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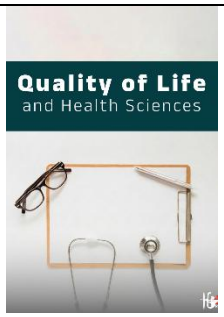

Social Support and Quality of Life in Older Adults With Chronic Disease: The Mediating Roles of Loneliness and Depressive Symptoms

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A B S T R A C T

Objective: This study aimed to examine the relationship between perceived social support and quality of life among older adults with chronic disease and to test the mediating roles of loneliness and depressive symptoms in this relationship.

Methods and Materials: This cross-sectional correlational study was conducted among 426 older adults with chronic disease in Canada. Participants were recruited from outpatient chronic disease clinics, community health centers, senior service organizations, and primary care referral networks. Eligible participants were aged 65 years or older and had at least one physician-confirmed chronic disease. Data were collected using a demographic and clinical information form, the Multidimensional Scale of Perceived Social Support, the UCLA Loneliness Scale, the 15-item Geriatric Depression Scale, and the WHOQOL-OLD. Data were analyzed using descriptive statistics, Pearson correlation analysis, and structural equation modeling. The indirect effects were examined using bootstrapping with 5,000 resamples and 95% confidence intervals.

Findings: Pearson correlation analysis showed that perceived social support was negatively correlated with loneliness ($r = -0.58$, $p < 0.001$) and depressive symptoms ($r = -0.46$, $p < 0.001$), and positively correlated with quality of life ($r = 0.52$, $p < 0.001$). Loneliness was positively correlated with depressive symptoms ($r = 0.63$, $p < 0.001$) and negatively correlated with quality of life ($r = -0.61$, $p < 0.001$). Depressive symptoms were also negatively correlated with quality of life ($r = -0.66$, $p < 0.001$). The structural model showed good fit to the data: $\chi^2/df = 2.23$, CFI = 0.972, TLI = 0.958, GFI = 0.965, RMSEA = 0.054, and SRMR = 0.041. Perceived social support had significant direct effects on loneliness ($\beta = -0.58$, $p < 0.001$), depressive symptoms ($\beta = -0.15$, $p = 0.002$), and quality of life ($\beta = 0.19$, $p < 0.001$). Loneliness predicted depressive symptoms ($\beta = 0.54$, $p < 0.001$) and quality of life ($\beta = -0.24$, $p < 0.001$), while depressive symptoms predicted quality of life ($\beta = -0.42$, $p < 0.001$). Bootstrapping confirmed significant indirect effects through loneliness, depressive symptoms, and their sequential pathway.

Conclusion: Perceived social support was directly and indirectly associated with better quality of life among older adults with chronic disease, and loneliness and depressive symptoms partially mediated this relationship.

Keywords: *Social support; quality of life; loneliness; depressive symptoms; older adults; chronic disease; mediation; structural equation modeling.*

1. Introduction

Population aging has intensified scientific and clinical concern about how older adults maintain quality of life while living with chronic disease. In late adulthood, quality of life is not determined only by the presence or absence of disease, but by the interaction of physical health, psychological adjustment, functional capacity, social participation, autonomy, emotional security, and access to meaningful relationships. Chronic diseases such as cardiovascular disease, diabetes, arthritis, respiratory disorders, chronic kidney disease, and inflammatory conditions often persist for many years and may gradually restrict mobility, independence, sleep, social engagement, and self-perceived well-being. Evidence from large aging populations has shown that multimorbidity is strongly associated with poorer quality of life, but that this relationship is shaped by clinical, functional, and social factors rather than disease count alone (Makovski et al., 2020). Similarly, research on the end of the life course has emphasized that social networks and multimorbidity are closely connected to health-related well-being, indicating that older adults' quality of life must be understood within a broader social and relational context (González et al., 2021). Community-based studies have also demonstrated that social and health determinants jointly contribute to quality of life among older adults, suggesting that physical illness and social resources should not be treated as separate domains in gerontological research (Lim et al., 2023). Structural equation modeling evidence among empty-nest older adults further indicates that quality of life is influenced by a complex configuration of demographic, psychological, social, and health-related factors (Zhang et al., 2021). In chronic disease populations, this multidimensional perspective is especially important because the burden of illness is rarely limited to symptoms and treatment demands; instead, it extends into emotional life, social identity, perceived usefulness, and the capacity to remain connected to family and community.

The relevance of quality of life becomes even more pronounced when chronic disease is considered through a biopsychosocial framework. Chronic illness may produce physical limitations and treatment burden, but its consequences are filtered through social support, coping resources, psychological distress, and the availability of meaningful interpersonal relationships. Studies in inflammatory bowel diseases, for example, have highlighted the interplay of biological, psychological, and social factors in shaping quality of life, supporting the need for integrative models rather than narrowly biomedical explanations (Thomann et al., 2021). In rheumatoid arthritis, a systematic review has similarly shown that social support is consistently linked to better quality of life, reinforcing the importance of relational resources in chronic disease adaptation (Kuit & Dunne, 2025). Older adults with sensory limitations also illustrate this interaction between physical impairment and psychosocial well-being. Hearing impairment has been associated with multiple health indicators among older adults, showing that sensory loss can affect daily functioning and emotional well-being (Fenwick et al., 2023). Vision and hearing impairments have also been linked to quality of life through psychosocial factors, indicating that the impact of impairment may be partly explained by its effects on social participation, independence, and emotional adjustment (Phua et al., 2021). In addition, hearing impairment, pain, and quality of life have been associated with depressive symptoms in older people, demonstrating how functional problems and psychological distress may reinforce one another in aging populations (Sun et al., 2021). These findings collectively suggest that chronic disease should be studied not only as a medical condition but also as a condition that reorganizes older adults' social and emotional lives.

Social support is one of the most important protective factors in the lives of older adults with chronic illness. It includes perceived emotional closeness, practical assistance, informational guidance, companionship, reassurance, and the belief that help is available when needed. For older adults, social support may come from spouses, adult children, relatives, friends, neighbors, peer groups, health professionals, and community institutions. Supportive relationships can reduce the psychological impact of disease, promote treatment adherence, improve coping, protect against isolation, and preserve a sense of belonging. In nursing home care, nurse-patient interaction has been described as a salutogenic resource that supports health, meaning, and well-being among older adults (Haugan, 2021). Family and environmental conditions also influence quality of life in the context of chronic disease, as caregiver burden and the caregiving environment may shape the everyday well-being of both older adults and those who support them (Bahtiar et al., 2024). Among community-dwelling older adults, social support has also been related to nutritional risk, showing that social resources may influence health through concrete behavioral and care pathways such as diet, monitoring, and daily assistance (Ganhão-Arranhado

et al., 2023). In older patients with chronic heart failure, social frailty has been associated with quality of life through family insufficiency and social networks, suggesting that inadequate relational resources may become a pathway from social vulnerability to diminished well-being (Huang, Liu, Wang, Luan, Yao, et al., 2025). Related evidence also indicates that social support may mediate the association between social frailty and symptoms of anxiety and depression in older patients with chronic heart failure, highlighting its role as a psychological buffer in medically vulnerable older adults (Huang, Liu, Wang, Luan, & Yao, 2025).

Loneliness represents a distinct but closely related construct that is highly relevant to quality of life among older adults with chronic disease. Whereas social support refers to the perceived availability and adequacy of social resources, loneliness reflects the subjective experience of insufficient, unsatisfying, or emotionally disconnected relationships. An older adult may live with others and still feel lonely, or may live alone while maintaining meaningful social ties. A comprehensive scoping review has emphasized loneliness as a major issue in aging populations, with implications for mental health, functional status, cognitive well-being, and quality of life (Puyané et al., 2025). Cross-sectional evidence among rural older adults has shown that loneliness predicts quality of life together with hope, suggesting that loneliness is not merely a social condition but also an existential and emotional experience that may influence how older adults evaluate their lives (Choompunuch et al., 2025). Mixed-method research among older adults has further shown that loneliness is associated with subjective cognitive decline and quality of life, indicating that loneliness may affect both perceived cognitive functioning and broader well-being (Sanprakhon et al., 2024). In long-term care residents, loneliness has been shown to mediate relationships among depression, social support, and quality of life, providing direct evidence that loneliness may function as a central mechanism linking interpersonal resources with emotional and health-related outcomes (Szeto et al., 2025). Among older adults with mild and moderate dementia, individual differences in social and emotional loneliness have also been associated with cognitive and psychological functioning, which shows that loneliness remains clinically meaningful even among older adults with cognitive impairment (Carbone et al., 2022). Although some evidence comes from populations with psychotic disorders, findings on health-related quality of life have similarly emphasized the role of loneliness and its contributors, supporting the broader relevance of loneliness as a determinant of well-being in vulnerable groups (Nevarez-Flores et al., 2022).

Depressive symptoms are another key psychological factor affecting quality of life among older adults with chronic disease. Depression in later life may involve sadness, loss of interest, hopelessness, fatigue, sleep disturbance, low motivation, reduced self-worth, and withdrawal from social participation. In chronic disease contexts, depressive symptoms may be intensified by pain, disability, fear of deterioration, dependence on others, financial burden, medication complexity, and repeated health care use. Studies among empty-nest older adults have shown that depressive symptoms are associated with poorer quality of life, suggesting that emotional distress may be especially consequential when social roles and family structures change in later life (He et al., 2022). Among community-dwelling older adults, depressive and insomnia symptoms have been shown to affect quality of life, indicating that psychological distress and sleep disturbance may jointly reduce perceived well-being (Tsaras et al., 2022). Research among institutionalized older adults has also identified depressive symptoms as a prevalent mental health problem and has examined their risk factors in care settings, reinforcing the need to address depression as part of geriatric health assessment (Sajali et al., 2021). Studies conducted during and after the COVID-19 period have further shown that quarantine, social distancing, emotional suffering, and psychological distress can affect older adults' quality of life, cognitive performance, and mental health status (Karlıbel et al., 2023; Maity et al., 2024; Santos & Thaís Bento Lima da, 2023). In Portugal, both depression and loneliness have been associated with quality of life among institutionalized and non-institutionalized older adults, suggesting that these two psychological and social experiences may operate together rather than independently (Silva et al., 2024). Living arrangements may also matter, as living alone has been associated with depressive symptoms through mediating factors such as sleep quality and anxiety, indicating that the pathway from social condition to depression may involve multiple emotional and behavioral mechanisms (Huang et al., 2023).

The mediating role of depressive symptoms has particular importance for explaining how social support may influence quality of life. Social support may improve quality of life directly by providing companionship, assistance, and a sense of security, but it may also exert indirect effects by reducing loneliness and depressive symptoms. In rural older adults, depressive symptoms have been shown to mediate the

relationship between social support and quality of life, demonstrating that part of the protective effect of support may operate through emotional health (Wang et al., 2020). A path analysis study also showed that depressive symptoms mediated the association between stigma and quality of life, supporting the broader principle that negative social experiences can impair quality of life through depression-related pathways (Huang et al., 2022). Among older adults with multimorbidity, loneliness and depression have been studied in relation to self-efficacy and social support, showing that social and psychological resources are closely interconnected in medically complex aging populations (Liang et al., 2023). Research on internet use among older adults has further shown that the association between instrumental internet use and quality of life may be mediated by loneliness and social support, indicating that both digital and interpersonal forms of connection may influence well-being through social-emotional mechanisms (Wójcik et al., 2021). Coping responses have also been associated with quality of life among older adults, suggesting that the way individuals respond psychologically and behaviorally to stress may shape the effects of illness, aging, and social conditions on well-being (Rosaly & Parashar, 2021). Therefore, a mediation framework is suitable for examining whether social support is linked to quality of life not only as a direct interpersonal resource but also through its effects on loneliness and depressive symptoms.

The available literature also suggests that older adults with chronic disease should not be viewed as a homogeneous group. Differences in disease severity, multimorbidity, sensory functioning, living arrangement, institutionalization, social network structure, access to care, psychological resilience, and coping capacity may all affect how social support is experienced and how loneliness and depressive symptoms emerge. For example, research on aging with schizophrenia has emphasized the complexity of later-life mental health and the importance of considering psychiatric vulnerability, functioning, and social circumstances together (Solomon et al., 2021). Studies conducted across different countries and settings have similarly shown that institutional status, community residence, family involvement, rural living, sensory impairment, and post-pandemic social disruption may shape quality of life among older adults (Choompunuch et al., 2025; Fenwick et al., 2023; Maity et al., 2024; Silva et al., 2024). These findings are important for chronic disease research because older adults often experience overlapping vulnerabilities: a long-term medical diagnosis may coincide with widowhood, retirement, reduced mobility, lower income, limited transportation, sensory impairment, or shrinking friendship networks. In such circumstances, the presence of social support may not simply add comfort; it may determine whether the older adult can remain socially engaged, emotionally stable, adherent to treatment, and capable of sustaining a meaningful daily life. Conversely, insufficient support may increase loneliness, which may then intensify depressive symptoms and reduce quality of life. This sequence is theoretically coherent and empirically plausible, yet it requires further testing in older adults with chronic disease using models that estimate both direct and indirect pathways simultaneously.

Despite growing evidence linking social support, loneliness, depressive symptoms, and quality of life, several gaps remain. Many studies have examined bivariate associations, but fewer have tested loneliness and depressive symptoms together as mediating mechanisms in a single integrated model. Some studies have focused on institutionalized older adults, empty-nest older adults, specific diagnostic groups, sensory impairment, or post-pandemic distress, while less attention has been given to community-dwelling older adults with chronic disease as a broad and clinically important population. Moreover, although social support is frequently described as beneficial, its pathway of influence is not always clear. It may improve quality of life because supportive relationships directly enhance daily functioning and emotional security, because they reduce loneliness, because they protect against depressive symptoms, or because loneliness and depressive symptoms operate sequentially. Clarifying these mechanisms is important for intervention design. If loneliness and depressive symptoms mediate the association between social support and quality of life, then improving quality of life among older adults with chronic disease requires more than increasing contact frequency; it requires emotionally meaningful support, loneliness reduction, depression screening, psychosocial care, and community-based strategies that strengthen both relational and psychological well-being. Therefore, the present study aimed to examine the relationship between perceived social support and quality of life among older adults with chronic disease and to test the mediating roles of loneliness and depressive symptoms in this relationship.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a cross-sectional, correlational design to examine the relationship between perceived social support and quality of life among older adults with chronic disease, with loneliness and depressive symptoms tested as mediating variables. The study population consisted of community-dwelling older adults living in Canada who had been diagnosed with at least one chronic physical health condition. Participants were recruited from outpatient chronic disease clinics, community health centers, senior service organizations, and primary care referral networks in Ontario, British Columbia, and Quebec. A total of 426 older adults participated in the study. Eligibility criteria included being 65 years of age or older, residing in Canada, having a physician-confirmed diagnosis of at least one chronic disease such as diabetes, cardiovascular disease, chronic respiratory disease, arthritis, hypertension, chronic kidney disease, or cancer, and having sufficient cognitive and communicative ability to complete the questionnaires independently or with minimal assistance. Participants were excluded if they had a documented diagnosis of severe cognitive impairment, acute psychiatric crisis, terminal-stage illness requiring palliative care, or hospitalization during the data collection period. The sample was selected using convenience sampling, and all participants provided informed consent before participation. Data collection was conducted in accordance with ethical principles for research involving human participants, and confidentiality, anonymity, voluntary participation, and the right to withdraw from the study at any time were emphasized.

2.2. Measures

Data were collected using a demographic and clinical information form and four standardized questionnaires measuring perceived social support, loneliness, depressive symptoms, and quality of life. The demographic and clinical information form was developed by the researchers to collect information on age, gender, marital status, education level, living arrangement, employment or retirement status, type of chronic disease, number of chronic conditions, duration of illness, medication use, perceived economic status, and frequency of contact with family members, friends, and health care providers. This form was used to describe the sample characteristics and to identify clinical and social factors that could be relevant to quality of life among older adults with chronic disease.

Perceived social support was measured using the Multidimensional Scale of Perceived Social Support, developed by Zimet, Dahlem, Zimet, and Farley in 1988. This instrument assesses the extent to which individuals perceive emotional and practical support from three major sources: family, friends, and significant others. The scale contains 12 items, with each subscale consisting of four items. Items are scored on a seven-point Likert scale ranging from strongly disagree to strongly agree, and higher scores indicate higher perceived social support. The Multidimensional Scale of Perceived Social Support has been widely used in older adult and chronic disease populations and has demonstrated acceptable validity and reliability in previous studies. In the present study, the total score was used as the main indicator of perceived social support, while the subscale scores were used for descriptive interpretation of the participants' perceived support networks.

Loneliness was assessed using the UCLA Loneliness Scale, Version 3, developed by Russell in 1996. This scale is one of the most widely used instruments for measuring subjective feelings of loneliness and perceived social isolation. It includes 20 items that evaluate the frequency with which individuals experience feelings such as lack of companionship, exclusion, isolation, and emotional disconnection from others. Responses are rated on a four-point scale ranging from never to often, with higher total scores reflecting higher levels of loneliness. The UCLA Loneliness Scale has shown strong psychometric properties across adult and older adult samples and is considered suitable for examining the psychological and social dimensions of loneliness in health-related research. In this study, the total loneliness score was used as one of the mediating variables in the relationship between perceived social support and quality of life.

Depressive symptoms were measured using the 15-item Geriatric Depression Scale, originally adapted from the longer version developed by Yesavage and colleagues. The short form of the Geriatric Depression Scale is specifically designed for use among older adults and focuses on affective and cognitive symptoms of depression while minimizing emphasis on somatic symptoms that may overlap with chronic physical illness. The scale consists of 15 yes-or-no items, and total scores indicate the severity of depressive symptoms, with higher scores representing greater depressive symptomatology. The 15-item version has been

widely used in community, clinical, and geriatric health research and has demonstrated satisfactory reliability and validity. In the present study, depressive symptoms were examined as the second mediating variable through which perceived social support could influence quality of life among older adults with chronic disease.

Quality of life was measured using the World Health Organization Quality of Life Instrument for Older Adults, known as the WHOQOL-OLD. This instrument was designed to assess quality of life in older populations and includes dimensions that are particularly relevant to aging. The WHOQOL-OLD contains 24 items distributed across six domains: sensory abilities; autonomy; past, present, and future activities; social participation; death and dying; and intimacy. Items are scored on a five-point Likert scale, and higher scores indicate better perceived quality of life. The instrument has been used internationally among older adults and has shown acceptable validity and reliability in diverse cultural and clinical settings. In this study, the total WHOQOL-OLD score was used as the main outcome variable, reflecting the participants' overall perceived quality of life in the context of aging and chronic disease.

2.3. Data Analysis

Data were analyzed using SPSS and AMOS software. Before conducting the main analyses, the dataset was screened for missing values, outliers, normality, and accuracy of data entry. Missing data were evaluated based on frequency and pattern, and cases with excessive missing responses were excluded from analysis. For cases with minimal missing data, appropriate statistical replacement procedures were applied according to the distribution and scale characteristics. Descriptive statistics, including mean, standard deviation, frequency, and percentage, were calculated to describe demographic and clinical characteristics of the participants and the main study variables. The internal consistency of each questionnaire was assessed using Cronbach's alpha coefficient. Normality was examined through skewness and kurtosis values, visual inspection of distributions, and relevant statistical indicators. Pearson correlation coefficients were calculated to examine the bivariate relationships among perceived social support, loneliness, depressive symptoms, and quality of life.

The hypothesized mediation model was tested using structural equation modeling. In the proposed model, perceived social support was entered as the independent variable, loneliness and depressive symptoms were entered as mediating variables, and quality of life was entered as the dependent variable. The direct effect of perceived social support on quality of life and the indirect effects through loneliness and depressive symptoms were estimated simultaneously. Model fit was evaluated using several standard fit indices, including the chi-square statistic, chi-square divided by degrees of freedom, Comparative Fit Index, Tucker–Lewis Index, Goodness-of-Fit Index, Root Mean Square Error of Approximation, and Standardized Root Mean Square Residual. Acceptable model fit was determined based on commonly recommended thresholds, including values above 0.90 for comparative fit indices and values below 0.08 for residual and approximation error indices. The significance of indirect effects was examined using bootstrapping with 5,000 resamples and 95% confidence intervals. An indirect effect was considered statistically significant when the confidence interval did not include zero. The significance level for all statistical analyses was set at $p < 0.05$.

3. Findings and Results

A total of 426 older adults with chronic disease participated in the study. The age of the participants ranged from 65 to 91 years, with a mean age of 73.41 years and a standard deviation of 6.18 years. Of the total sample, 239 participants were women and 187 were men, representing 56.1% and 43.9% of the sample, respectively. Regarding marital status, 226 participants were married or living with a partner, 121 were widowed, 46 were divorced or separated, and 33 were single. In terms of educational status, 135 participants had completed secondary education or less, 159 had college-level education, and 132 had university-level education. With respect to living arrangement, 166 participants reported living alone, whereas 260 lived with a spouse, partner, family member, or other caregiver. The clinical profile of the sample indicated that chronic disease burden was relatively high. Hypertension was reported by 238 participants, arthritis by 171 participants, type 2 diabetes by 146 participants, cardiovascular disease by 128 participants, chronic respiratory disease by 75 participants, chronic kidney disease by 45 participants, and cancer by 36 participants. Because several participants reported more than one chronic condition, the total number of reported diagnoses exceeded the total sample size. Overall, 282 participants had two or more chronic conditions, indicating that multimorbidity was common in the study population. The average duration of chronic disease was 11.08 years,

with a standard deviation of 7.42 years. These demographic and clinical characteristics show that the sample represented a heterogeneous group of older adults with long-term chronic health conditions and varying levels of social and functional vulnerability.

Table 1

Descriptive Statistics, Reliability Coefficients, and Distribution Indices of the Main Study Variables

Variable	Possible Range	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis	Cronbach's Alpha
Perceived social support	1–7	4.89	1.21	1.67	7.00	-0.42	-0.31	0.91
Family support	1–7	5.13	1.42	1.00	7.00	-0.51	-0.28	0.88
Friend support	1–7	4.61	1.47	1.00	7.00	-0.18	-0.47	0.90
Significant-other support	1–7	4.92	1.36	1.00	7.00	-0.36	-0.34	0.87
Loneliness	20–80	43.76	10.84	21.00	74.00	0.37	0.21	0.92
Depressive symptoms	0–15	5.86	3.21	0.00	14.00	0.51	0.14	0.84
Quality of life	24–120	74.28	13.67	39.00	109.00	-0.29	-0.19	0.89

The descriptive findings presented in Table 1 indicate that the participants reported a moderate-to-high level of perceived social support, with a total mean score of 4.89 on the seven-point scale. Among the social support dimensions, family support had the highest mean score, followed by support from significant others and support from friends. This pattern suggests that family remained the most prominent source of perceived support among older adults with chronic disease, while friend-based support was relatively weaker. The mean loneliness score was 43.76, indicating a moderate level of perceived loneliness in the sample. The mean depressive symptom score was 5.86, suggesting that a notable proportion of participants experienced clinically relevant emotional distress, although the overall sample mean remained within a moderate range. The mean quality of life score was 74.28 out of a possible 120, reflecting a moderate level of perceived quality of life among the participants. The skewness and kurtosis values for all variables were within the acceptable range of -2 to +2, supporting the assumption of approximate normality for the main variables. Cronbach's alpha coefficients ranged from 0.84 to 0.92, indicating good to excellent internal consistency for all measures used in the study.

Table 2

Pearson Correlation Matrix Among Perceived Social Support, Loneliness, Depressive Symptoms, and Quality of Life

Variable	1	2	3	4
1. Perceived social support	1			
2. Loneliness	-0.58***	1		
3. Depressive symptoms	-0.46***	0.63***	1	
4. Quality of life	0.52***	-0.61***	-0.66***	1

As shown in Table 2, perceived social support had a significant negative correlation with loneliness and depressive symptoms and a significant positive correlation with quality of life. These findings indicate that older adults who perceived greater support from family, friends, and significant others tended to report lower loneliness, fewer depressive symptoms, and better quality of life. Loneliness was strongly and positively correlated with depressive symptoms, showing that participants who felt more socially isolated were also more likely to experience depressive symptomatology. In addition, loneliness and depressive symptoms were both significantly and negatively associated with quality of life. The strongest negative relationship with quality of life was observed for depressive symptoms, followed closely by loneliness. These results support the conceptual basis of the proposed mediation model by showing that the independent variable, mediating variables, and dependent variable were significantly related to one another in the expected directions.

Table 3

Fit Indices of the Structural Equation Model

Fit Index	Obtained Value	Recommended Criterion	Interpretation
Chi-square	84.62	Lower values indicate better fit	Acceptable
Degrees of freedom	38	—	—
Chi-square/df	2.23	< 3.00	Good fit
Comparative Fit Index	0.972	≥ 0.90	Good fit
Tucker–Lewis Index	0.958	≥ 0.90	Good fit
Goodness-of-Fit Index	0.965	≥ 0.90	Good fit
Root Mean Square Error of Approximation	0.054	≤ 0.08	Good fit
90% Confidence Interval for RMSEA	0.039–0.069	Upper bound < 0.08	Good fit
Standardized Root Mean Square Residual	0.041	≤ 0.08	Good fit

The model fit results presented in Table 3 show that the hypothesized mediation model had an acceptable and strong fit to the observed data. The chi-square divided by degrees of freedom was 2.23, which was below the recommended threshold of 3.00 and therefore indicated acceptable fit. The Comparative Fit Index, Tucker–Lewis Index, and Goodness-of-Fit Index were all above 0.90, demonstrating that the proposed model adequately represented the covariance structure among the study variables. The Root Mean Square Error of Approximation was 0.054, and its 90% confidence interval ranged from 0.039 to 0.069, indicating a satisfactory level of approximation error. The Standardized Root Mean Square Residual was 0.041, which was also below the recommended threshold. Taken together, these indices confirm that the proposed structural model was statistically appropriate for testing the direct and indirect relationships among perceived social support, loneliness, depressive symptoms, and quality of life in older adults with chronic disease.

Table 4

Standardized Direct Path Coefficients in the Structural Model

Structural Path	Standardized Beta	Standard Error	Critical Ratio	p-value
Perceived social support → Loneliness	-0.58	0.034	-13.74	<0.001
Perceived social support → Depressive symptoms	-0.15	0.031	-3.04	0.002
Loneliness → Depressive symptoms	0.54	0.036	11.89	<0.001
Perceived social support → Quality of life	0.19	0.038	4.62	<0.001
Loneliness → Quality of life	-0.24	0.041	-5.73	<0.001
Depressive symptoms → Quality of life	-0.42	0.039	-9.84	<0.001

The standardized path coefficients in Table 4 indicate that perceived social support had a significant negative effect on loneliness, meaning that higher perceived support was associated with lower loneliness among older adults with chronic disease. Perceived social support also had a smaller but statistically significant negative direct effect on depressive symptoms, showing that support was associated with reduced depressive symptomatology even after accounting for loneliness. Loneliness had a strong positive effect on depressive symptoms, indicating that older adults who experienced higher levels of loneliness were more likely to report depressive symptoms. Regarding quality of life, perceived social support had a significant positive direct effect, whereas both loneliness and depressive symptoms had significant negative direct effects. Among the predictors of quality of life, depressive symptoms had the strongest standardized effect, followed by loneliness and perceived social support. These findings suggest that quality of life in older adults with chronic disease is influenced not only by the availability and perception of social support but also by the emotional and psychological consequences of social disconnection.

Table 5

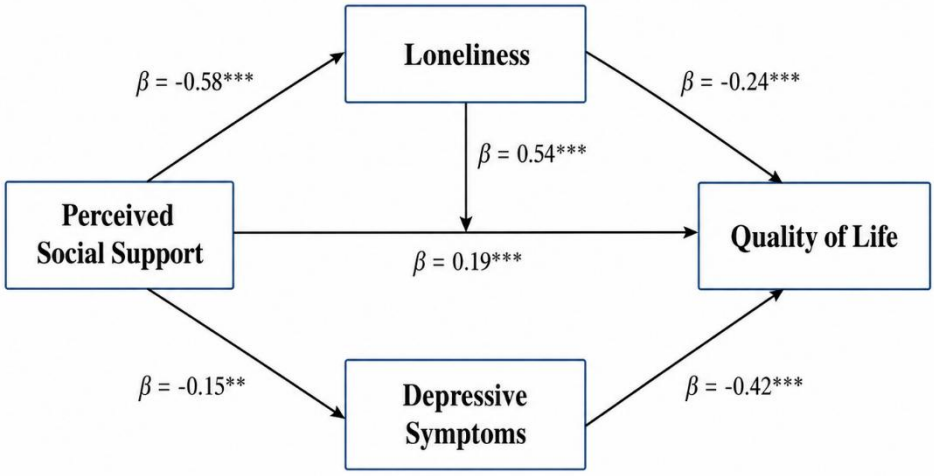
Bootstrapped Direct, Indirect, and Total Effects of Perceived Social Support on Quality of Life

Effect Pathway	Standardized Effect	Bootstrapped SE	95% Lower CI	95% Upper CI	p-value
Direct effect: Social support → Quality of life	0.194	0.041	0.112	0.276	<0.001
Indirect effect through loneliness	0.139	0.031	0.083	0.202	<0.001
Indirect effect through depressive symptoms	0.063	0.024	0.021	0.112	0.006
Sequential indirect effect through loneliness and depressive symptoms	0.132	0.029	0.079	0.195	<0.001
Total indirect effect	0.334	0.039	0.257	0.411	<0.001
Total effect	0.528	0.035	0.460	0.596	<0.001

The bootstrapping results in Table 5 demonstrate that the relationship between perceived social support and quality of life was mediated by loneliness and depressive symptoms. The direct effect of perceived social support on quality of life remained statistically significant, indicating that social support continued to explain quality of life even after the mediating variables were included in the model. However, the total indirect effect was also significant, showing that a substantial part of the association between social support and quality of life operated through psychological and social mechanisms. The indirect effect through loneliness was significant, meaning that higher perceived social support was associated with lower loneliness, which in turn was associated with better quality of life. The indirect effect through depressive symptoms was also significant, indicating that perceived social support contributed to quality of life partly by reducing depressive symptoms. In addition, the sequential indirect pathway from perceived social support to loneliness, from loneliness to depressive symptoms, and from depressive symptoms to quality of life was significant. This finding suggests that loneliness may function as an initial social-emotional mechanism through which inadequate support contributes to depressive symptoms, which then further reduces quality of life. Since the confidence intervals for all indirect pathways did not include zero, all mediation effects were statistically supported. The total effect of perceived social support on quality of life was 0.528, while the total indirect effect was 0.334, indicating that approximately 63.3% of the total effect was explained through loneliness and depressive symptoms. Therefore, the mediation was partial rather than full, because both the direct pathway and the indirect pathways were statistically significant.

Figure 1

Standardized structural model of the mediating roles of loneliness and depressive symptoms in the relationship between perceived social support and quality of life among older adults with chronic disease



The structural model summarized in Figure 1 shows that perceived social support was positively associated with quality of life both directly and indirectly. The indirect pathways demonstrate that social support reduced loneliness and depressive symptoms, and these reductions were associated with better quality of life. The strongest pathway in the model was the positive association between loneliness and depressive symptoms, followed by the negative association between depressive symptoms and quality of life. This pattern indicates that emotional distress is a central mechanism linking social conditions to health-related quality of life in older adults with chronic disease. The model also shows that loneliness had both a direct negative effect on quality of life and an indirect negative effect through depressive symptoms. Therefore, loneliness should not be interpreted only as a social variable, but also as an important psychological risk factor that may intensify depressive symptoms and reduce perceived well-being. Overall, the findings support the proposed mediating model and indicate that perceived social support, loneliness, and depressive symptoms jointly explain meaningful variation in quality of life among older adults living with chronic disease.

4. Discussion

The present study examined the relationship between perceived social support and quality of life among older adults with chronic disease and tested the mediating roles of loneliness and depressive symptoms. The findings showed that older adults who perceived higher levels of social support reported lower loneliness, fewer depressive symptoms, and better quality of life. In the structural model, perceived social support had a significant negative direct effect on loneliness and depressive symptoms and a significant positive direct effect on quality of life. Loneliness had a significant positive effect on depressive symptoms and a significant negative effect on quality of life, while depressive symptoms had the strongest negative direct effect on quality of life. The bootstrapping results further confirmed that loneliness and depressive symptoms mediated the relationship between perceived social support and quality of life, both independently and sequentially. Therefore, the results supported a partial mediation model in which perceived social support influenced quality of life directly and indirectly through reduced loneliness and depressive symptoms.

The significant positive association between perceived social support and quality of life is consistent with previous evidence emphasizing the protective role of social relationships in later life and chronic disease. Older adults with chronic conditions often experience functional limitations, treatment demands, uncertainty about disease progression, and reduced participation in previously valued activities. In such circumstances, social support may enhance quality of life by providing emotional security, practical assistance, informational guidance, companionship, and a sense of being valued. The present finding aligns with evidence from multimorbidity research showing that social factors contribute meaningfully to the association between chronic disease burden and quality of life (Makovski et al., 2020). It is also consistent with findings indicating that social networks and multimorbidity are linked to health-related well-being in later life (González et al., 2021). Similarly, studies among community-dwelling older adults have shown that social and health determinants jointly shape quality of life, suggesting that quality of life in aging populations cannot be explained by physical health alone (Lim et al., 2023). The present results also support research on rheumatoid arthritis showing that social support is positively associated with quality of life in chronic disease populations (Kuit & Dunne, 2025). Accordingly, the findings reinforce the idea that perceived social support is not merely a background variable but a central psychosocial resource in the adaptation of older adults with chronic disease.

The negative relationship between perceived social support and loneliness was also expected and theoretically meaningful. Although loneliness and social support are related, they are not identical constructs. Social support reflects the perceived availability and adequacy of supportive relationships, whereas loneliness reflects subjective dissatisfaction with social connection. The present findings indicate that older adults who felt more supported by family, friends, and significant others were less likely to experience loneliness. This result is consistent with the growing literature describing loneliness as a major determinant of health and well-being in aging populations (Puyané et al., 2025). The finding also aligns with studies showing that loneliness is associated with lower quality of life among rural older adults (Choompunuch et al., 2025) and with subjective cognitive decline and diminished well-being in older adults (Sanprakhon et al., 2024). In long-term care residents, loneliness has been shown to mediate relationships among depression, social support, and quality

of life, which closely supports the pathway observed in the present study (Szeto et al., 2025). These results suggest that social support may protect quality of life partly because it reduces the painful perception of social disconnection. For older adults with chronic disease, this may be particularly important because illness can reduce mobility, decrease participation in social roles, and increase dependence on others, all of which may heighten vulnerability to loneliness.

The present study also found that loneliness had a significant negative direct effect on quality of life. This finding suggests that loneliness reduces quality of life independently of depressive symptoms. Loneliness may undermine quality of life by reducing emotional satisfaction, weakening perceived belonging, limiting engagement in meaningful activities, and increasing the subjective burden of illness. In older adults with chronic disease, loneliness may also reduce motivation for self-care, increase perceived helplessness, and intensify the experience of functional decline. The result is consistent with evidence showing that loneliness is a clinically meaningful predictor of quality of life among older adults (Choompunuch et al., 2025; Sanprakhon et al., 2024). Similar patterns have been observed in institutionalized and non-institutionalized older adults, where loneliness and depression were both associated with quality of life (Silva et al., 2024). Research among individuals with psychotic disorders has also shown that loneliness contributes to poorer health-related quality of life, supporting the broader relevance of loneliness across vulnerable populations (Nevarez-Flores et al., 2022). In addition, studies among older adults with dementia have shown that social and emotional loneliness are associated with cognitive and psychological functioning, indicating that loneliness is not only a social experience but also a factor related to broader mental and functional health (Carbone et al., 2022). Therefore, the present findings support the interpretation of loneliness as a key psychosocial mechanism through which social vulnerability affects well-being in later life.

Another important finding was the significant association between loneliness and depressive symptoms. Older adults who reported higher loneliness also reported more depressive symptoms. This pathway was one of the strongest in the structural model, indicating that loneliness may be a major emotional precursor of depression among older adults with chronic disease. Chronic illness may increase the risk of loneliness by restricting social activity, creating dependence, reducing confidence in public participation, and increasing fatigue or pain. When loneliness persists, it may contribute to depressive symptoms through perceived rejection, loss of meaning, reduced positive reinforcement, and diminished hope. This result is consistent with studies on older adults with multimorbidity showing that loneliness and depression are closely related and that social support and self-efficacy may play important roles in this relationship (Liang et al., 2023). It also aligns with evidence showing that living alone is associated with depressive symptoms through mechanisms such as sleep quality and anxiety (Huang et al., 2023). Studies of empty-nest older adults have similarly shown that depressive symptoms are important determinants of quality of life, particularly when social and family roles change in later life (He et al., 2022). The present findings therefore suggest that loneliness should be considered a clinically relevant warning sign for depressive symptoms in older adults with chronic disease.

Depressive symptoms had the strongest negative direct effect on quality of life in the model. This finding indicates that emotional distress is one of the most important determinants of reduced quality of life among older adults with chronic disease. Depression may reduce quality of life by diminishing energy, motivation, pleasure, sleep quality, perceived competence, social engagement, and treatment adherence. For older adults managing chronic illness, depressive symptoms may also amplify perceived disease burden and reduce confidence in maintaining independence. The present result is consistent with evidence showing that depressive and insomnia symptoms are associated with reduced quality of life among community-dwelling older adults (Tsaras et al., 2022). It also corresponds with findings from institutionalized older adults, where depressive symptoms are prevalent and associated with vulnerability in later life (Sajali et al., 2021). Research conducted during and after the COVID-19 period further supports this interpretation, showing that social distancing, quarantine, and emotional suffering can negatively affect older adults' psychological status and quality of life (Karlıbel et al., 2023; Maity et al., 2024; Santos & Thaís Bento Lima da, 2023). Moreover, the finding is consistent with evidence that depressive symptoms can mediate the relationship between negative social experiences and quality of life (Huang et al., 2022). These findings highlight the importance of depression as both an outcome of social vulnerability and a direct determinant of poor quality of life.

The mediation results provide a more detailed explanation of how perceived social support may influence quality of life. The significant indirect effect through loneliness indicates that perceived social support improves

quality of life partly by reducing loneliness. This suggests that the subjective quality of support matters. Older adults may benefit most when support is emotionally meaningful, reliable, and connected to a sense of belonging rather than merely frequent or instrumental. The significant indirect effect through depressive symptoms also indicates that perceived social support contributes to quality of life by reducing depressive symptoms. This result is consistent with previous evidence showing that depressive symptoms mediate the association between social support and quality of life among rural older adults (Wang et al., 2020). The sequential mediation pathway from social support to loneliness, from loneliness to depressive symptoms, and from depressive symptoms to quality of life was also significant. This finding is particularly important because it suggests a possible psychosocial chain: inadequate perceived support increases loneliness, loneliness intensifies depressive symptoms, and depressive symptoms reduce quality of life. This pathway aligns with evidence from long-term care residents showing interrelationships among loneliness, depression, social support, and quality of life (Szeto et al., 2025), as well as evidence from older adults with multimorbidity showing the interconnection of loneliness, depression, self-efficacy, and social support (Liang et al., 2023).

The findings also have implications for understanding chronic disease within a broader social-ecological and biopsychosocial framework. Chronic disease can generate quality-of-life losses through symptoms, disability, and treatment burden, but these effects are influenced by the interpersonal and psychological context in which illness is experienced. Social support may buffer the impact of chronic illness by increasing emotional resilience, improving access to care, encouraging activity, and reducing the sense of facing illness alone. Evidence from chronic heart failure research supports this perspective, showing that social frailty is associated with quality of life through family insufficiency and social networks (Huang, Liu, Wang, Luan, Yao, et al., 2025). Related findings also suggest that social support may mediate relationships between social frailty and anxiety and depression among older patients with chronic heart failure (Huang, Liu, Wang, Luan, & Yao, 2025). The role of supportive relationships is further supported by nursing home research describing nurse-patient interaction as a salutogenic resource for older adults (Haugan, 2021). Likewise, caregiver-related and environmental factors have been linked to the quality of life of older adults with chronic diseases and their care systems (Bahtiar et al., 2024). Therefore, the present findings confirm that interventions aimed at improving quality of life should address both the medical and social-emotional dimensions of chronic disease.

5. Conclusion

Sensory impairments such as hearing and vision loss can reduce quality of life partly through psychosocial pathways, including reduced participation and increased emotional distress (Fenwick et al., 2023; Phua et al., 2021). Hearing impairment, pain, and quality of life have also been linked to depressive symptoms in older adults, suggesting that functional limitations may become psychologically harmful when they restrict social engagement and autonomy (Sun et al., 2021). Social support has been related to nutritional risk among community-dwelling older adults, showing that social connection may also influence concrete health behaviors and daily care processes (Ganhão-Arranhado et al., 2023). In addition, instrumental internet use has been associated with quality of life through loneliness and social support, suggesting that access to communication and digital resources may help maintain social connection in later life (Wójcik et al., 2021). Coping responses have also been associated with quality of life among older adults, indicating that psychological and behavioral adaptation may shape the experience of aging and illness (Rosaly & Parashar, 2021). Taken together, these findings support the conclusion that the quality of life of older adults with chronic disease depends on the interaction of social support, loneliness, emotional health, functional capacity, and adaptive resources.

6. Limitations & Suggestions

This study had several limitations that should be considered when interpreting the findings. First, the cross-sectional design prevents causal conclusions about the direction of relationships among perceived social support, loneliness, depressive symptoms, and quality of life. Although the proposed mediation model was theoretically grounded and statistically supported, longitudinal or experimental designs are needed to determine whether changes in social support lead to subsequent changes in loneliness, depressive symptoms, and quality of life. Second, the data were collected using self-report questionnaires, which may be affected by recall bias, social desirability, emotional state, or response style. Third, the sample consisted of older adults with chronic disease living in Canada, and although the sample was clinically diverse, the

findings may not be generalizable to all older adults, particularly those in long-term care facilities, rural or remote communities, culturally specific populations, or individuals with severe cognitive impairment. Fourth, chronic disease was treated broadly, and differences between diagnostic groups, disease severity levels, treatment regimens, disability status, and duration of illness were not examined in detail. Finally, unmeasured variables such as pain, sleep quality, income, health literacy, resilience, cognitive function, and access to health care may also have influenced the relationships observed in the model.

Future research should examine the relationships among social support, loneliness, depressive symptoms, and quality of life using longitudinal designs to clarify temporal ordering and causal mechanisms. Researchers should investigate whether changes in perceived social support over time predict later reductions in loneliness and depressive symptoms and whether these changes improve quality of life among older adults with chronic disease. Future studies should also compare different chronic disease groups and consider the effects of disease severity, multimorbidity, pain, functional limitations, treatment burden, and cognitive status. In addition, it would be valuable to examine different sources of support separately, including family support, friend support, partner support, community support, and professional health care support, because each source may influence loneliness and depressive symptoms in different ways. Future research should also consider cultural background, migration status, rural versus urban residence, digital access, and socioeconomic status as possible moderators. Mixed-method studies are recommended to capture not only statistical pathways but also older adults' lived experiences of support, loneliness, depression, and quality of life in the context of chronic disease.

The findings suggest that improving quality of life among older adults with chronic disease requires integrated attention to social, emotional, and clinical needs. Health care providers should routinely assess perceived social support, loneliness, and depressive symptoms as part of chronic disease management, rather than focusing only on physical symptoms and medication adherence. Screening for loneliness and depression should be incorporated into primary care, geriatric care, rehabilitation services, and chronic disease clinics. Interventions should aim to strengthen meaningful social support through family involvement, peer support groups, community programs, home-based outreach, social prescribing, and age-friendly digital communication resources. Because loneliness may contribute to depressive symptoms and reduced quality of life, interventions should prioritize the quality and emotional meaning of social relationships, not merely the number of contacts. Clinical teams should also coordinate psychological support, counseling, and referral pathways for older adults who show depressive symptoms. Practical support for transportation, daily activities, health literacy, and disease self-management may further enhance independence and well-being. Overall, care for older adults with chronic disease should be person-centered, relationship-oriented, and designed to protect both physical functioning and social-emotional health.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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