



# Association between Multimorbidity and Quality of Life among Adults Attending Outpatient Clinics in the Ashanti Region: A Cross-Sectional Study

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**How to cite this paper:** Acquaye, J., Brenyah, J.K., Brobbey-Kyei, I.A. and Brobbey-Kyei, E. (2024) Association between Multimorbidity and Quality of Life among Adults Attending Outpatient Clinics in the Ashanti Region: A Cross-Sectional Study. *Open Access Library Journal*, 11: e11532. <https://doi.org/10.4236/oalib.1111532>

**Received:** April 4, 2024

**Accepted:** May 13, 2024

**Published:** May 16, 2024

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## Abstract

Multimorbidity, the coexistence of two or more chronic conditions in an individual, is increasingly prevalent worldwide, posing significant challenges for healthcare systems and patient well-being. This cross-sectional study aims to investigate the association between multimorbidity and quality of life (QoL) among adults attending outpatient clinics in health facilities within the Ashanti Region of Ghana. **Method:** A sample of  $n = 400$  participants were recruited using convenience sampling. Data were collected through structured interviews using the Short Form Health Survey (SF-36) to assess QoL and a checklist to ascertain multimorbidity status. Statistical analyses including correlation and regression analyses were performed to explore the relationship between multimorbidity and QoL, adjusting for potential confounders. **Results:** The findings reveal that there is no statistically significant association between multi-morbidity and the perceived changes in current health compared to one year ago ( $X^2 = 4.814$ ,  $p = 0.307$ ), with 11.76% of those with multi-morbidity reporting better health, and 11.14% of non-multi-morbid individuals reporting the same. Similarly, role function, general health, and energy and fatigue did not demonstrate statistically significant associations with multi-morbidity. However, the emotional problem variable approached significance ( $X^2 = 9.299$ ,  $p = 0.054^*$ ), with 35.29% of individuals with multi-morbidity experiencing emotional issues compared to 25.90% among non-multi-morbid individuals. Notably, health change exhibited a significant

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association ( $X^2 = 4.812$ ,  $p = 0.028$ ), indicating that 73.53% of those with multi-morbidity reported a worsening health change, compared to 59.34% of non-multi-morbid individuals. **Conclusion:** This study sheds light on the nuanced relationship between multi-morbidity and various dimensions of perceived health. While no significant associations were found between multi-morbidity and certain aspects such as role function, general health perception, and energy/fatigue levels, notable findings emerged regarding emotional well-being and health changes over time.

## Subject Areas

Public Health

## Keywords

Multimorbidity, Quality of Life, Outpatient Clinics, Ashanti Region, Ghana, SF-36, Cross-Sectional Study

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## 1. Introduction

The evolving demographics and social dynamics accompanying aging populations are driving swift epidemiological shifts, notably marked by the surge of chronic non-communicable diseases (NCDs) and multimorbidity [1]. Multimorbidity denotes the coexistence of two or more long-term conditions, whether related or unrelated, within an individual [2]. Despite methodological variations in defining and assessing multimorbidity [3], its global burden is demonstrably increasing [4] [5], extending to low- and middle-income countries (LMICs) [6] [7], and specifically, Ghana [8] [9]. By 2035, multimorbidity prevalence is anticipated to double, with a forecast that the majority of individuals aged over 65 will contend with four or more chronic ailments [10] [11]. These people may either be within the outpatients' category or maybe on admission to a healthcare facility. This study therefore seeks to assess the association between multimorbidity and quality of life among adults attending outpatient clinics in the Ashanti Region in Ghana.

The emergence of multimorbidity within the population has multiple contributors. Several factors, including advanced age [4] [12] [13] [14] [15], socioeconomic disparities [15], obesity [16], gender (female) [17] [18], sedentary lifestyle [19], tobacco and alcohol use [20] [21], and psychosocial elements like limited social networks and external locus of control [22] [23], are commonly associated with multimorbidity in global literature. Multimorbidity profoundly impacts various facets of patients' lives, manifesting in diminished quality of life (QoL), heightened disability, functional deterioration, and escalated healthcare expenditures [19] [24] [25]. Its adverse effect on QoL is particularly pronounced among middle-aged and elderly populations, females, and those with comorbid mental health conditions [17].

The experience of multimorbidity transcends the sum of individual chronic conditions [26], with specific disease clusters exerting distinct effects on physical and psychological well-being [27]. Consequently, individuals with multimorbidity consistently report lower health-related QoL compared to those without [28]. The enduring presence of multimorbidity poses substantial challenges for healthcare systems [29], given that individuals with diverse NCD combinations harbor varying needs and priorities [30]. Regrettably, insufficient attention is accorded to the preferences of individuals managing multiple health issues, especially among outpatients whose state of health conditions are not usually deemed critical [31] [32]. Furthermore, prevailing care models and guidelines, predominantly rooted in single disease paradigms, often overlook the holistic needs and circumstances of complex care patients [33] [34]. Consequently, individuals grappling with multiple conditions frequently interact with disparate healthcare professionals, resulting in fragmented, uncoordinated, and compartmentalized patient management [2] [35]. The advent of infections such as COVID-19 exacerbates this complexity, exacerbating the burden on healthcare systems and worsening outcomes for those with pre-existing chronic diseases and multimorbidity [36] [37].

While numerous studies have explored the nexus between QoL and multimorbidity [38] [39], the majority have been conducted in high-income countries, employing disparate QoL measurement tools [40]. Notably, the Short Form Health Survey (SF-12) emerges as an efficient algorithm for reproducing the SF-36 tool to gauge health-related QoL [41].

However, methodological disparities persist, extending to data analysis techniques [42]. Ordinal regression models emerge as a more sensitive and comprehensive approach, superior to conventional methods in analyzing ordered outcomes like QoL [43] [44].

Yet, challenges remain, as data often fail to meet the assumptions of proportional odds models [43]. In such instances, a more pragmatic approach, such as the partial proportional odds (PPO) model, proves effective, offering insights into unobserved heterogeneity and identifying correlates of negative health outcomes, including impaired QoL [42] [44] [45].

Addressing the QoL concerns of individuals with multimorbidity represents a pivotal challenge for contemporary healthcare and social systems [25]. Consequently, there's a growing call to tailor multimorbidity management to account for its impact on individuals' QoL and their unique priorities [46] [47]. However, understanding the impact of multimorbidity on health-related QoL in Ghana remains scant, necessitating comprehensive assessments to inform targeted interventions.

## **2. Methodology**

### **2.1. Study Design**

This cross-sectional study design employed a quantitative research approach to in-

investigate the association between multimorbidity and QoL among outpatient adults.

## 2.2. Study Setting and Participants

The study was conducted at Komfo Anokye Teaching Hospital (the second largest hospital in Ghana) from April 2023 to July 2024 involving outpatient adults attending outpatient clinics. The facility serves as a referral centre notably in southern and northern Ghana.

## 2.3. Sample Size Calculation

The sample size was calculated using the formula for estimating a single proportion, with a 95% confidence level and a margin of error of 5%. Considering an anticipated prevalence of multimorbidity of 50% and assuming a non-response rate of 10%, the estimated sample size was  $n = 400$ .

## 2.3. Data Collection

Data was collected with structured questionnaire by trained research assistants. The Short Form Health Survey (SF-36) was also used to assess QoL, while the questionnaire contained a checklist that was used to ascertain the presence of multimorbidity. Information on sociodemographic characteristics, medical history, and healthcare utilization were also solicited.

## 2.4. Data Analysis

Descriptive statistics was used to summarize the characteristics of the study population. The association between multimorbidity and QoL was examined using correlation and regression analyses, adjusting for potential confounders such as age, sex, socioeconomic status, and comorbidity burden.

## 2.5. Ethical Considerations

Ethical approval was obtained from the Komfo Anokye Teaching Hospital Institutional Review Board or ethics committees. Written informed consents were obtained from all study participants, and measures were taken to ensure confidentiality and privacy throughout the study.

## 3. Results

**Table 1** shows the sociodemographic characteristics of respondents is presented in **Table 1**. With a median age of 43 years, the respondents span a wide age range, from below 20 years to those aged 60 years and above. Notably, individuals aged 60 years and above constitute the largest group, making up 27.50% of the sample. The study maintains a balanced gender representation, with females comprising 52.00% and males 48.00% of the respondents. Occupationally, the unemployed form the largest group at 37.75%, followed by traders, students, and farmers. Educational diversity is evident, with categories ranging from no formal education to tertiary education, allowing for a nuanced exploration of multi-

morbidity across educational strata. The residence type exhibits a mix of urban and rural settings, with 43.00% per urban, 14.25% urban, and 42.75% rural. Ethnically, the majority of respondents identify as Akan (91.00%), while smaller proportions represent Ga, Northerner, and Voltarian ethnicities. This sociodemographic framework provides a solid foundation for analyzing multi-morbidity trends, ensuring a comprehensive and inclusive examination of health patterns among diverse demographic segments in the Ashanti Region.

**Table 1.** Distribution of respondents' sociodemographic information.

Variable	Frequency (n = 400)	Percentage (%)
<b>Age</b>		
median age = 43years		
25% quartile = 25 years		
75% quartile = 61years		
<b>Age groups</b>		
Below 20 years	54	13.50
20 - 29 years	74	18.50
30 - 39 years	60	15.00
40 - 49 years	44	11.00
50 - 59 years	58	14.50
60 years and above	110	27.50
<b>Gender</b>		
Female	206	52.00
Male	192	48.00
<b>Occupation</b>		
Unemployed	151	37.75
Farmer	40	10.00
Trader	87	21.75
Student	43	10.75
Artisan	19	4.75
Civil Servant	32	8.00
Retired	28	7.00
<b>Educational level</b>		
No formal education	106	26.50
Primary/JSS	127	31.75
Secondary	89	22.25
Tertiary	78	19.50
<b>Residence type</b>		
Per Urban	172	43.00
Urban	57	14.25
Rural	171	42.75
<b>Ethnicity</b>		
Akan	364	91.00
Ga	4	1.00
Northerner	25	6.25
Voltarian	7	1.75

**Table 2** shows the exploration of the relationship between multi-morbidity and the quality of life (QOL) among adults attending outpatient clinics in the Ashanti Region involves a detailed analysis of a 400-respondent sample. The study considers variables such as current health compared to one year ago, role function, general health, energy and fatigue, emotional problems, health change, pain, and social activity. The findings reveal that there is no statistically significant association between multi-morbidity and the perceived changes in current health compared to one year ago ( $X^2 = 4.814$ ,  $p = 0.307$ ), with 11.76% of those with multi-morbidity reporting better health, and 11.14% of non-multi-morbid individuals reporting the same. Similarly, role function, general health, and energy and fatigue did not demonstrate statistically significant associations with multi-morbidity. However, the emotional problem variable approached significance ( $X^2 = 9.299$ ,  $p = 0.054^*$ ), with 35.29% of individuals with multi-morbidity experiencing emotional issues compared to 25.90% among non-multi-morbid individuals. Notably, health change exhibited a significant association ( $X^2 = 4.812$ ,  $p = 0.028$ ), indicating that 73.53% of those with multi-morbidity reported a worsening health change, compared to 59.34% of non-multi-morbid individuals. The variables of pain and social activity affected did not show significant associations with multi-morbidity. This in-depth analysis of the relationship between multi-morbidity and various dimensions of QOL emphasizes the need to address both physical health and emotional well-being in managing individuals with multiple health conditions.

**Table 2.** Association between multi-morbidity and quality of life among adults attending the outpatient clinic.

Variable	Frequency (n = 400) (%)		X <sup>2</sup>	P-value
	Morbidity			
	Multi-morbidity	Non-multi morbidity		
<b>Current health compared to 1 year</b>				
Better	8 (11.76)	37 (11.14)	4.814	0.307
Good	10 (14.71)	80 (24.10)		
Equal	17 (25.00)	85 (25.60)		
Worse	12 (17.65)	61 (18.60)		
Much worse	21 (30.88)	69 (20.78)		
<b>Role function</b>				
Limited	34 (50.00)	158 (47.59)	0.131	0.717
Not limited	34 (50.00)	174 (52.41)		
<b>General Health</b>				
Poor health	23 (33.82)	129 (38.86)	0.606	0.436
Good Health	45 (66.18)	203 (61.14)		
<b>Energy and Fatigue</b>				
Have challenges during work	33 (48.53)	151 (45.48)	0.211	0.646
Have no challenge during work	35 (51.47)	181 (54.52)		

## Continued

<b>Emotional Problem</b>				
Moderately severe	12 (34.00)	86 (37.90)	9.299	<b>0.054*</b>
Not at all slightly	24 (52.00)	86 (37.90)		
Very severe	7 (14.00)	62 (24.20)		
<b>Health Change</b>				
Get worse	50 (73.53)	197 (59.34)	4.812	0.028
Excellent	18 (26.47)	135 (40.66)		
<b>Pain</b>				
Pain affects work	43 (63.24)	195 (58.73)	0.474	0.491
Pain does not affect work	25 (36.76)	137 (41.27)		
<b>Social activity affected</b>				
Always	27 (39.71)	126 (37.95)	0.255	0.968
Most of the time	4 (5.88)	16 (4.82)		
Sometime	3 (4.41)	16 (4.82)		
None of the time	34 (50.00)	174 (52.41)		

## 5. Discussion

The exploration of the relationship between multi-morbidity and the quality of life (QOL) among adults attending outpatient clinics in the Ashanti Region provides valuable insights into the complex interplay between health conditions and overall well-being. The detailed analysis of a 400-responder sample offers nuanced findings across multiple dimensions of QOL, shedding light on both similarities and disparities between individuals with multi-morbidity and those without.

Firstly, the study reveals that there is no statistically significant association between multi-morbidity and perceived changes in current health compared to one year ago suggests that having multiple health conditions does not necessarily dictate a decline in self-reported health over time. This finding challenges assumptions about the inevitability of health deterioration in the context of multi-morbidity and underscores the importance of individual variations in health outcomes. However, earlier research has highlighted the difficulties associated with managing multimorbidity [8]. Evidence suggests that prevalent risk factors driving the escalating burden of multimorbidity include advanced age, obesity, sedentary lifestyle, socioeconomic disadvantage, and the consumption of tobacco and alcohol [21]. These findings imply that a significant proportion of the risk factors for multimorbidity are amenable to modification [6].

Similarly, the absence of significant associations between multi-morbidity and variables such as role function, general health, and energy and fatigue implies that the impact of multiple health conditions on these aspects of QOL may be more nuanced or influenced by other factors beyond the presence of co-morbidities. Numerous studies have indicated that multimorbidity significantly diminishes quality of life (QoL) [38] [39] [43]. While direct comparisons with prior research

may be challenging due to methodological differences, the authors note a consistent finding: individuals grappling with multimorbidity exhibit markedly lower QoL compared to those managing a single chronic condition. These results highlight the complexity of assessing QOL in individuals with multi-morbidity and the need for comprehensive approaches that consider diverse factors contributing to well-being.

However, the study's identification of a near-significant association between multi-morbidity and emotional problems suggests that individuals with multiple health conditions may be more vulnerable to experiencing psychological distress compared to their counterparts with fewer health issues. This finding underscores the importance of addressing mental health concerns alongside physical health management in the care of individuals with multi-morbidity.

Furthermore, the significant association between multi-morbidity and reported worsening health change underscores the substantial impact that co-morbidities can have on individuals' perceived health trajectories. This finding underscores the urgency of proactive interventions aimed at mitigating the progression of health decline in individuals with multi-morbidity and promoting strategies for maintaining or improving overall well-being.

Although variables such as pain and social activity affected did not demonstrate significant associations with multi-morbidity in this study, their inclusion in the analysis provides valuable insights into additional dimensions of QOL that may be influenced by the presence of multiple health conditions.

## **6. Conclusion**

The study highlights the complexity of the relationship between multi-morbidity and QOL, emphasizing the need for tailored interventions that address both physical and psychological aspects of health in individuals with multiple health conditions. Having multiple health conditions does not inevitably lead to a decline in self-reported health over time, highlighting the importance of individual variations in health outcomes. The impact of multi-morbidity on different aspects of QOL may vary, emphasizing the need for comprehensive approaches to well-being assessment. This highlights the importance of addressing mental health concerns alongside physical health management in the care of individuals with multi-morbidity.

## **7. Recommendation**

This study's inclusive analysis of the relationship between multi-morbidity and various dimensions of QOL highlights the need for holistic approaches to healthcare that address both physical and emotional aspects of well-being in individuals with multiple health conditions. By recognizing the diverse factors contributing to QOL outcomes in this population, healthcare providers can tailor interventions to meet the complex needs of individuals with multi-morbidity and improve their overall quality of life.



## Acknowledgments

The authors thank the management, research unit and outpatients department of Komfo Anokye Teaching Hospital for their contribution accepting the conduct of the study. The authors are also grateful to the outpatients (study participants) who were sampled for the study.

## Funding

This study was funded by the authors.

## Availability of Data and Materials

The data supporting this study's findings are available from the corresponding author upon request.

## Authors' Contributions

**JA** led the background development, fieldwork, and analysis of the paper. **JKB** was involved in analyses and report writing. All authors were involved in editing and proofreading the manuscript. **IBK** was the local collaborator at the study site. **EBK** final editing and typesetting

## Ethics Approval and Consent to Participate

The study was approved by the Research and Development Unit of Komfo Anokye Teaching Hospital, Kumasi-Ghana. Respondents were selected based on their consent. Again, all participants were provided with written informed consent to participate. The study followed all the ethical considerations about respondents' selection, interview process, confidentiality, and data analysis protocols.

## Consent for Publication

All Authors' have fully consented for this paper to be published.

## Conflicts of Interest

The authors declare that they have no conflict of interest.

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### List of Abbreviation

QoL	Quality of Life
LMICs	Low- and middle-income countries
SF	Short form
PPO	Partial Proportional Odds