

Association Between Anxiety, Memory Loss, and Quality of Life Among Adults Aged 40–55 Years

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ABSTRACT

Background: Anxiety is a common psychological condition that may adversely affect cognitive functioning and perceived well-being, particularly in adults experiencing increasing psychosocial and functional demands. Memory complaints and reduced quality of life are frequently reported in individuals with emotional distress, yet their combined relationship in middle adulthood remains insufficiently explored. **Objective:** To determine the association of anxiety with memory loss and to examine its impact on quality of life among adults aged 40 to 55 years. **Methods:** This cross-sectional study included 154 participants recruited through convenience sampling from community, educational, and workplace settings in Punjab, Pakistan. Anxiety was assessed using the Generalized Anxiety Disorder-7 questionnaire, memory loss using the Multifactorial Memory Questionnaire, and quality of life using the Older People's Quality of Life Questionnaire-35. Data were analyzed in SPSS version 27 using frequency distributions and chi-square testing. **Results:** Of the 154 participants, 41.6% were aged 40-45 years, 37.7% were aged 46-50 years, and 20.8% were aged 51-55 years. Memory-loss experience was reported by 33.8% of participants. Anxiety showed a significant association with quality of life in the overall sample ($\chi^2=46.166$, $df=12$, $p<0.001$) and with memory loss ($\chi^2=39.098$, $df=15$, $p<0.001$). Age-stratified analysis showed significant anxiety-quality-of-life associations in the 40-45-year group ($p=0.048$) and 46-50-year group ($p=0.004$), but not in the 51-55-year group ($p=0.107$). **Conclusion:** Higher anxiety was associated with poorer quality of life and greater memory-loss burden in adults aged 40 to 55 years, highlighting the importance of early psychosocial screening in middle adulthood. **Keywords:** Anxiety; Memory loss; Quality of life; Middle adulthood; Cognitive complaints; GAD-7.

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INTRODUCTION

Anxiety is one of the most prevalent psychological conditions affecting adult populations and is increasingly recognized as a multidimensional problem with emotional, cognitive, behavioral, and functional consequences. Beyond excessive worry, restlessness, and autonomic symptoms, anxiety has been linked with impaired concentration, reduced attentional control, subjective forgetfulness, and poorer day-to-day functioning, all of which may collectively reduce an individual's perceived quality of life (1,2). Contemporary literature also suggests that anxiety and depressive symptoms may interact with cognitive processes in a reciprocal manner, such that emotional distress can worsen cognitive efficiency while perceived cognitive decline can itself intensify psychological burden (3). This interaction is particularly important in adults approaching older age, because subtle cognitive complaints emerging in midlife may influence occupational performance, social engagement, confidence, and independence before the onset of clinically overt neurocognitive disease (4-6).

Memory-related complaints in adulthood do not always indicate frank neurodegenerative pathology, yet they are clinically meaningful because they often shape health-seeking behavior, self-perception, and interpersonal functioning. Previous studies have shown that concerns about memory are common among aging populations and may be influenced not only by biological aging but also by mood state, stress, education, and social context (7-9). At the same time, quality of life is now understood as a broad,

multidomain construct that encompasses physical health, emotional well-being, autonomy, social relationships, environment, and satisfaction with daily living, making it a particularly useful outcome when evaluating the broader effects of anxiety and subjective memory impairment (10-14). Evidence from adult and aging populations indicates that psychological distress is associated with poorer quality of life profiles, and that this burden may be amplified in those already experiencing cognitive concerns or psychosocial strain (15,16).

Recent work has strengthened the argument that emotional symptoms are not merely coexisting complaints but may play a mechanistic role in later cognitive dysfunction. Studies in older adults have reported that anxious and depressed mood may predict future executive dysfunction, while poor sleep, social stressors, and reduced social support may further mediate associations between anxiety, subjective cognitive decline, and diminished well-being (17-22). Cross-sectional evidence has also shown that emotional symptoms in later life are associated with impaired cognition and reduced psychosocial functioning, highlighting the need to identify modifiable psychological factors before more severe decline occurs (23). However, despite growing recognition of these interrelationships, relatively fewer studies have examined anxiety, memory complaints, and quality of life together within the 40-55-year age range, a period better characterized as middle adulthood than late adulthood. This age band is important because it often represents a transitional stage during which occupational responsibilities, family demands, early health changes, and psychosocial stressors may converge, potentially influencing both anxiety burden and self-perceived cognitive health.

The available literature therefore supports the relevance of examining these variables together, but a contextual gap remains regarding how anxiety relates simultaneously to memory complaints and quality of life in community-based adults in this age bracket. A clearer understanding of this association may help identify individuals at higher psychosocial risk and support earlier screening or targeted intervention strategies. Accordingly, the present study aimed to determine the association between anxiety and memory loss and to examine their impact on quality of life among adults aged 40 to 55 years. It was hypothesized that higher anxiety levels would be associated with greater memory complaints and poorer quality of life.

MATERIALS AND METHODS

This cross-sectional observational study was conducted to examine the association between anxiety, subjective memory complaints, and quality of life among adults aged 40 to 55 years. The study was carried out in Punjab, Pakistan, and data were collected from participants approached in different institutional and community settings, including private and government educational environments and workplace locations. The study population consisted of men and women within the predefined age range who were willing to participate and able to complete the study questionnaire independently after providing informed consent. The target age group was selected to capture adults in middle adulthood, a period in which psychological stress, emerging cognitive concerns, and functional changes may begin to influence overall well-being before the more advanced phases of aging. The final analyzed sample comprised 154 participants, as reflected in the frequency and inferential analyses reported in the results section

Participants were recruited using a non-probability convenience sampling strategy. Individuals were approached in person at the selected sites, informed about the purpose of the study, and invited to participate voluntarily. Written informed consent was obtained before data collection. Eligibility was restricted to adults aged 40 to 55 years from the accessible community who were able to understand and respond to the questionnaire. Individuals with known severe neurological or musculoskeletal conditions that could substantially impair cognition or questionnaire completion were not included in the analytic target population, consistent with the study objective of examining anxiety, memory complaints, and quality of life in otherwise community-dwelling adults rather than in patients with established major

neurological disease. To reduce information bias, all participants were provided the same instructions and completed the same questionnaire set in a standardized sequence.

Data were collected manually through structured questionnaires accompanied by a demographic information form. Baseline variables included age and other participant characteristics recorded during the subjective assessment phase. Age was categorized into three groups: 40-45 years, 46-50 years, and 51-55 years. The primary exposure variable was anxiety level, assessed using the Generalized Anxiety Disorder-7 questionnaire as specified in the manuscript dataset. The primary outcome variables were subjective memory status, assessed using the Multifactorial Memory Questionnaire, and quality of life, assessed using the Older People's Quality of Life Questionnaire-35. In addition, participants were asked whether they had experienced memory loss before, generating a dichotomous descriptive variable that was analyzed separately in the frequency tables. For the purpose of statistical analysis, categorical representations derived from questionnaire scoring were used to examine associations between anxiety and quality of life as well as between anxiety and memory loss. The operational intent of the study was to evaluate whether increasing anxiety severity corresponded to less favorable memory and quality-of-life categories.

Several steps were incorporated to improve data consistency and reduce the effect of avoidable bias. Uniform eligibility screening was used at the point of recruitment, the same questionnaire battery was administered to all participants, and responses were collected directly rather than through proxy reporting. Because the study used a cross-sectional design and convenience sampling, no causal inference was intended. Potential confounding by age was partly addressed analytically through age-stratified chi-square testing, which allowed assessment of the relationship between anxiety and quality of life within each age subgroup. Descriptive analysis was first performed to summarize age distribution and prior memory-loss experience. Categorical variables were reported as frequencies and percentages. Inferential analysis was then performed to examine associations between categorical variables using Pearson chi-square tests, with likelihood ratio and linear-by-linear association statistics also reported where generated by the software. The main analyses evaluated the relationship between anxiety and quality of life, the relationship between anxiety and memory loss, and the age-stratified relationship between anxiety and quality of life

Statistical analysis was conducted using SPSS version 27. All entered questionnaires were reviewed for completeness before coding and analysis in order to maintain data integrity. Only valid cases were included in the reported inferential models, yielding 154 analyzable observations. A two-sided p-value of less than 0.05 was considered statistically significant. Where chi-square outputs showed sparse expected cell counts, results were interpreted cautiously because low expected frequencies can weaken the robustness of asymptotic chi-square estimates. To support reproducibility, the same coding framework, category definitions, and software-generated procedures were applied consistently across all analyses. Ethical conduct was maintained throughout the study by obtaining voluntary informed consent, preserving participant confidentiality during data handling, and restricting data use to research purposes only.

RESULTS

A total of 154 participants were included in the analysis. The largest age group was 40-45 years, comprising 64 participants (41.6%), followed by 46-50 years with 58 participants (37.7%), and 51-55 years with 32 participants (20.8%). Thus, nearly four-fifths of the sample fell between 40 and 50 years of age, indicating that the study population was weighted toward the younger segment of the selected age range

With regard to memory-loss experience, 52 participants (33.8%) reported that they had experienced memory loss before, whereas 102 participants (66.2%) reported no such experience. This indicates that subjective memory complaints were present in approximately one-third of the study sample, which supports the clinical relevance of exploring their association with anxiety and quality of life

Age-stratified analysis showed that the relationship between anxiety and quality of life was statistically significant in participants aged 40-45 years and 46-50 years, but not in those aged 51-55 years. In the 40-45-year group, the Pearson chi-square value was 17.065 with 9 degrees of freedom and a p-value of 0.048. In the 46-50-year group, the association was stronger, with a chi-square value of 29.151, 12 degrees of freedom, and a p-value of 0.004. However, in the 51-55-year group, the association was not statistically significant, with a chi-square value of 14.453, 9 degrees of freedom, and a p-value of 0.107. These findings suggest that the association between anxiety and quality of life was more evident in the younger and middle segments of the sampled age range than in the oldest subgroup included in this study. However, these findings should be interpreted cautiously because the chi-square assumptions were weakened by sparse cell counts in all age-specific analyses

In the overall sample, anxiety was significantly associated with quality of life. The Pearson chi-square value was 46.166 with 12 degrees of freedom and a p-value of less than 0.001. This was supported by the likelihood ratio test, which yielded a value of 30.470 with a p-value of 0.002. In addition, the linear-by-linear association was 10.292 with a p-value of 0.001, indicating a significant ordinal trend across categories. Collectively, these results suggest that higher anxiety levels were associated with poorer quality-of-life categories in the study population

Table 1. Age Distribution of Participants

Age Group (Years)	Frequency, n	Percentage (%)
40-45	64	41.6
46-50	58	37.7
51-55	32	20.8
Total	154	100.0

Table 2. Previous Experience of Memory Loss

Response	Frequency, n	Percentage (%)
Yes	52	33.8
No	102	66.2
Total	154	100.0

Table 3. Age-Stratified Association Between Anxiety and Quality of Life

Age Group (Years)	Pearson Chi-Square	df	p-value	Interpretation
40-45	17.065	9	0.048	Significant
46-50	29.151	12	0.004	Significant
51-55	14.453	9	0.107	Not significant

Table 4. Association Between Anxiety and Quality of Life

Statistical Test	Value	df	p-value	Interpretation
Pearson Chi-Square	46.166	12	<0.001	Significant
Likelihood Ratio	30.470	12	0.002	Significant
Linear-by-Linear Association	10.292	1	0.001	Significant trend

Table 5. Association Between Anxiety and Memory Loss

Statistical Test	Value	df	p-value	Interpretation
Pearson Chi-Square	39.098	15	<0.001	Significant
Likelihood Ratio	24.291	15	0.060	Not significant
Linear-by-Linear Association	13.418	1	<0.001	Significant trend

A similarly significant association was observed between anxiety and memory loss. The Pearson chi-square value was 39.098 with 15 degrees of freedom and a p-value of less than 0.001, while the linear-by-linear association was 13.418 with a p-value of less than 0.001. Although the likelihood ratio value was 24.291 with a p-value of 0.060, the overall pattern still supports a statistically meaningful relationship between increasing anxiety level and worsening memory-loss category. As with the other chi-square models, this result should be interpreted with caution because several expected cell counts were below the recommended threshold, which may reduce the stability of asymptotic testing

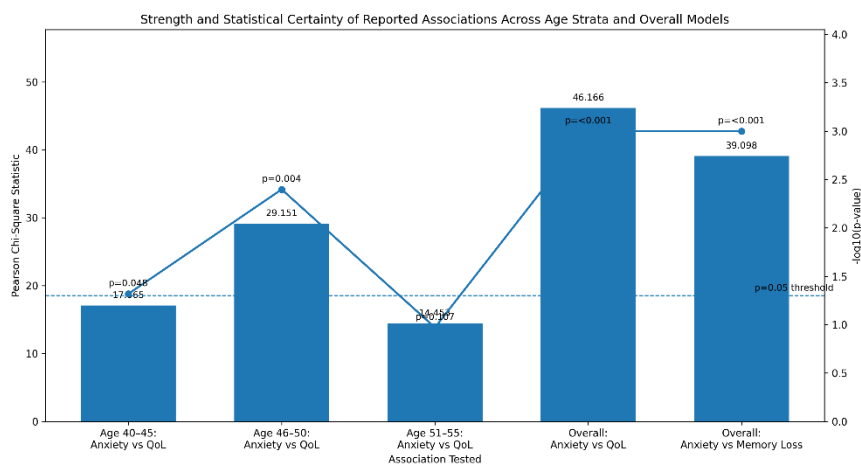


Figure 1 Associations Between Anxiety, Quality of Life, and Memory Loss Across Age Strata and the Overall Sample

The figure demonstrates that the strongest observed association in the dataset was between anxiety and quality of life in the overall sample, with a Pearson chi-square value of 46.166 and a p-value below 0.001, followed by the association between anxiety and memory loss, with a chi-square value of 39.098 and a p-value below 0.001. Among the age-stratified comparisons, the 46-50-year group showed the largest subgroup association between anxiety and quality of life at $\chi^2=29.151$ ($p=0.004$), whereas the 40-45-year group showed a weaker but still statistically significant association at $\chi^2=17.065$ ($p=0.048$). The 51-55-year group had the smallest age-specific association and did not reach statistical significance, with $\chi^2=14.453$ and $p=0.107$. This pattern indicates that the relationship of anxiety with reduced quality of life was more pronounced in the 40-50-year range than in the oldest subgroup studied, while the overall models yielded the clearest inferential signal in the dataset.

DISCUSSION

The present cross-sectional study examined the association between anxiety, memory loss, and quality of life among adults aged 40 to 55 years and found that anxiety was significantly associated with both poorer quality of life and greater memory-loss burden in the overall sample. The strongest overall finding was observed in the relationship between anxiety and quality of life, where the Pearson chi-square statistic reached 46.166 with a p-value below 0.001, while anxiety was also significantly associated with memory loss with a Pearson chi-square value of 39.098 and a p-value below 0.001. These findings support the view that anxiety in middle adulthood is not limited to emotional symptoms alone but may extend into cognitive complaints and broader impairment in daily well-being. This overall pattern is consistent with previous literature showing that anxious mood is linked with reduced cognitive efficiency, executive dysfunction, subjective cognitive decline, and poorer psychosocial functioning in adult and aging populations (17,18).

The observed association between anxiety and quality of life is clinically plausible and supported by prior evidence demonstrating that psychological distress can adversely affect emotional well-being, perceived health, social participation, and overall life satisfaction. Quality of life is a multidimensional construct, and anxiety may disrupt several of its domains simultaneously by reducing coping capacity, impairing sleep, heightening somatic vigilance, and worsening interpersonal strain. Earlier studies have likewise shown that mental health burden in adulthood is strongly associated with poorer quality-of-life outcomes, particularly when emotional symptoms coexist with functional or cognitive complaints (10,15,20,21). In the present study, the significant linear-by-linear association for anxiety and quality of life further suggests that deterioration in quality of life may increase across ordered anxiety categories, indicating a gradient rather than an isolated categorical difference. This trend strengthens the clinical interpretation that worsening anxiety is associated with progressively less favorable life-quality status.

The relationship between anxiety and memory loss also deserves careful attention. Participants with higher anxiety levels demonstrated significantly worse memory-related outcomes in the overall analysis, and the linear-by-linear association remained highly significant. This finding is concordant with previous reports that anxiety, depression, and related affective symptoms may contribute to subjective cognitive complaints, especially in populations experiencing sleep disruption, social strain, or early functional decline (18,22,23). Anxiety may interfere with attention, working memory, and encoding processes, leading individuals to experience or perceive more frequent forgetfulness even in the absence of overt neurodegenerative disease. From a clinical perspective, this suggests that memory complaints in middle adulthood should not be interpreted solely as markers of aging, as they may also reflect modifiable psychological burden. The present findings therefore support the importance of evaluating emotional status when adults report subjective memory difficulties.

Age-stratified analysis provided a more nuanced understanding of the anxiety-quality-of-life relationship. Significant associations were observed in the 40-45-year and 46-50-year groups, whereas the 51-55-year group did not show a statistically significant association. The strongest subgroup effect was identified among participants aged 46-50 years. This pattern may indicate that anxiety exerts a particularly visible influence on perceived life quality during the earlier part of middle adulthood, when occupational responsibilities, economic pressures, caregiving roles, and social demands may be especially intense. However, these age-specific differences should not be overinterpreted. The absence of statistical significance in the 51-55-year group does not necessarily indicate a true lack of association, because the smaller size of that subgroup and the sparse distribution of observations across contingency cells likely reduced statistical stability. Accordingly, the subgroup findings are better interpreted as suggestive rather than definitive.

A critical strength of the study lies in its attempt to analyze anxiety, memory complaints, and quality of life together within a community-based middle-adult sample, an area that remains relatively underexplored in comparison with studies focused exclusively on older adults or on single psychological outcomes. At the same time, several limitations must be acknowledged. First, the cross-sectional design does not permit causal inference, and it remains unclear whether anxiety contributed to memory complaints and reduced quality of life, whether poor quality of life heightened anxiety, or whether these relationships were bidirectional. Second, participants were recruited through convenience sampling from multiple community and workplace settings, which may have introduced selection bias and limited generalizability. Third, all measures were questionnaire-based, meaning that the findings reflect self-reported anxiety and subjective memory concerns rather than formal psychiatric or neurocognitive diagnosis. Fourth, the chi-square analyses were affected by a high proportion of expected cell counts below 5, which weakens the reliability of asymptotic significance testing and suggests that future studies should consider collapsing categories or using exact methods. Finally, potential confounding factors such as education, socioeconomic status, comorbidity burden, sleep quality, medication use, and depression were not modeled analytically, although earlier studies suggest that these variables may substantially influence both cognition and quality of life (17,20-23).

Despite these limitations, the findings have meaningful implications. They suggest that anxiety screening in middle adulthood may help identify individuals at risk of both poorer quality of life and increased memory complaints. They also indicate that cognitive concerns in adults aged 40 to 55 years should be approached within a broader psychosocial framework rather than being attributed exclusively to aging. Future research should use analytically stronger designs, including larger probability-based samples, multivariable models, and longitudinal follow-up, to clarify directionality and isolate the relative contribution of anxiety to subjective and objective cognitive decline. Studies that integrate psychological assessment with functional and neurocognitive testing would further strengthen the evidence base and improve the clinical interpretability of these associations.

CONCLUSION

This study found that anxiety was significantly associated with both poorer quality of life and greater memory-loss burden among adults aged 40 to 55 years, with the strongest overall relationship observed between anxiety and quality of life. Age-stratified findings suggested that this association was more apparent in the 40-50-year groups than in the 51-55-year group, although subgroup interpretation was limited by sparse cell counts and reduced statistical stability. Overall, the results support the view that anxiety in middle adulthood may have meaningful cognitive and functional consequences, highlighting the need for early psychosocial assessment and targeted intervention strategies aimed at reducing anxiety-related decline in perceived well-being and memory performance.

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