularly concerning health outcomes and patient histories, was collected through self-reports, which can be subject to recall bias or inaccuracies. Objective health data and medical records could complement self-reported data for a more accurate assessment.
- **Lack of Detailed Behavioral and Socioeconomic Factors:** The study did not extensively account for potential confounders such as lifestyle factors, diet, socioeconomic status and educational background, which can significantly influence health outcomes in elderly populations.
- **Statistical Power:** Given the number of comparisons and the diverse conditions studied, there is a possibility of type II errors, where true associations may not have been detected. Future studies could benefit from a larger sample size to increase the statistical power and detect smaller effects.

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