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RESEARCH ARTICLE

Comparison of cognitive function, depression, fall-related behaviors, and quality of life in elderly individuals according to age

Mehmet Salih Tan[1], Ebru Yildirim[2], Tugba Turk Kalkan[3], Busra Soylemez Karakus[4]

[1]Istanbul Medipol University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Istanbul, Turkiye
[2]Gazi University, Neuroscience and Neurotechnology Center of Excellence (NOROM), Ankara, Turkiye
[3]Trakya University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Edirne, Turkiye
[4]Bilkent University, Department of Neuroscience, Aysel Sabuncu Brain Research Center (ASBAM), Ankara, Turkiye

ABSTRACT

Objective: As the aging process progresses, individuals experience various changes in physical, cognitive, and psychological domains that can directly affect their quality of life. This study aimed to compare cognitive function, depressive symptoms, fall-related behaviors, and quality of life across different age groups and to examine their associations with quality of life in older adults.

Method: A total of 98 community-dwelling older adults aged 65 years and older, living independently in two districts of Istanbul, were included in the study. Participants were classified into three age groups: young-old (65–74 years), middle-old (75–84 years), and old-old (85 years and older). Assessments included the Standardized Mini-Mental State Examination (SMMSE), the Geriatric Depression Scale, the Falls Behavioral Scale for Older People, and the World Health Organization Quality of Life–Older Adults Module (WHOQOL-OLD).

Results: The findings revealed that the young-old group had significantly better cognitive function, lower levels of depression, and higher quality of life scores compared to the other groups. Moreover, significant positive correlations were found between quality of life and cognitive function, while significant negative correlations were observed between quality of life and depression level across all age groups ($p<0.05$). Individuals who exhibited safer fall-related behaviors also demonstrated higher levels of quality of life ($p<0.05$).

Conclusion: These results suggest that quality of life in older adults is closely associated with cognitive, emotional, and behavioral factors, highlighting the importance of age-specific, multidisciplinary assessment approaches.

Keywords: Aging, cognitive function, depression, fall-related behaviors, quality of life

INTRODUCTION

Aging is a natural process that begins at birth and continues throughout life, leading to changes in physiological functions, cognitive abilities, and psychological states (1). Since the 20th century, advances in healthcare and technology, the prevention of infectious diseases, and the expansion of public health services have significantly increased life expectancy (1). Accordingly, the number of

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Correspondence: Tugba Turk Kalkan, Trakya University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Edirne, Turkiye
E-mail: tugbaturkkalkan@trakya.edu.tr

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individuals aged 65 years and older has been steadily rising both globally and in Turkiye. According to the World Population Prospects 2022 report, the global population of individuals aged 65 years and over has reached 771 million (2). In Turkiye, the number of people in this age group was approximately 8 million in 2021 (2). Population projections indicate that the proportion of older adults will continue to increase in the coming years. Therefore, aging has become one of the foremost public health priorities today.

The World Health Organization (WHO) and the United Nations define the lower chronological threshold of old age as 65 years. Older adults are classified into subgroups as follows: "young-old" (65–74 years), "middle-old" (75–84 years), and "old-old" (85 years and older) (3). According to data from the Turkish Statistical Institute, 64.7% of the older adult population falls within the 65–74 age group, 27.3% within the 75–84 group, and 8% are 85 years or older (2). This classification allows for a more detailed understanding of the heterogeneous characteristics associated with the aging process.

Aging is accompanied by various functional changes in physical, cognitive, and psychological domains (4, 5). Age-related decline in cognitive functions such as attention, learning, memory, and language may lead to cognitive impairments in older individuals (6). Moreover, age-related multisystem deterioration, an increased burden of chronic diseases, dependency resulting from care needs, and the loss of a spouse or partner may lead to feelings of loneliness. When combined with social status or financial losses, these factors significantly increase the risk of depression (7). Additionally, degenerative changes in the musculoskeletal system may result in impaired postural control and balance problems, leading to a higher risk of falls—one of the most common and serious health concerns among older adults. Falls not only cause injury and disability but also lead to a fear of falling, which may reduce self-confidence, decrease physical activity levels, and promote social withdrawal. Avoidance of activity and increased social isolation—common coping behaviors among older adults attempting to prevent falls—further reduce physical capacity and exacerbate cognitive and psychological decline, thereby negatively impacting quality of life on multiple levels (8).

According to the WHO, quality of life in older adults is defined as an individual's subjective perception of their position in life within the context of their culture and value systems, and in relation to their goals, expectations, standards, and concerns (9). Quality of life is a multidimensional concept reflecting the integrated interaction of various factors, including physical health, psychological well-being, level of independence, social relationships, and personal beliefs (9). In older individuals, age-related decline in cognitive and physical functions, fear of falling, and depressive symptoms have been associated with reduced quality of life. Numerous studies have examined the impact of physical, cognitive, and psychological functions on quality of life (10-14).

However, studies in the literature that classify individuals aged 65 and older into age subgroups and simultaneously evaluate the interrelationships among cognitive functions, depression level, fall-related behaviors, and quality of life remain limited. Therefore, the primary aim of this study was to investigate the relationships among cognitive function, depressive symptoms, fall-related behaviors, and quality of life in older adults, and to compare these variables across different age groups. We hypothesized that (i) cognitive function, depressive symptoms, fall-related behaviors, and quality of life would differ across age groups; and (ii) cognitive status, depressive symptoms, and fall-related behaviors would be associated with quality of life in older adults.

METHODS

Study Design and Participants

This cross-sectional study was conducted between June 25 and September 1, 2025, in accordance with the Declaration of Helsinki. Ethical approval was obtained from the Non-Interventional Clinical Research Ethics Committee of Istanbul Medipol University (Approval No: E-10840098-202.3.02-3769; 19 June 2025). The sample consisted of 98 community-dwelling older adults aged 65 years and older residing in the Cekmekoy and Umraniye districts of Istanbul, Turkiye. Participants were recruited through local senior centers and neighborhood associations using convenience sampling. The sample size was determined using an a priori power analysis conducted with G*Power version 3.1. As the primary objective was to examine the associations among cognitive function, depressive symptoms, fall-related behaviors, and quality of life, the sample size estimation was based on a two-tailed bivariate correlation analysis. Assuming a medium effect size (ρ=0.30), a 95% confidence level (α=0.05), and 80% statistical power (1-β), the minimum required sample size was calculated as 84. The final sample (N=98) exceeded this requirement.

The inclusion criteria were: (a) being aged 65 years or older and (b) willingness to participate in the study. The exclusion criteria were: (a) having a clinically diagnosed severe orthopedic, neurological, psychiatric, or rheumatologic disorder that could substantially limit mobility or prevent participation in the assessments; (b) having an acute or unstable medical illness; and (c) having a diagnosed major neurocognitive disorder or cognitive impairment severe enough to hinder communication. Participants with diagnosed psychiatric disorders were excluded; however, individuals with subthreshold or undiagnosed depressive symptoms were not excluded and were assessed using the Geriatric Depression Scale. Participants with stable chronic systemic diseases and common age-related musculoskeletal conditions were not excluded. Eligibility screening was performed through structured interviews and a review of participants' medical history records. Eligibility regarding cognitive status was determined based on participants' ability to communicate effectively during the interview and consent process. All assessments were conducted through face-to-face interviews by a single physiotherapist. No medical diagnoses were made by the physiotherapist; when necessary, participants were asked to verify existing medical conditions with physician documentation.

Measurements

Sociodemographic Data Form

This form included information on age, gender (female/male), education level, and marital status. In addition to basic sociodemographic variables, data regarding living arrangement (living alone or with family), history of falls within the past 12 months, and the presence of at least one chronic disease were collected for descriptive purposes.

Standardized Mini-Mental State Examination (SMMSE)

This test is used to evaluate cognitive function and consists of five subdomains: orientation, short-term memory, attention, calculation, recall, and language skills. It is scored on a scale ranging from 0 to 30 points. The Turkish validity and reliability study was conducted by Gungen et al. (15).

Geriatric Depression Scale (GDS)

This 30-item scale, developed to assess depressive symptoms in older adults, consists of "Yes/No" responses. Each depressive response is scored as one point, and the total score reflects the severity of depression. The scale was developed by Yesavage et al. (16), and its Turkish validity and reliability study was conducted by Ertan and Eker (17). Scores of 14 and above indicate the presence of depression.

Falls Behavioral Scale for Older People (FaB)

This scale is used to assess attitudes and behaviors related to falling. It consists of 10 subcategories, including cognitive adaptation, safe movement, avoidance, awareness, and attentiveness. The scale includes 30 items, each rated from 1 to 4. The total score is divided by the number of items to obtain an average score. Higher scores indicate safer or more protective behaviors against falls, whereas lower scores reflect riskier or unsafe behaviors. The scale was developed by Clemson et al. (18), and its Turkish validity and reliability study was conducted by Uymaz et al. (19).

World Health Organization Quality of Life Instrument-Older Adults Module (WHOQOL-OLD)

Developed by the WHOQOL Group, this instrument consists of six subdomains: sensory abilities, autonomy, past, present and future activities, social participation, death and dying, and intimacy. It includes 24 items rated on a 1–5 scale, with higher scores indicating better quality of life. The Turkish validity and reliability study of the instrument was conducted by Eser et al. (20).

Statistical Analysis

Statistical analyses were performed using Jamovi (version 2.6.2) and SPSS version 22.0 (Statistical Package for the Social Sciences). Descriptive statistics were presented as mean ± standard deviation (mean±SD). Prior to inferential analyses, the assumptions underlying the statistical tests were evaluated. The normality of variables was assessed using the Shapiro–Wilk test. As the variables were not normally distributed, non-parametric methods were applied. Group differences were examined using the Kruskal–Wallis test, and post hoc pairwise comparisons were conducted using the Dwass–Steel–Critchlow–Fligner (DSCF) procedure. Spearman's rank correlation analysis was applied to examine the relationships among cognitive function (SMMSE), depression level (GDS), fall-related behaviors (FaB), and quality of life (WHOQOL-OLD). The independence of observations and appropriate measurement levels were verified prior to conducting the analyses. Correlation coefficients between 0.00 and 0.30 were considered weak, 0.30–0.50 low, 0.50–0.70 moderate, and 0.70–0.90 strong. Values above 0.90 were considered indicative of a very strong correlation (21). Statistical significance was set at $p<0.05$.

Table 1: Demographic and clinical characteristics of participants

	Young-old group (n=46)	Middle-old group (n=33)	Old-old group (n=19)	p
Age, mean±SD (years)	68.90±2.33	80.50±3.16	89.20±2.94	**<0.001**[a]
Gender, n (female/male)	18/28	13/20	10/9	0.569[b]
Educational status, n (illiterate/primary school/high school/university)	11/20/14/1	18/11/3/1	11/7/1/0	**0.028**[b]
Marital status, n (single/married)	13/33	7/26	8/11	0.275[b]
Living arrangement, n (%)				
Alone	10 (21.7)	11 (33.3)	9 (47.4)	
With family	36 (78.3)	22 (66.7)	10 (52.6)	
Fall history within the past 12 months, n (%)				
Yes	13 (28.3)	14 (42.4)	11 (57.9)	
No	33 (71.7)	19 (57.6)	8 (42.1)	
Presence of a chronic disease (≥1), n (%)				
Yes	24 (52.2)	22 (66.7)	15 (78.9)	
No	22 (47.8)	11 (33.3)	4 (21.1)	

SD: Standard deviation; a: Kruskal-Wallis test; b: Chi-square test; p<0.05. Continuous variables are presented as mean±standard deviation; categorical variables as n (%).

Table 2: Cognitive status, depression, fall-related behaviors, and quality of life by age group

	Young-old group (n=46) Mean±SD	Middle-old group (n=33) Mean±SD	Old-old group (n=19) Mean±SD	p
SMMSE	22.26±0.48	19.00±0.43	18.68±0.50	**<0.001**[a]
GDS	12.33±0.40	14.09±0.36	14.89±0.54	**0.001**[a]
FaB	2.97±0.09	2.25±0.09	2.19±0.12	**<0.001**[a]
WHOQOL-OLD	71.61±3.71	45.21±3.43	43.05±3.94	**<0.001**[a]

SMMSE: Standardized Mini-Mental State Examination; GDS: Geriatric Depression Scale; FaB: Falls Behavioral Scale for Older People; WHOQOL-OLD: World Health Organization Quality of Life Instrument–Older Adults Module; Mean: Mean; SD: Standard deviation; a: Kruskal-Wallis test; p<0.05.

RESULTS

Participants' demographic characteristics, cognitive status, depression levels, fall-related behaviors, and quality of life were compared across age groups. Additionally, the relationships between quality of life and other clinical variables were examined using correlation analysis.

The mean age differed significantly among the age groups ($\chi^2(2)=83.0$, $p<0.001$). The mean age was 68.90±2.33 years in the young-old group, 80.50±3.16 years in the middle-old group, and 89.20±2.94 years in the old-old group. No statistically significant differences were found among the groups in terms of gender distribution or marital status ($p>0.05$). However, a statistically significant difference was observed in educational status ($p=0.028$); the proportion of participants with a high school or university education was higher in the young-old group compared to the other age groups (Table 1). Living arrangement, fall history within the past 12 months, and the presence of at least one chronic disease are also summarized in Table 1 for descriptive purposes.

Cognitive status was assessed using the Standardized Mini-Mental State Examination, depression symptoms were evaluated with the Geriatric Depression Scale, fall-related behaviors were measured using the Falls Behavioral Scale for Older People, and quality of life was assessed with the WHOQOL-OLD. SMMSE scores differed significantly among the groups ($\chi^2(2)=24.7$, $p<0.001$, $\varepsilon^2=0.255$). Post hoc comparisons indicated that the young-old group had significantly higher SMMSE scores than both the middle-old ($p<0.001$) and old-old groups ($p<0.001$), indicating an age-related decline in cognitive function. GDS scores also differed significantly among the groups ($\chi^2(2)=14.0$, $p<0.001$, $\varepsilon^2=0.145$). Post hoc analyses demonstrated that the young-old group had significantly lower GDS scores than both the middle-old ($p=0.016$) and old-old groups ($p=0.004$),

Table 3: Correlation between WHOQOL-OLD scores and clinical variables by age group

	Young-old group (n=46) p (r)	Middle-old group (n=33) p (r)	Old-old group (n=19) p (r)
SMMSE – WHOQOL-OLD	**p<0.001 (r=0.770)**	**p<0.001 (r=0.599)**	**p=0.009 (r=0.581)**
GDS – WHOQOL-OLD	**p<0.001 (r=-0.681)**	**p=0.002 (r=-0.519)**	**p=0.005 (r=-0.619)**
FaB – WHOQOL-OLD	**p<0.001 (r=0.563)**	p=0.069 (r=0.321)	**p=0.002 (r=0.671)**

SMMSE: Standardized Mini-Mental State Examination; GDS: Geriatric Depression Scale; FaB: Falls Behavioral Scale for Older People; WHOQOL-OLD: World Health Organization Quality of Life Instrument–Older Adults Module; p: statistical significance value; r: Spearman's correlation coefficient; p<0.05.

suggesting an increase in depressive symptoms with advancing age. FaB scores, reflecting fall-related behaviors, showed significant differences among groups ($\chi^2(2)=25.5$, $p<0.001$, $\varepsilon^2=0.263$). Post hoc comparisons revealed that the young-old group had significantly higher FaB scores than both the middle-old ($p<0.001$) and old-old groups ($p<0.001$), indicating safer fall-related behaviors in the young-old age group. Similarly, WHOQOL-OLD scores differed significantly across groups ($\chi^2(2)=24.3$, $p<0.001$, $\varepsilon^2=0.251$). Post hoc analyses demonstrated that the young-old group had significantly higher WHOQOL-OLD scores than both the middle-old ($p<0.001$) and old-old groups ($p<0.001$), reflecting a decline in quality of life with increasing age (Table 2).

The relationships between quality of life and cognitive status, depression level, and fall-related behaviors were examined using Spearman's correlation coefficients. In the young-old group, WHOQOL-OLD scores showed a strong positive correlation with cognitive function as measured by the SMMSE ($r=0.770$, $p<0.001$). Additionally, WHOQOL-OLD scores were moderately positively correlated with fall-related behaviors (FaB) ($r=0.563$, $p<0.001$) and moderately negatively correlated with depressive symptoms assessed by the GDS ($r=-0.681$, $p<0.001$). In the middle-old group, WHOQOL-OLD scores were moderately positively correlated with SMMSE scores ($r=0.599$, $p<0.001$) and moderately negatively correlated with GDS scores ($r=-0.519$, $p=0.002$). The correlation between WHOQOL-OLD and FaB scores approached statistical significance in this group ($r=0.321$, $p=0.069$). In the old-old group, WHOQOL-OLD scores were moderately positively correlated with SMMSE scores ($r=0.581$, $p=0.009$) and strongly positively correlated with FaB scores ($r=0.671$, $p=0.002$). A moderate negative correlation was also observed between WHOQOL-OLD and GDS scores ($r=-0.619$, $p=0.005$) (Table 3).

Although education level differed among age groups, additional analyses indicated that the observed associations between quality of life and SMMSE, FaB, and GDS scores were consistent across education levels (Supplementary Digital Appendix 1).

DISCUSSION

This study examined demographic characteristics, cognitive function, depressive symptoms, fall-related behaviors, and quality of life among 98 community-dwelling adults aged 65 years and older, comparing outcomes across age groups. Additionally, the relationships between quality of life and these clinical variables were assessed using correlation analyses. The findings indicated that older age groups were characterized by lower cognitive function, higher levels of depressive symptoms, fewer protective fall-related behaviors, and lower quality of life. Furthermore, quality of life was positively associated with cognitive function and protective fall-related behaviors, and negatively associated with depressive symptoms. Across age groups, cognitive status and depressive symptoms were consistently associated with quality of life. These results suggest that not only chronological age but also physical, cognitive, and psychosocial conditions are closely linked to quality of life in older adults. Rather than operating independently, these domains may interact in shaping perceived well-being; thus, quality of life in older adulthood may reflect the cumulative interplay of cognitive vulnerability, emotional distress, and behavioral adaptation processes rather than isolated impairments. Sex was reported as a biological variable in accordance with the SAGER (Sex and Gender Equity in Research) guidelines and is presented among the descriptive characteristics of the sample (Table 1). Because sex distribution did not differ significantly between age groups, the observed differences in cognitive function, depression, fall-related behaviors, and quality of life are unlikely to be confounded by sex. Future studies with larger samples may further investigate sex-specific differences in cognitive and psychosocial outcomes.

Numerous studies have reported age-related declines in quality of life; however, this relationship is often moderated by cognitive status, emotional well-being, and environmental factors (4). Ilhan et al. (22) found that quality of life scores were lower among older individuals in more advanced age groups. Similarly, a study by Besikci et al. (1), which examined factors affecting quality of life in individuals aged 65 years and older, reported an age-related decline in quality of life. Our findings are consistent with these results, demonstrating a decrease in quality of life with increasing age. However, this pattern is not universally applicable to all individuals, as quality of life is influenced by numerous personal, social, and environmental factors beyond chronological age. Although physiological and functional decline may negatively affect perceived quality of life, positive experiences, such as accumulated knowledge and life experience, sustained social relationships, and increased free time following retirement, may help preserve or even enhance quality of life in some individuals. Therefore, a comprehensive understanding of the multidimensional factors affecting quality of life is warranted.

Significant differences in cognitive status were observed among the age groups, with the young-old group demonstrating higher SMMSE scores. This finding suggests an age-related decline in cognitive function. Moreover, positive correlations were identified between cognitive status and quality of life across all age groups, with a particularly strong association observed in the young-old group ($r=0.770$, $p<0.001$). This magnitude indicates a clinically meaningful relationship between cognitive function and quality of life. These findings support the notion that better cognitive functioning is positively associated with perceived quality of life. Similar results have been reported in the literature (10, 23). For example, Missotten et al. (24) reported that older individuals with cognitive dysfunction experience significant declines in quality of life domains such as social participation, autonomy, and emotional well-being. Cognitive decline may negatively affect quality of life through reduced engagement in daily activities and diminished capacity for environmental adaptation. Impaired executive functioning, in particular, may limit adaptive coping strategies and adjustment to environmental demands, thereby increasing the perceived impact of age-related functional limitations on overall well-being. Our findings underscore the importance of maintaining cognitive health in older adults, not only for preserving mental function but also for sustaining overall quality of life. It should be noted that the Standardized Mini-Mental State Examination is a screening instrument designed to estimate global cognitive status rather than to establish a definitive clinical diagnosis of cognitive impairment. Therefore, the cognitive scores obtained in this study should be interpreted cautiously as indicators of probable cognitive functioning. Although participants with diagnosed psychiatric or neurological disorders were excluded, lower SMMSE scores may still be observed in community-dwelling older adults due to factors such as advanced age, lower educational attainment, and sociocultural characteristics. In the present study, the SMMSE was used solely as a screening tool rather than a diagnostic criterion, and no cut-off score was applied for exclusion. In addition, educational level differed significantly among age groups and may have influenced cognitive performance, as SMMSE scores are known to be education-dependent. Educational attainment may also affect perceived quality of life and therefore represents a potential confounding factor in interpreting these findings. To further explore this issue, additional education-stratified analyses were conducted (Supplementary Digital Appendix 1). Spearman correlation analyses between WHOQOL-OLD and SMMSE, GDS, and FaB scores were repeated within low- and high-education strata. The direction and magnitude of these associations were comparable across education levels, suggesting that the observed relationships are unlikely to be explained solely by differences in educational attainment. Nevertheless, residual confounding cannot be entirely excluded.

In our study, depression levels differed significantly among age groups, with higher GDS scores observed in older participants. Additionally, significant negative correlations were found between GDS and WHOQOL-OLD scores across all age groups, indicating that higher levels of depressive symptoms were associated with lower quality of life. Consistent with these findings, several previous studies have reported strong associations between depression and reduced quality of life (25, 26). In a cross-sectional study conducted by Altun et al. (27) among Turkish older adults, depressive symptoms were found to significantly decrease life satisfaction. Similarly, Sivertsen et al. (28) reported that older adults with depressive symptoms had lower quality of life scores compared to those without depression, and that lower quality of life was associated with greater depression severity. Overall, our findings align with the existing literature, indicating that lower levels of depressive symptoms are associated with better

quality of life in older adults. These results emphasize the clinical importance of supporting mental health in older adults—not only to promote psychological well-being but also to preserve overall quality of life. Depressive symptoms may contribute to activity restriction, reduced social participation, and diminished self-efficacy, thereby reinforcing a reciprocal cycle between emotional distress and functional decline.

Age-related declines in mobility, postural control, and balance are associated with an increased risk of falls in older adults, while fear of falling may further negatively affect quality of life (12). In our study, higher FaB scores reflected safer and more protective behaviors related to fall awareness and fear, whereas lower scores indicated riskier and unsafe behaviors (18). Our findings revealed significant differences in fall-related behaviors among the age groups, with the young-old group exhibiting higher FaB scores, indicating safer behavioral patterns. Additionally, positive correlations between FaB scores and quality of life were found in the young-old and old-old groups. In contrast, the association between fall-related behaviors and quality of life did not reach statistical significance in the middle-old group, although the direction of the relationship was positive. This finding may be partially explained by the relatively small sample size of this subgroup and the transitional characteristics of this age period, during which adaptive behavioral strategies may partially attenuate the perceived impact of fall-related behaviors on quality of life. Consistent with the literature, our findings indicate that individuals who exhibited safer fall-related behaviors reported higher quality of life, whereas those demonstrating unsafe behaviors and lower awareness had lower quality of life scores. Cinarli et al. (12) reported that fear of falling is associated with impaired balance, reduced participation in daily activities, and social isolation. Other studies have shown that fear of falling increases fall risk, reduces quality of life, and contributes to greater dependency and higher healthcare costs (29, 30). In this context, our findings indicate that greater fall awareness and more protective behaviors are associated with better quality of life and lower healthcare burden among older adults. Recent evidence examining cognitive status, depressive symptoms, fall-related behaviors, and quality of life within an integrated analytical framework has similarly demonstrated strong interrelationships among these domains in community-dwelling older adults (31). Taken together, these findings support an integrated conceptualization of quality of life in older adulthood, shaped by interacting cognitive, emotional, and behavioral processes. Although the present study primarily focused on depressive symptoms, fall-related behaviors may also be influenced by other psychopathological factors, such as anxiety and fear-avoidance beliefs. Previous research suggests that the severity of anxiety and depressive symptoms may exacerbate fear of falling and activity restriction in older adults. Therefore, the interaction between fall-related behaviors and broader psychological profiles should be considered in future multidisciplinary research. The associations among fall-related behaviors, cognitive function, and depressive symptoms are further supported by the age-stratified correlation analyses presented in Supplementary Digital Appendix 2.

With advancing age, the prevalence of cognitive decline, reduced physical performance, and mental health issues increases. These three domains are known to interact and collectively influence quality of life (32). The literature indicates that cognitive dysfunction and depressive symptoms are closely associated with lower quality of life. For example, Kitis et al. (11) reported that cognitive dysfunction and depression negatively affected quality of life in older individuals. Similarly, Sertel et al. (14) found that among individuals aged 65 years and older, cognitive decline and depression were accompanied by physical impairments, increased fall risk, and ultimately reduced quality of life. In line with these findings, our study demonstrated that lower cognitive status, higher depression scores, and reduced fall awareness were associated with poorer quality of life. These findings suggest that cognitive, emotional, and physical parameters are closely related to overall well-being in older adults, both directly and indirectly, through their interactions with one another. This multidimensional interplay highlights the need for integrated assessment and intervention strategies in geriatric care. Cognitive vulnerability may increase emotional distress; depressive symptoms may reduce adaptive engagement; and avoidance-oriented behaviors related to fall risk may further restrict participation. Such mutually reinforcing pathways underscore the importance of early, coordinated, and multidisciplinary approaches in geriatric care.

Overall, our findings emphasize the importance of comprehensive assessment strategies in older adults that encompass not only physical but also cognitive and psychosocial dimensions. Quality of life in older adulthood is influenced by multiple factors and is

closely associated with factors such as cognitive decline, depressive symptoms, and fear of falling. Therefore, healthcare planning for older adults should incorporate multidimensional evaluation processes that include functional, environmental, and emotional components. In particular, physiotherapy practices that integrate these dimensions may enhance individual quality of life while also reducing healthcare costs. Early identification, preventive interventions, and multidisciplinary approaches can significantly support life satisfaction, independence, and social participation in older adults. In this regard, the findings of our study provide an evidence-based foundation for individual-, community-, and institution-level strategies aimed at improving quality of life in older populations.

The findings of this study should be interpreted in light of several methodological and conceptual limitations. First, the cross-sectional design does not permit conclusions regarding causality or temporal direction among cognitive status, depressive symptoms, fall-related behaviors, and quality of life. The observed associations may reflect complex and potentially reciprocal processes rather than direct causal mechanisms. Longitudinal and prospective studies are required to clarify the direction, stability, and dynamic interplay of these relationships over time.

Second, several variables were assessed using screening instruments and self-report measures. The SMMSE provides an estimate of global cognitive functioning rather than a comprehensive neuropsychological evaluation, and both the WHOQOL-OLD and the GDS rely on subjective perceptions. Consequently, shared method-related influences may have affected the strength of the observed associations. Future studies incorporating objective functional assessments and more detailed cognitive measures may provide a more comprehensive understanding of these interrelationships.

Third, although additional analyses stratified by educational level were conducted, residual confounding cannot be fully excluded. Cognitive screening performance is influenced by educational and sociocultural background, factors that may also shape individuals' perceptions of quality of life. Accordingly, the findings should be interpreted within the sociodemographic context of the sample.

Fourth, the use of bivariate correlation analyses provides an overview of relationships among variables but does not allow examination of potential mediating or moderating mechanisms. Quality of life in older adulthood is likely influenced by multifactorial and interacting pathways. Future research employing multivariate statistical models or structural approaches may better capture these complexities.

Fifth, the sample consisted of community-dwelling, independently living older adults recruited through convenience sampling from two districts of Istanbul. Therefore, the generalizability of the findings to institutionalized older adults, individuals with advanced neurocognitive disorders, or populations from different sociocultural contexts may be limited.

Finally, the conceptual framework of the present study focused primarily on cognitive status, depressive symptoms, and fall-related behaviors as correlates of quality of life. Other potentially relevant determinants—such as anxiety, social support, comorbidity burden, and environmental accessibility—were not examined. Therefore, the proposed framework represents a partial rather than comprehensive explanation of quality of life in older adulthood.

CONCLUSION

This study provides important insights into the relationships among cognitive function, depressive symptoms, fall-related behaviors, and quality of life in community-dwelling older adults across different age groups. By categorizing participants into young-old, middle-old, and old-old subgroups, age-related differences were examined in detail. The findings revealed that the older age groups were characterized by lower cognitive performance, higher levels of depressive symptoms, fewer protective fall-related behaviors, and lower quality of life. Furthermore, these factors were found to be interrelated and jointly associated with overall well-being.

The comprehensive assessment of multiple health dimensions underscores the importance of adopting a person-centered, multidisciplinary approach in geriatric healthcare and expanding preventive strategies to support healthy and independent aging. These findings provide an evidence-based foundation for the development of geriatric rehabilitation strategies that concurrently address physical, cognitive, and psychosocial domains.

Future studies with larger, multicenter samples conducted in diverse sociocultural settings are warranted to further validate and extend these findings and to inform targeted strategies aimed at improving quality of life among older adults.

Online Supplementary Digital Appendix File:

https://dusunenadamdergisi.org/storage/upload/thumbnails/1774335122.jpeg

Ethical Approval: The Istanbul Medipol University Non-Interventional Clinical Research Ethics Committee granted approval for this study (Date: 19.06.2025, number: E-10840098-202.3.02-3769).

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Contribution Categories		Author Initials
Category 1	Concept/Design	M.S.T., E.Y., T.T.K., B.S.K.
	Data acquisition	M.S.T., E.Y.
	Data analysis/Interpretation	M.S.T., E.Y., T.T.K.
Category 2	Drafting manuscript	M.S.T., E.Y., T.T.K., B.S.K.
	Critical revision of manuscript	M.S.T., E.Y., T.T.K., B.S.K.
Category 3	Final approval and accountability	M.S.T., E.Y., T.T.K., B.S.K.
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