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Evaluation of quality of life in the elderly who have fallen

Maath Ahmed Khalaf Khalaf [1], Tahsin Barış Değer [2]

[1] Çankırı Karatekin University, Graduate School of Health Sciences, Department of Public Health Nursing, Çankırı, Turkey
[2] Çankırı Karatekin University, Faculty of Health Sciences, Department of Gerontology, Çankırı, Turkey

ORCID ID of the author(s)

MAKK: 0000-0001-8488-3514
TBD: 0000-0002-4231-0782

Corresponding Author
Tahsin Barış Değer
Aksu M. Çelebi S. No: 17, 18200, Çankırı, Turkey
E-mail: drbarisdeger@gmail.com

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All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

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Abstract

Background/Aim: Approximately 30% of older adults fall at least once per year; consequently, falls are a significant public health concern in the elderly. The most common outcomes are fractures, immobility, high morbidity, and mortality rates. In recent years, quality of life (QoL) is used as a criterion to guide social policies for the elderly. The high prevalence of falls can have serious consequences on the QoL of older people, resulting in prolonged hospitalization, institutionalization, need for care, social isolation, anxiety, and depression. Therefore, it is essential to understand the effect of falls on QoL and influencing factors. In light of this study's results, it is intended to provide recommendations for social policy that will protect the elderly from falls and maintain their high QoL. This study aimed to determine the QoL and the factors affecting the elderly who have fallen.

Methods: The research was a cross-sectional study. The study sample consisted of 90 elderly individuals who applied to the hospital due to falls. The inclusion criteria were being 65 years of age or older, applying to the hospital's emergency department, orthopedic or orthopedic surgery clinic due to a fall, not having passed 6 months from the date of discharge, and agreeing to participate in the study voluntarily. Data were collected through face-to-face interviews in January–June 2021 using the purposive sampling method. The Elderly Introduction Form was used to obtain sociodemographic data of the participants, as well as data on falls and their experiences after falls. The Quality of Life Scale for the Elderly was used to determine QoL. The student's t-test was used to compare two categorical variables. ANOVA was used for more than two variables, and logistic regression analysis was also applied.

Results: QoL levels were classified as poor, fair, and good, and 58.9% of the participants were found to have a fair QoL. In addition, according to the scale's total score average of 3.17 (0.473), the general quality of life was found to be fair for all participants. According to the t-test and ANOVA results, the QoL was higher for those with higher education levels and those living with their spouses ($P<0.05$). The QoL was low in those who had fractures, had surgery, were hospitalized for more than 4 days, and had chronic diseases ($P<0.05$). In the regression analysis model, age, economic status, and the number of drugs used were effective on QoL.

Conclusion: The quality of life was poor in the elderly who experienced fractures and were hospitalized. Balance-enhancing exercises in the elderly can prevent falls and associated complications. Low education level, chronic illness, and drug use reduced the quality of life. For education, literacy courses and lifelong learning programs can be applied to the elderly. For diseases, healthy aging policies can be implemented.

Keywords: aged, quality of life, falls, social policy

Introduction

A fall is the unintentional tipping to the ground or a lower level without secondary cause or external forces [1]. Approximately 30% of older adults fall at least once per year, making falls in the elderly a significant public health concern [2]. When examining previous research on older adults living in the community, it was determined that 27.6% of older adults had fallen in the previous year in a study conducted in Brazil with a very large sample size [3]. Even among the elderly without any balance disorder, the rate of falls was 29.8% in a separate field study [4] that screened the elderly for fall risk. In addition, it was reported that the rate of falls was 32% among those aged 65–74 and 51% among those aged 85 and older [5].

Falls, which are extremely common among the elderly, can impair functional capacity and lead to loss of autonomy. The most common outcomes are fractures, immobility, activity restrictions, nursing home confinement, deteriorating health, and mortality risk. In addition, psychological issues include fear of falling again, increased health care costs, family issues, and limited participation in social life [6]. In old age, increased bone mineral loss and a decrease in muscle mass and strength, known as sarcopenia, increase both the risk of falls and the risk of fracture after a fall. Consequently, hospitalization, morbidity, and mortality rates rise [1].

Quality of life (QoL) is the state of being well and satisfied with life within the environmental conditions and opportunities in which people live. People's level of functionality, health, and psychological conditions affect their QoL [7]. Old age is a period of physical decline, an increase in chronic diseases, and a decrease in participation in social activities. For this reason, the concept of QoL is much more important in old age. In developed countries, all public policies are focused on the QoL of the elderly by actively participating in society [8]. Because aging rates are higher in developing countries, QoL is used as a criterion to guide social policies [9].

When the relationship between falls and QoL in the elderly is examined, it has been reported that due to the acute consequences of falls, such as fractures and fear of falling, the physical, psycho-social, and functional abilities of those who fall deteriorate in the longer term, which has a significant impact on their perceived health and QoL [10]. Therefore, the high prevalence of falls can have serious consequences on the QoL of older people, resulting in prolonged hospitalization, institutionalization, restriction of activity and mobility, changes in balance and postural control, social isolation, anxiety, and depression. Therefore, it is essential to understand the strengthening and protective factors for falls, take precautions against falls, and avoid reducing the QoL of the elderly [5].

This study aimed to examine the effects of falls, one of the most prevalent and significant geriatric syndromes, on the QoL of the elderly. How is the life quality of the elderly affected by a fall? What are the factors affecting this process? How do fractures, the treatment process, having to undergo an operation, the length of hospitalization, permanent disability, and rehabilitation services impact the QoL of the elderly following a fall? How do the sociodemographic and economic characteristics of the elderly affect their QoL after a fall? In light of the answers to all of these questions, this study intended to provide recommendations for social policy that will protect the elderly from falls and maintain their high QoL.

Materials and methods

Subjects

The research was descriptive and cross-sectional. The study employed a method of purposeful sampling. The study sample consisted of ninety elderly individuals admitted for falls to the Ramadi Training and Research Hospital in Al-Anbar, Iraq. The study universe was determined from hospital records based on the number of elderly patients admitted to the hospital in October 2020 due to falls within one month. Within a month, 30 elderly patients were admitted due to falls. In a period of three months, this number would reach 90, and the study universe was estimated to be 90. Because the number of participants included in the study within three months based on the inclusion criteria was less than anticipated, data collection continued until the target universe size was reached. The number of participants reached 90 in June 2021, at which point the study was terminated. As a result, data collection occurred over the course of six months until the sample size and universe size were equal.

The inclusion criteria were being 65 years of age or older, applying to the hospital's emergency department, orthopedic or orthopedic surgery clinic due to a fall, not having passed 6 months from the date of discharge, and agreeing to participate in the study voluntarily. Exclusion criteria included being younger than 65 years old, having a mental disorder or hearing impairment that made it difficult to comprehend the questionnaire questions, or refusing to participate in the study.

Evaluation parameters

Two forms, the Elderly Introduction Form and Quality of Life Scale, were used in the study.

The Elderly Introduction Form was a questionnaire designed by the researchers. With this questionnaire, sociodemographic data of the participants, as well as data on falls and the process they experienced after falls, were obtained. Did the elderly experience a fracture or other disability after the fall, did they receive outpatient treatment or hospitalization, and what was the duration of hospitalization and discharge time? In addition, did they receive any rehabilitation services after discharge? Intercalarily, data such as body mass index, economic status, and the presence of other chronic diseases were obtained with this form.

The Quality of Life Scale for the Elderly comprised six sub-dimensions: general life, physical health, emotional and psychological, social relations, environment, and spiritual. The validity and reliability studies of the scale were conducted, and it was reported to be valid for the Iraqi elderly and reliable, with a Cronbach's alpha of 0.88 [11]. It is a five-point Likert-type scale. The scoring system is based on averages. Those with a mean score between 1.00–1.80 are considered to have a very poor QoL. Those with a mean score between 1.81–2.60 are considered to have a poor QoL, 2.61–3.40 fair, 3.41–4.20 good, and 4.21–5.00 very good QoL [11]. Written permission was obtained from the relevant author to use the scale. In addition, after the study was completed, Cronbach's alpha of this scale was calculated for our current study sample and found to be 0.91.

Face-to-face interviews were conducted with the participants. In accordance with the inclusion criteria, patients who had been admitted to the emergency department, surgery, or orthopedics clinic in the previous six months due to falls and received treatment services were visited in their homes. Those who voluntarily agreed to participate in the study were informed about the study and provided informed consent. The research was conducted in accordance with the Helsinki Declaration. The Çankırı Karatekin University Ethics Committee (Meeting No. 18, Date: 05.01.2021) and the Al Anbar Ministry of Health Scientific Research Committee approved the study (No: 2, Date: 11.01.2021).

Statistical analysis

The SPSS for Windows version 24.0 software package was used for data evaluation. Descriptive statistics (mean, standard deviation, number, and percentile) were given for categorical and continuous variables. For the causal relationships between categorical variables, firstly, the compatibility of the scale scores with normal distribution was checked by the Kolmogorov-Smirnov test. Because the scale scores were normally distributed, the student's t-test was used to compare two categorical variables, and ANOVA was used for more than two variables. Logistic regression analysis was also applied. $P<0.05$ and was considered statistically significant.

The dependent variable of the study was the QoL scale score. The independent variables were sociodemographic data and all other questions related to falls in the Elderly Introduction Form section of the questionnaire.

Results

When the QoL levels of the participants were evaluated based on the average scale scores, it was determined that 58.9% of the participants had a moderate QoL (Table 1). When the QoL levels of the participants were evaluated with the sub-dimensions of the scale, it was determined that the QoL was at a good level in the social relations and spirituality sub-dimensions and at a moderate level in all other sub-dimensions. According to the total mean scale score of 3.17 (0.473), the overall QoL level was found to be moderate for all participants of the study (Table 2).

Table 1: Number and percentage values of the participants according to the mean scores of quality of life

Level of the Quality of Life	n	%
Very Poor [1.00–1.80]	0	0.0
Poor [1.81–2.60]	12	13.3
Fair [2.61–3.40]	53	58.9
Good [3.41–4.20]	25	27.8
Very Good [4.21–5.00]	0	0.0
Total	90	100

Table 2: Evaluation of quality of life sub-dimensions in the elderly after falls

Sub-Domains of the Quality of Life	Mean	SD	Evaluation
General life	3.30	0.736	Fair
Physical health	2.62	0.362	Fair
Emotional and psychological	3.20	0.619	Fair
Social relations	3.45	0.698	Good
Environment	2.66	0.619	Fair
Spiritual	3.80	0.674	Good
Total	3.17	0.473	Fair

The effect of the sociodemographic data of the participants on their QoL was significant in the variables of age, educational status, and cohabitation. The QoL of the elderly in the younger age group (65–74 years) was higher than that of the elderly in the older age group ($P<0.001$). QoL was higher in university and high school graduates compared to illiterate elderly participants ($P<0.001$). QoL was higher in the elderly living with a spouse or living with both spouse and children than in the elderly living without a spouse and living only with children ($P=0.052$). When the effect of the economic data of the elderly on their QoL was analyzed, the QoL of the elderly who received pensions was higher than the elderly who had no income ($P=0.001$). The QoL of the elderly whose income met their needs was higher than the elderly whose income did not meet their needs ($P=0.011$) (Table 3).

Table 3: The effect of sociodemographic and economic data on quality of life in elderly people who had a fall

	Categories	n	%	Mean	SD	F / t	*P*-value
Age	65–74 years	51	56.7	3.34	**0**.485	9.314	<0.001*
	75–84 years	29	32.2	3.02	**0**.364		
	≥ 85	10	11.1	2.79	**0**.330		
Gender	Male	42	46.7	3.09	0.454	1.517	0.133
	Female	48	53.3	3.24	0.484		
Marital Status	Married	67	74.4	3.09	0.454	2.679	0.052
	Widowed	15	16.7	3.24	0.484		
	Divorced	5	5.6	3.25	**0**.477		
	Single	3	3.3	2.91	**0**.346		
Education	Illiterate	28	31.1	2.97	**0**.390	5.376	<0.001*
	Literate	23	25.6	3.18	**0**.531		
	Primary School	15	16.7	3.01	**0**.375		
	Middle School	5	5.6	3.27	**0**.439		
	High School	10	11.1	3.42	**0**.309		
	University	9	10.0	3.72	**0**.387		
Body mass index [BMI]	Underweight (<18.5)	4	4.4	3.14	**0**.345	1.328	0.270
	Normal weight (18.5–24.9)	35	38.9	3.28	**0**.494		
	Overweight (25–29.9)	17	18.9	3.19	**0**.527		
	Obesity (≥ 30])	34	37.8	3.06	**0**.425		
Live at home	Alone	1	1.1	3.00	**0.0**	3.096	0.020*
	Wife/Husband	9	10.0	3.38	**0**.736		
	Wife/Husband and children	59	65.6	3.24	**0**.437		
	Children	19	21.1	2.86	**0**.333		
	Other	2	2.2	3.21	**0**.152		
Economic situation	No income	37	41.1	3.07	**0**.394	4.408	0.001*
	Elderly pension	3	3.3	3.19	**0**.408		
	Disabled pension	3	3.3	2.34	**0**.240		
	Salary from spouse	3	3.3	3.08	**0**.396		
	Pension	43	47.8	3.34	**0**.474		
	Other	1	1.1	2.45	**0.0**		
Do you have any other income?	No	52	57.8	3.19	**0**.487	1.379	0.312
	Rent	34	37.8	3.18	**0**.464		
	Assistance	4	4.4	2.82	**0**.260		
Is your income sufficient for your needs?	Yes	35	38.9	3.32	**0**.466	4.752	0.011*
	Sometimes	24	26.7	3.22	**0**.372		
	Not Enough	31	34.4	2.98	**0**.497		

F: ANOVA, t: t-test, SD: Standard deviation, *P*: significance ($P<0.05$)*

In the elderly after a fall, the QoL of participants who experienced a fracture was lower than those who did not experience a fracture ($P<0.001$). Participants who were hospitalized had lower QoL than those who were treated as outpatients ($P<0.001$). Participants who were hospitalized for 3 days or less had a higher QoL than those who were hospitalized for 4 days or more ($P<0.001$). Participants who had to undergo surgery for a fall had a lower QoL than participants who did not undergo surgery ($P<0.001$). Participants with a discharge time of fewer than 3 months had a higher QoL than participants with a discharge time between 3 and 6 months ($P=0.008$). Participants who received physical therapy and rehabilitation services after the treatment process had a lower QoL than those who did not ($P=0.012$). Participants with at least one chronic disease had a lower QoL than those with no chronic disease ($P<0.001$). Participants who regularly used 3 or more medications on a daily basis had a lower QoL than participants who used less than 3 or no medications ($P<0.001$) (Table 4).

The model by which the effect of demographic characteristics on the QoL was examined is statistically significant (F=2.79 [$P<0.001$]). Independent variables affect 50.1% of QoL in a statistically significant way. The effect of the constant on the QoL of 3.194 units in the model was statistically significant; these are age, economic situation, and the number of medications used regularly (Table 5). However, according to the regression model,

except for these three independent variables, no other independent variables were statistically significant.

Table 4: The effect of treatment recovery process, and general health status on quality of life in the elderly after falls

Variables	Categories	n	%	Mean	SD	F / t	*P*-value
What kind of problem/injury did you experience due to falling?	Fracture	35	38.9	2.85[a]	**0**.341	10.239	<0.001*
	Dislocation	8	8.9	3.43[b]	**0**.289		
	Sprain	19	21.1	3.32[b]	**0**.488		
	Swelling	20	22.2	3.35[b]	**0**.442		
	Tendon damage	8	8.9	3.56[b]	**0**.366		
Have you been to the hospital?	Yes	41	45.6	2.92	0.355	5.369	<0.001*
	No	49	54.4	3.39	0.456		
Duration of hospitalization	None	49	54.4	3.39[b]	0.456	8.901	<0.001*
	1–3days	16	17.8	3.04[b]	0.380		
	4–6 days	6	6.7	2.76[a]	0.371		
	8–10 days or more	19	21.1	2.84[a]	0.375		
Have you had an operation?	Yes	40	44.4	2.88	0.342	6.399	<0.001*
	No	50	55.6	3.41	0.430		
When were you discharged?	None	3	3.3	3.78[b]	0.257	3.397	0.008*
	One week	14	15.6	3.30[b]	0.585		
	Fifteen days	19	21.1	3.35[b]	0.419		
	One month	14	15.6	3.10[b]	0.518		
	Three months	25	27.8	3.10[b]	0.403		
	Six months	15	16.7	2.89[a]	0.323		
Have you received rehabilitation services?	Yes	19	21.1	2.93	0.443	6.556	0.012*
	No	71	78.9	3.24	0.463		
Do you have a chronic disease?	Yes	59	65.6	3.04	0.475	3.981	<0.001*
	No	31	34.4	3.43	0.358		
How many drugs do you use in a day regularly?	None	31	34.5	3.43[b]	0.358	7.497	<0.001*
	One	4	4.4	3.40[b]	0.351		
	Two	26	28.9	3.16[b]	0.499		
	Three or more	29	32.2	2.83[a]	0.339		

F: ANOVA, t: t-test, SD: Standard deviation, [a, b] Statistical significance exists between the categorical variables with the letters a and b (P<0.05)*.

Table 5: Impact of age, economy and number of used medications variables (independent variables) on quality of life (dependent variable) according to regression analysis

Dependent variable	**B unstandardized**	**T-test**	***P*-value**	**Model**		**ANOVA**		
Independent variable						**Df**	**F**	***P*-value**
Intercept	3.194	3973.0	<0.001					
Age	-0.190	1.870	0.065	R	0.712	65	2.79	<0.001*
Economic	0.017	0.446	0.657	R^2	0.508			
Drugs number	-0.121	-0.967	0.337	R^{-2}	0.498			

R: Sample regression, Df: Degree of Freedom, Sig: Significant*, F: F- Test, R^2: Regression Square, R^{-2}: Adjusted Regression Square

Discussion

The results of this study, in which the QoL levels of the elderly after falls were measured and the factors affecting their QoL were identified, were discussed in light of previously published national and international research. In a study involving a total of 1,792 elderly individuals, the QoL among those who had fallen in the previous year was found to be moderate despite being lower than among those who had not fallen in the previous year. The median QoL score of the elderly who had fallen was identical to the median score of the entire sample [12]. In a study conducted in Thailand among elderly people of various ethnic backgrounds and revealing the relationship between falls and QoL, the negative impact of falls on the QoL was revealed, and 68.6% of the elderly were reported to have a moderate QoL [13]. In a study involving 4,260 elderly women treated for falls in Korea, 44.7% of participants reported a high quality of life, 55.3% reported a low QoL, and the sample as a whole was considered to have a moderate QoL [14]. In the present study, the QoL of the participants was found to be moderate, with a mean score of 3.17 (0.473), and the present study was consistent with the literature. In another study using the same scale that we used in the current study, the QoL of the elderly was found to be good, with a mean score of 3.91 (0.436), independent of falls. The reason for the good QoL in this study was that the elderly were engaged in physical activity. In the same study, QoL was low in the elderly who did not engage in physical activity [11].

When sociodemographic data were analyzed in a study examining the relationship between falls and QoL, the QoL of the elderly over 75 years of age was lower than the elderly aged 65–74 years [15]. In another study involving older people who experienced falls, older people had lower QoL scores than younger elderly [14]. In another study, age, gender, and marital status were reported to affect the QoL in older people [16]. In another study, older men were reported to have a higher QoL than older women [17]. Contrary to all these study results, there were also studies reporting that age and gender had no effect on the QoL of the elderly [18]. In our current study, the QoL of the elderly in the younger age group (65–74 years) was found to be higher than the elderly in the older age group. The reason for this is that as age increases, mineral loss from the bones of the elderly increases, and the bones become weaker. The current study sample consists of elderly people who have fallen. The older elderly have a higher risk of injury after a fall and a lower rate of recovery during the treatment process. Accordingly, lower QoL was an expected result. In the present study, gender had no effect on the QoL. The reason for this was that the treatment opportunities after a fall were the same for both genders, and there was no effect of gender in equal environmental conditions.

When the educational status was analyzed, in most of the published studies, educational level was beneficial to the life quality of the elderly [19]. Consistent with previous research, participants with a high level of education had a high QoL in the current study. This was expected, as activities such as Internet use, book reading, and self-care during the recovery process were associated with education level.

One study found that the post-fall QoL for elderly people living with their spouses was high [14]. The present study was consistent with previous research. Because the definition of QoL is a person's satisfaction with life, it was expected that the elderly living with their spouses would have higher scores than those who had lost their spouses.

In previous research, the QoL of seniors with a higher socioeconomic status was higher than that of seniors with a lower socioeconomic status [13,20–21]. The present study was consistent with previous research. Although factors affecting the QoL vary across countries and cultures, it is indisputable that the economy was the most significant constant factor.

In a systematic review of 49 published studies that examined the variable of experiencing fractures, the QoL of the elderly who experienced fractures was lower than that of the elderly who did not experience fractures [22]. The present study was consistent with previous research. The treatment process, pain, and recovery-related anxiety were sufficient to diminish life quality.

In a study involving elderly patients who were hospitalized for fractures and underwent surgery, it was found that the participants' QoL scores decreased significantly between the time they were admitted to the hospital and one month after discharge and that their average length of hospital stay was 5 days

[23]. In the current study, those who were hospitalized had a lower QoL than those who were not hospitalized, those who underwent surgery had a lower QoL than those who did not, and those who stayed in the hospital for 4 days or more had a lower QoL than those who stayed in the hospital for 3 days or less. In terms of discharge time, the present study was distinct from previous research. In the present study, the reason for the lower QoL of those whose hospital stay lasted between three and six months was interpreted as a decrease in life satisfaction as time passed due to the participant's inability to fully regain their former health.

According to studies, physical therapy and rehabilitation applications for orthopedic disorders improve the elderly's QoL [24]. The present study found the opposite to be true. In the current study, participants who received physical therapy and rehabilitation services following a fall had a low QoL. This was attributed to the fact that participants with mild injuries, sprains, and strains following a fall did not require rehabilitation services. It was believed that the elderly applicants for rehabilitation services included individuals who had fractures and undergone surgery.

It was reported that elderly people with chronic diseases had a lower QoL following a fall than elderly people without chronic diseases [13,14]. The present study was consistent with previous research. According to previous research, the QoL of the elderly declines as the number of medications they take on a daily basis rises [25]. The present study was consistent with previous research. The reason for this is that polypharmacy, drug interactions, and side effects increase the risk of falls in the elderly by causing balance disorders; consequently, a decline in QoL is inevitable.

Strengths and limitations

One of the researchers worked in the hospital where the study was conducted. The researcher contacted the participants while they were lying in the ward and obtained their consent. The researcher visited the participants at home and completed the questionnaires within a maximum of 6 months after the participants were discharged. Face-to-face interviews were conducted, an environment of trust was established, and data were collected accurately and hygienically.

Due to COVID-19, some elderly people did not accept health personnel into their homes. In order to prevent this situation from negatively affecting the study, the data collection period was extended, and an adequate sample size was reached.

Conclusion

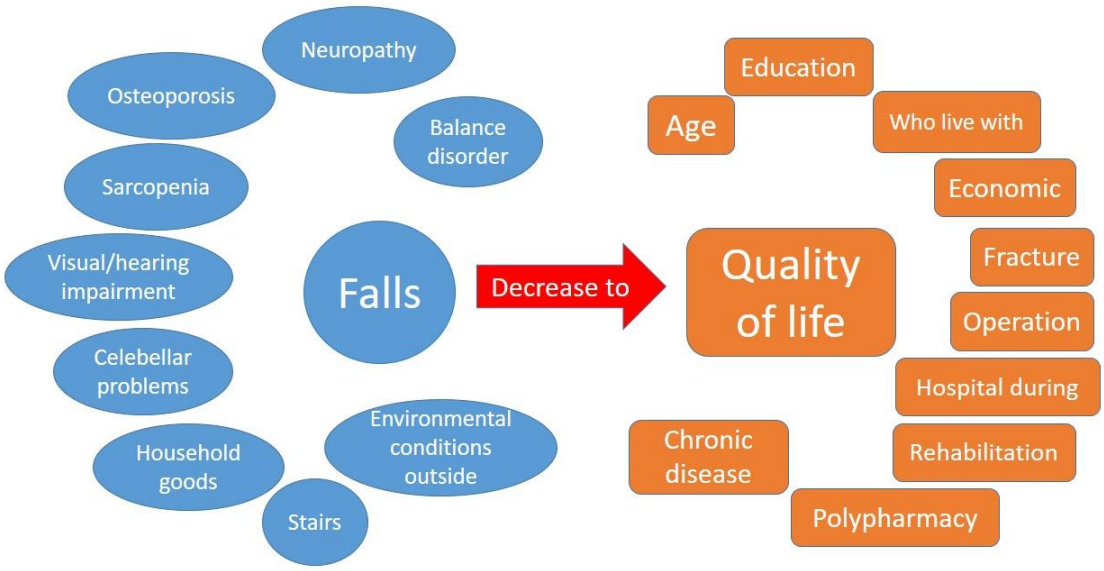
In light of the results of the study, protective and preventive health policies for the elderly were developed. These policy recommendations, developed to protect the elderly from falls and to improve their quality of life, were presented as a figure (Figure 1).

Social and health policy suggestions

To enhance the QoL of the elderly, falls should be prevented. Balance disorders should be prevented in the elderly to avoid falls. The elderly should be encouraged to walk and engage in physical activity. Public services for the elderly should be expanded, particularly those provided by local governments. The elderly should be provided with physical activity in the presence of physiotherapists and sports instructors at elderly living centers. Physical activity safeguards the elderly by delaying the onset of muscle atrophy [sarcopenia] and osteoporosis, which are the leading causes of falls. To raise the elderly's awareness, it is necessary to create public service announcements and posters. For the elderly, useful television programming should be developed (Figure 1).

Everyone should have a gerontologist or social worker registered with them in government family health centers, just as everyone has a family doctor. These professionals should monitor the elderly and refer them to social services that safeguard their health. In addition to assisting the elderly with home modifications, these professionals should take measures to prevent them from tripping and falling at home, such as removing carpets with curled edges, high door thresholds, and stairs without handrails. Vision, hearing, and neurologic examinations should be performed routinely on the elderly. There should be measures taken to facilitate the outdoor lives of the elderly. The elderly should be able to ride urban public transportation vehicles in comfort and safety, and city sidewalks and landscaping should be designed with the elderly in mind (Figure 1).

Figure 1: Risk factors for falls, quality of life, and factors affecting the quality of life



In addition to enhancing the QoL of the elderly by protecting them from falls, it is necessary to address factors that have a direct impact on QoL; courses in literacy should be made available to elderly illiterates. Opportunities for lifelong learning should be provided. Education on healthy living and conscious drug use should be organized. Activities such as sudoku should be organized to protect their cognitive skills and projects should be created to protect their fine motor skills. To prevent elderly poverty, employment policies should be implemented for the elderly. The quality of health services in hospitals should be enhanced, geriatrics clinics should be expanded, and post-discharge rehabilitation services should be increased (Figure 1).

References

1. Fahimfar N, Yousefi S, Noorali S, Gharibzadeh S, Sanjari M, Khalagi K, et al. The association of cardio-metabolic risk factors and history of falling in men with osteosarcopenia: a cross-sectional analysis of Bushehr Elderly Health (BEH) program. BMC Geriatr. 2022;22:46. doi: 10.1186/s12877-021-02657-1
2. Muir SW, Gopaul K, Montero Odasso MM. The role of cognitive impairment in fall risk among older adults: a systematic review and meta-analysis. Age Ageing. 2012;41(3):299–308. doi: 10.1093/ageing/afs012
3. Siqueira FV, Facchini LA, Silveira DS, Piccini RX, Tomasi E, Thumé E, et al. Prevalence of falls in elderly in Brazil: a countrywide analysis. Cad Saúde Pública. 2011;27(9):1819-26. doi: 10.1590/S0102-311X2011000900015
4. Değer TB, Saraç ZF, Savaş ES, Akçiçek SF. The relationship of balance disorders with falling, the effect of health problems, and social life on postural balance in the elderly living in a district in Turkey. Geriatrics [Basel, Switzerland). 2019;4(2):37. doi: 10.3390/geriatrics4020037
5. Smith AA, Silva AO, Rodrigues RAP, Moreira MASP, Nogueira JA, Tura LFR. Assessment of risk of falls in elderly living at home. Rev. Latino-Am. Enfermagem. 2017;25:e2754. doi: 10.1590/1518-8345.0671.2754
6. Duarte GP, Santos JLF, Lebrão ML, Duarte YADO. Relationship of falls among the elderly and frailty components. Rev Bras Epidem. 2018;21(Suppl 02). doi: 10.1590/1980-549720180017
7. Değer TB, Ordu Y. Yaşlılarda yaşam kalitesini etkileyen faktörler: bir taşra örneği. Gümüşhane Univ J Health Sci. 2022;11(2):574-85. doi: 10.37989/gumussagbil.958202
8. Bowling A, Stenner, P. "Which measure of quality of life performs best in older age? A comparison of the OPQOL, CASP-19 and WHOQOL-OLD". J Epidemiol Commun H. 2011;65(3):273–80. doi: 10.1136/jech.2009.087668
9. Kunkel SR, Scott Brown J, Whittington FJ. Global aging: comparative perspectives on aging and the life course. New York: Springer Publishing Company; 2014. pp. 79-81.
10. Vaapio SS, Salminen MJ, Ojanlatva A, Kivelä SL. Quality of life as an outcome of fall prevention interventions among the aged: a systematic review. Eur J Public Health. 2009;19(1):7-15. doi: 10.1093/eurpub/ckn099
11. Al Abedi GAH, Naji AB. Impact of physical activity program upon elderly quality of life at Al-Amara city/Iraq. Medico-Legal Update. 2020;20(3):6-11.
12. Thiem U, Klaaßen-Mielke R, Trampisch U, Moschny A, Pientka L, Hinrichs T. Falls and EQ-5D rated quality of life in community-dwelling seniors with concurrent chronic diseases: a cross-sectional study. Health Qual Life Out. 2014;12:2. doi: 10.1186/1477-7525-12-2
13. Kantow S, Seangpraw K, Ong-Artborirak P, Tonchoy P, Auttama N, Bootsikeaw S, et al. Risk factors associated with fall awareness, falls, and quality of life among ethnic minority older adults in Upper Northern Thailand. Clin Interv Aging. 2021;16:1777–88. doi: 10.2147/CIA.S328912
14. Song J, Lee E. Health-related quality of life of elderly women with fall experiences. Int J Env Res Pub He. 2021;18(15):7804. doi: 10.3390/ijerph18157804
15. Paiva MMD, Lima MG, Barros MBDA. Social inequalities in the impact of falls on health-related quality of life among older adults. Ciência & Saúde Coletiva. 2020;25:1887-96. doi: 10.1590/1413-81232020255.34102019
16. Gobbens RJ, Remmen R. The effects of sociodemographic factors on quality of life among people aged 50 years or older are not unequivocal: comparing SF-12, WHOQOL-BREF, and WHOQOL-OLD. Clin Interv Aging. 2019;14:231–9. doi: 10.2147/CIA.S189560
17. Yu T, Enkh-Amgalan N, Zorigt G, Hsu YJ, Chen HJ, Yang HY. Gender differences and burden of chronic conditions: impact on quality of life among the elderly in Taiwan. Aging Clin And Exp Res. 2019;31(11):1625–33. doi: 10.1007/s40520-018-1099-2
18. Khaje-Bishak Y, Payahoo L, Pourghasem B, Asghari Jafarabadi M. Assessing the quality of life in elderly people and related factors in Tabriz, Iran. J Caring Sci. 2014;3(4):257–63. doi: 10.5681/jcs.2014.028
19. Elsous AM, Radwan MM, Askari EA, Abu AM. Quality of life among elderly residents in the Gaza Strip: a community-based study. Ann Saudi Med. 2019;39(1):1–7. doi: 10.5144/0256-4947.2019.1
20. Rong J, Ding H, Chen G, Ge Y, Xie T, Meng N. Quality of life of rural poor elderly in Anhui, China. Medicine. 2020;99:6(e19105). doi: 10.1097/MD.0000000000019105
21. Kwon M, Kim SA, So WY. Factors influencing the quality of life of Korean elderly women by economic status. Int J Env Res Pub He. 2020;17(3):888. doi: 10.3390/ijerph17030888
22. Alexiou KI, Roushias A, Varitimidis SE, Malizos KN. Quality of life and psychological consequences in elderly patients after a hip fracture: a review. Clin Interv Aging. 2018;13:143–50. doi: 10.2147/CIA.S150067
23. Amarilla-Donoso FJ, López-Espuela F, Roncero-Martín R, Leal-Hernandez O, Puerto-Parejo LM, Aliaga-Vera I, et al. Quality of life in elderly people after a hip fracture: a prospective study. Health Qual Life Out. 2020;18(1):71. doi: 10.1186/s12955-020-01314-2
24. Mesci E, Icagasioglu A, Mesci N, Turgut ST. Relation of physical activity level with quality of life, sleep and depression in patients with knee osteoarthritis. Northern Clin Istanbul. 2015;2(3):215–21. doi: 10.14744/nci.2015.95867
25. Tegegn HG, Erku DA, Sebsibe G, Gizaw B, Seifu D, Tigabe M, et al. Medication-related quality of life among Ethiopian elderly patients with polypharmacy: A cross-sectional study in an Ethiopia university hospital. PloS one. 2019;14(3):e0214191. doi: 10.1371/journal.pone.0214191.

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