Alqalam Journal of Medical and Applied Sciences. 2025;8(2):608-623
https://doi.org/10.54361/ajmas.258211

Original article

Risk Factors Associated with A History of Falls Among the Elderly in Libya

Mahmoud Shtawa*, Esraa Khalid, Amira Ben Said

[1]*Department of Physiotherapy, Faculty of Medical Technology, University of Tripoli, Tripoli, Libya*
Corresponding Email. *ptmahmoudshtawa@gmail.com*

Abstract
Falls pose a significant threat to independent living and contribute substantially to morbidity and mortality among older adults. This cross-sectional study investigated the multifactorial relationship between fall risk and daily activities, nutritional status, medication use, and medical history in 200 randomly selected Libyan individuals aged 60 and above. Data were collected using standardized instruments, including the International Physical Activity Questionnaire (IPAQ), Falls Efficacy Scale International (FES-I), Mini Nutritional Assessment (MNA), and Activities of Daily Living (ADL) assessment. Statistical analysis, performed using SPSS v24, revealed significant associations ($p > 0.05$) between fall risk and several factors, including age, gender, medical history, physical activity levels, nutritional status, and ADL independence. These findings underscore the complex interplay of factors contributing to fall risk in the elderly Libyan population and highlight the need for comprehensive, multi-pronged interventions to mitigate this risk and improve quality of life.
Keywords. Fall Risk, Elderly, Activity of Daily Living, Falls Efficacy Scale International.

Introduction

The World Health Organization (WHO) defines a fall as "an event which results in a person coming to rest inadvertently on the ground, floor, or other lower level." In the United States, falls constitute a major cause of morbidity and mortality among older adults (defined by the United Nations as individuals aged 60 and above). These events frequently result in adverse outcomes, including increased hospitalizations, higher healthcare utilization, loss of independence, diminished daily functioning, and heightened fear of falling [1-4].

Balance and gait dysfunction are prevalent in older adults, with the prevalence of self-reported imbalance increasing from 13% in those aged 65-69 to 46% in those over 85. These deficits are strongly associated with increased fall incidence, a leading cause of morbidity and mortality in this population. Furthermore, effective balance control is crucial for postural maintenance, the execution of voluntary movements, and responding to external perturbations. Maintaining balance requires the center of mass to remain within the dynamic limits of stability, a parameter determined by individual biomechanics, task demands, and support surface characteristics [5]. Falls are the second leading cause of unintentional injury-related deaths globally and a substantial risk factor for mortality in older adults. Annually, approximately 684,000 fatal falls occur, along with an estimated 37.3 million non-fatal falls requiring medical attention. Individuals aged 60 and above are particularly susceptible due to age-related declines in cognitive, physical, and sensory functions [6].Etiological factors for falls include environmental hazards (such as slippery flooring, uneven surfaces), visual impairments, balance and gait deficits, chronic diseases, a history of falls, confusion, postural hypotension, syncope, medication use, and dementia. These factors have been categorized as both physical and psychological [7,8].

The aging global population and increased fall susceptibility among older adults pose significant challenges to healthcare systems and individuals. Annually, about one-third of older adults experience a fall, with risks rising with age. Falls are a major public health concern, particularly in Western nations, due to their links to disability, loss of independence, and premature mortality [9]. Age-related declines in somatosensory, visual, and vestibular systems, along with central nervous system changes (such as neuron loss and altered neurotransmitter synthesis), impair postural control. Reduced lower limb strength and motor unit activation further exacerbate these issues. Individuals with dementia face a threefold higher fall risk due to frontal lobe damage affecting executive function. While physical activity benefits older adults, falls remain a significant threat to independence and quality of life, emphasizing the need for effective prevention strategies [10,11]. Moreover, functional decline in older adults, affecting over 45% of individuals aged 60 and above, is marked by difficulties with Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL). This decline compromises musculoskeletal health, body composition, and physical capacity, increasing risks of falls, disability, and loss of independence. Over 50% of falls occur during routine activities such as walking or transferring. Contributing factors include advanced age, multimorbidity, sensory impairments, and gait or balance dysfunction, highlighting the multifactorial nature of falls and the need for targeted preventive measures [12,13]. The aging population, driven by declining birth rates, reduced mortality, and increased life expectancy, poses significant social and political challenges in developed societies. This demographic shift impacts social welfare systems, labor markets, and intergenerational

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

dynamics, necessitating urgent policy responses to address its societal and economic implications [14]. This study examines balance levels and fall risk factors among elderly individuals in Libya, focusing on the relationship between physical and psychological conditions and fall risks. The findings aim to elucidate mechanisms contributing to falls in this population.

Methods

The study employed a cross-sectional survey design, utilizing a mixed-format questionnaire to evaluate the daily physical activity, medication effects, and psychological and mental factors among elderly participants. The questionnaire comprised four sections rated on a four-point Likert scale and translated into Arabic to enhance participant comprehension. Data collection occurred in 'Autumn 2022' across various hospitals and physiotherapy centers in Libya, with distribution facilitated both electronically and via in-person interviews. The sample included 200 participants aged 60 and above, with demographic, medical history, nutritional, functional status, and fall efficacy data collected. Ethical considerations ensured confidentiality, and inclusion criteria focused on mentally capable Libyan elderly individuals.

Results

This study involved 200 participants, including 103 males and 97 females. Sample homogeneity was assessed using primary variables such as age, height, weight, and body mass index (BMI). Skewness coefficients ranged from -2.999 to 0.332, within the acceptable range of ±3, indicating a high degree of consistency across these measures. This homogeneity strengthens the reliability of subsequent statistical analyses, as shown in Table 1.

Table 1. Sample of homogeneity.

Statistics	N	Missing	Mean	Std. Deviation	Skewness
Age	198	2	42.51	10.021	0.223
Height	194	6	1.64	0.107	-0.005
Weight	194	6	76.13	14.460	0.332
BMI	193	7	3.80	0.564	-2.999

The demographic information of the participants were53% males and 47% females. 60% aged 60-70 years, 24.5% aged 71-80, 12% aged 81-90, and 2.5% over 90 years; 1% of participants did not report their age. The majority of participants (77%) resided in Tripoli, with representation from other cities ranging from 0.5% to 6%; 0.5% of participants did not specify their location as detailed in Table 2.

Table 2. Frequencies and percentiles for the variables (sex/age/city).

Variables		Frequency	Percent
Gender	Male	106	53.0
	Female	94	47.0
Age	60-70	120	60.0
	71-80	49	24.5
	81-90	24	12.0
	More than 90	5	2.5
	Total	198	99.0
	Missing	2	1.0
City	Tripoli	154	77.0
	Gharyan	12	6.0
	Kikla	3	1.5
	Jafara Plain	6	3.0
	Zawiya	1	0.5
	Sabratha	3	1.5
	Zliten	6	3.0
	Misrata	1	0.5
	Benghazi	4	2.0
	Zuwara	1	0.5
	Qminis	2	1.0
	Tarhuna	2	1.0
	Qamens	1	0.5
	Sarman	1	0.5
	Bin Ghashir palace	2	1.0
	Total	199	99.5
	Missing	1	0.5

There are statistically significant differences for the variable ($p<0.01$) were observed for "Have you been sick or hospitalized in the last 12 months?" (t-value-4.6), with a greater proportion (67%) responding "No". A

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

similar significant difference was found for "Date of fall in the past three months" (t-value-9.798), with "No fall" representing 49.33% of responses. Conversely, no statistically significant difference was observed for "State of vision" (p>0.05), despite a general trend towards "acceptable without glasses, as shown in Table 3.

Table 3. The analysis of the variables chosen

Variables			Statistical characterization						One-Sample Test	
			Freq.	%	SMA	Standard deviation	Relative weight	Sample orientation	Approximate value	significance level
Binary Likert	Hospitalized In the Past 12 Months	No	131	65.5	1.34	0.34	67	No	-4.6	0.000
		Yes	69	34.5						
		Total	200	100.0						
Triple Likert	History of Falls (Past 3 months)	No falls	119	59.5	1.5	0.6	49.33	No falls	-9.798	0.000
		1-2 falls	64	32.0						
		3 or more falls	16	8.0						
		Total	199	99.5						
		Missing	1	0.5						
	Total		200	100.0						
Binary Likert	Vision Status	Adequate (w/ or w/o glasses)	108	54.0	1.5	0.5	77	Adequate (w/ or w/o glasses)	-1.132	0.259
		Poor (w/ or w/o glasses)	92	46.0						
		Total	200	100.0						

Regarding mental acuity, the majority of respondents (78%) demonstrated spontaneous recall, while 17.5% reported frequent forgetfulness. Poor recall was reported by 2%, and 2.5% did not provide data. These findings (Figure 1) indicate a predominance of spontaneous recall, with a smaller proportion experiencing memory retrieval difficulties or not reporting their recollection status.

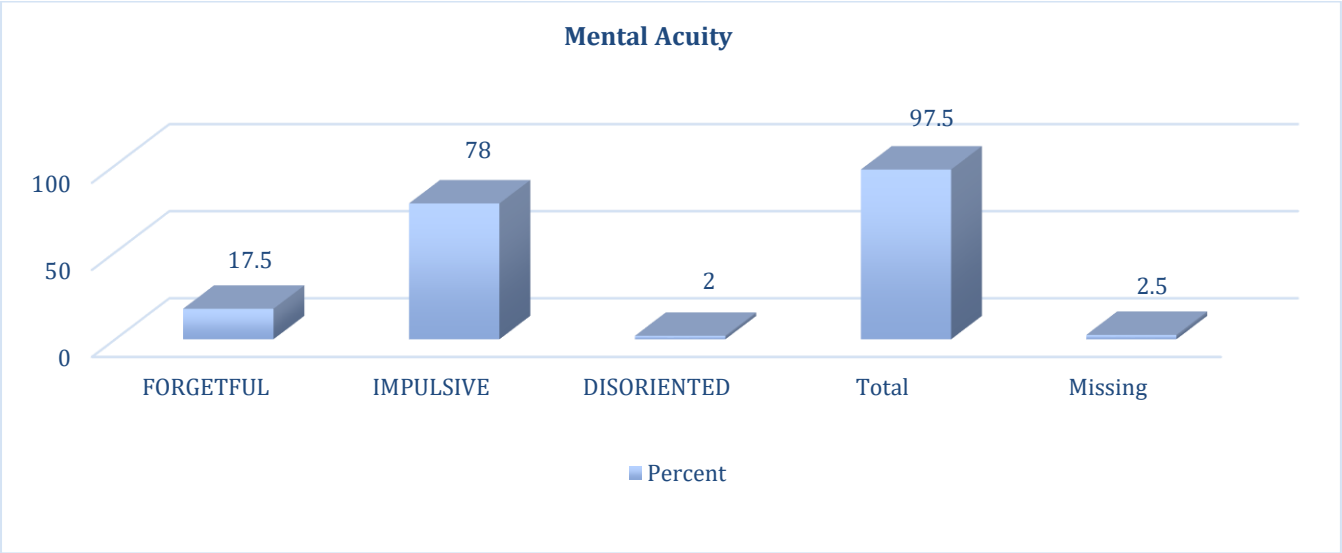

Figure 1. The mental acuity of the participant

While the majority of respondents (73.5%) reported no difficulty with ambulation, 26% utilized assistive devices (crutches or walkers). In relation to gait and balance, 46.5% exhibited a safe gait and natural balance, 27% experienced balance issues during ambulation, and 15.5% required assistance. Balance difficulties while standing were reported by 8.5%, and 2.5% altered their gait when navigating doorways (Figure 2&3).

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

https://doi.org/10.54361/ajmas.258211

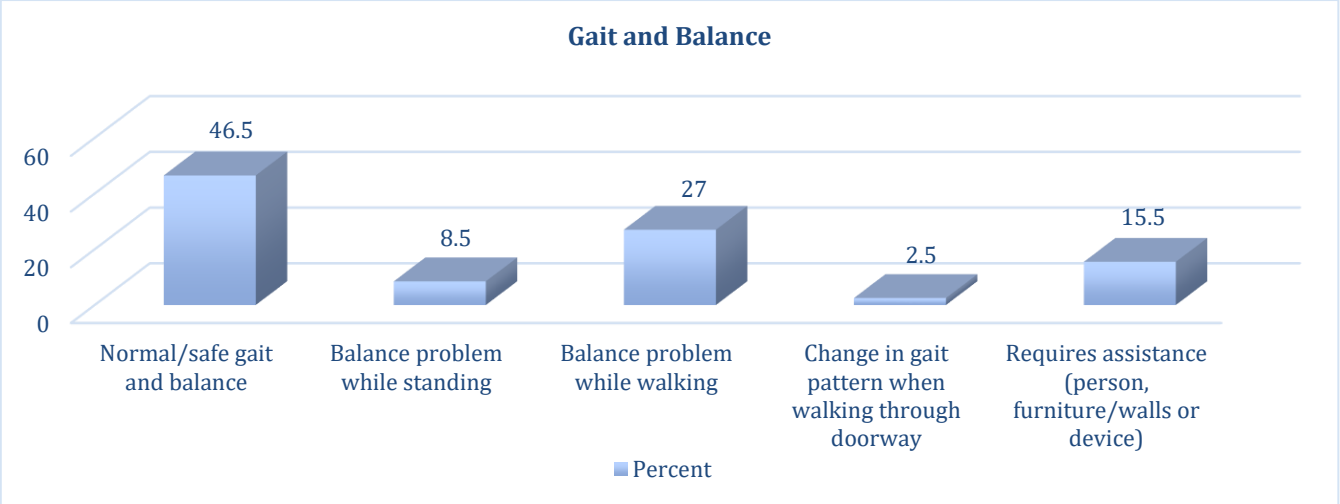

Figure 2. Gait and Balance

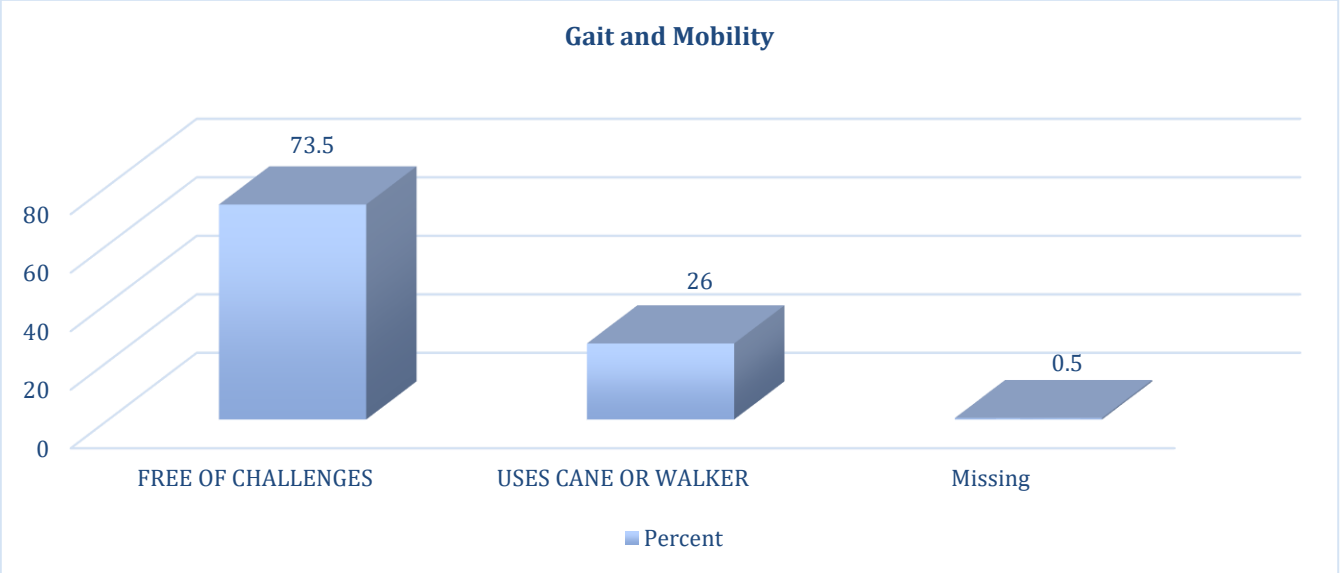

Figure 3. Gait and Mobility of the participant

Regarding participants' functional activities (Table 4): 92% were independent in eating, 4% required assistance (slow eating/spillage), 2% required feeding, and 1.5% experienced spillage due to forgetfulness. For dressing, 80.5% were independent, 11.5% required assistance, and 8% dressed slowly/disorganizedly. Bathing independence was reported by 84.5%, 8% were bathed by others, 5.5% required assistance, and 2% needed reminders. For toileting, 89.5% were self-reliant, 5% required assistance, 3% experienced incontinence, and 2% needed reminders; 0.5% did not respond.

Table 4. The analysis of the self-care activities of the participant

The analysis of the self-care activities		Frequency	Percent
Eating	No problem	184	92.0
	Independent, but slow or some spills	8	4.0
	Needs help to cut or pour; spills often	3	1.5
	Must be fed most foods	4	2.0
	Total	199	99.5
	Missing	1	0.5
	Total	200	100.0
Dressing	No problem	161	80.5
	Wrong sequence, forgets items	16	8.0
	Needs help with dressing	23	11.5
	Total	200	100.0
Bathing	No problem	169	84.5
	Bathes self, but needs to be reminded	4	2.0
	Bathes self with assistance	11	5.5

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

	Must be bathed by others	**16**	**8.0**
	Total	**200**	**100.0**
Elimination	**Goes to the bathroom independently**	**179**	**89.5**
	Goes to the bathroom when reminded; some accidents	**4**	**2.0**
	Needs assistance for elimination	**10**	**5.0**
	Has no control over either bowel or bladder	**6**	**3.0**
	Don't know	**1**	**0.5**
	Total	**200**	**100.0**

With respect to medication management, a substantial majority of respondents (62.5%) self-administered their prescribed regimens. However, a notable minority (14.5%) required assistance with medication administration, and 13.5% reported either non-adherence or unawareness of their prescribed schedule. Furthermore, 4.5% relied on external reminders for medication management (Figure 4).

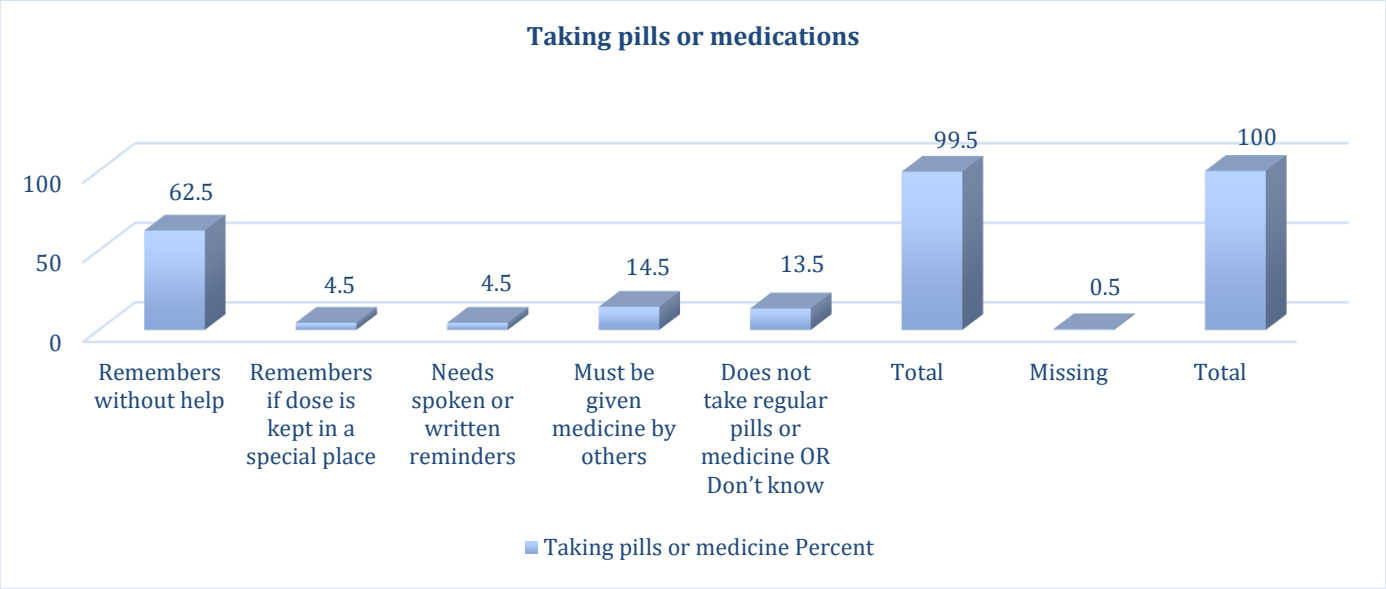

Figure 4. Analysis of taking medication of the participant

In addition, the distribution of medication uses within the past seven days. A plurality of respondents (51%) reported consuming 1-2 medications, followed by 26% who reported no medication use. Twenty-three percent indicated use of 3-4 medications (Figure 5).

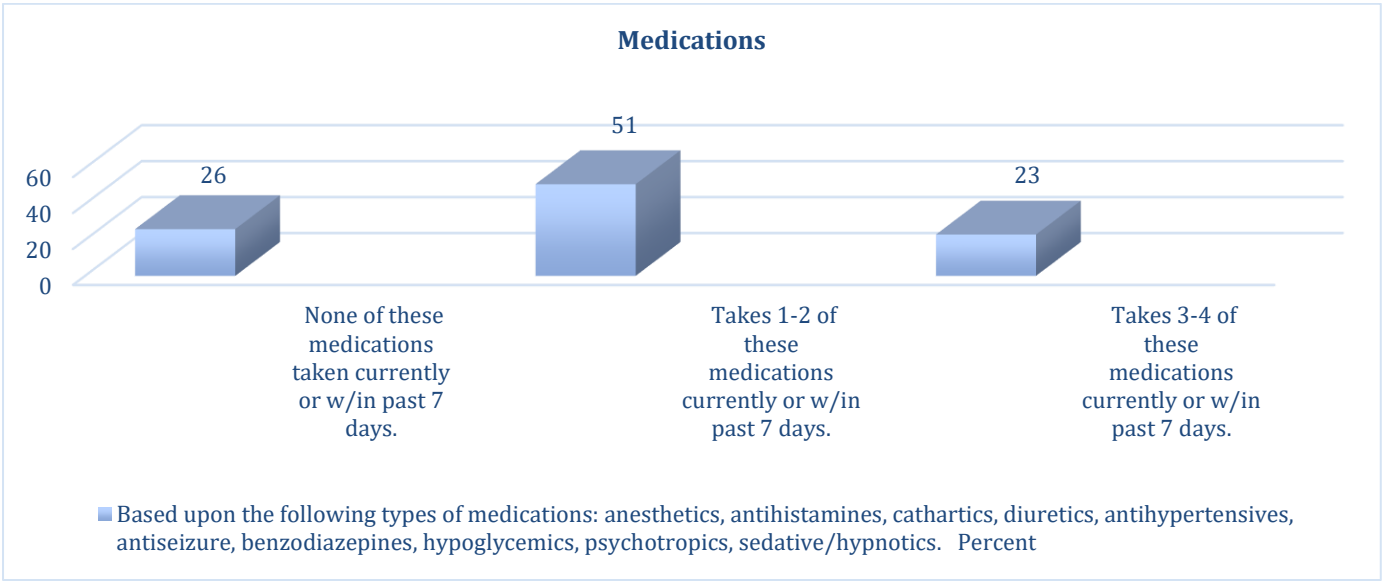

Figure 5. Medications taken by the participant.

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

https://doi.org/10.54361/ajmas.258211

For personal appearance maintenance of respondents showed that 75% of respondents actively maintained their appearance, while 13% only attended to their appearance when exiting their homes. A minority (4%) resisted assistance with external appearance, and 3% remained uncertain or non-responsive as shown in Figure6.

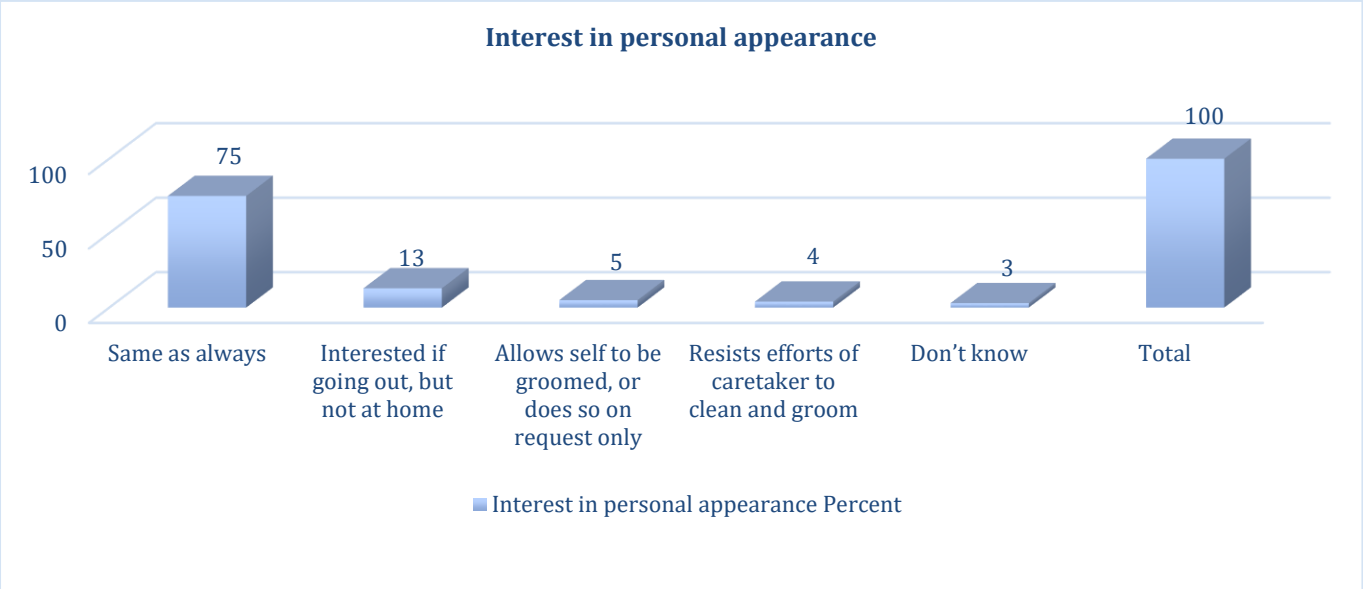

Figure 6. Personal appearances by the participant.

In terms of functional status related to home care activities, 38% of individuals did not prepare meals, 34% cooked independently, 17.5% cooked minimally, 6.5% never cooked or were unsure, and 3.5% relied solely on pre-prepared meals. Regarding setting the Table (5), 43% reported no difficulty, 37.5% no longer performed the task, 15% never performed it or were unsure, 1% experienced occasional difficulties, and 0.5% did not respond. For general household tasks, 41.5% maintained or organized their homes, 27.5% ceased these activities, 13.5% never performed them or were unsure, 12.5% completed partial housework, and 4.5% performed minor chores; 0.5% did not respond.

Table 5. Home care activities by the participant.

Home care activities		Frequency	Percent
Preparing meals, cooking	Plans and prepares meals without difficulty	68	34.0
	Some cooking, but less than usual, or less variety	35	17.5
	Gets food only if it has already been prepared	7	3.5
	Does nothing to prepare meals	76	38.0
	Never did this activity OR don't know	13	6.5
	Total	199	99.5
	Missing	1	0.5
	Total	200	100.0
Setting the table	No problem	86	43.0
	Independent, but slow or clumsy	6	3.0
	Forgets items or puts them in the wrong place	2	1.0
	No longer does this activity	75	37.5
	Never did this activity, OR don't know	30	15.0
	Total	199	99.5
	Missing	1	0.5
	Total	200	100.0
Housekeeping	Keeps house as usual	83	41.5
	Does at least half of his/her job	25	12.5
	Occasionally rake or some other minor job	9	4.5
	No longer does any maintenance	55	27.5
	Never did this activity, OR don't know	27	13.5
	Total	199	99.5
	Missing	1	0.5
	Total	200	100.0

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

https://doi.org/10.54361/ajmas.258211

Additionally, the participants reported that 35.5% had never performed laundry or were unsure. 27.5% indicated they no longer washed clothes independently, while 23% continued to wash clothes regularly, often adhering to a routine or schedule. Fourteen percent reported intermittent laundry activity (Table 6).

Table 6. The laundry activity was done by the participants.

Laundry activity	Frequency	Percent
Does laundry as usual (same schedule, routine)	46	23.0
Does laundry less frequently	28	14.0
No longer does laundry	55	27.5
Never did this activity, OR don't know	71	35.5

Besides, employment status among respondents showed that (46.5%) were non-employed (retired pre-illness or uncertain), while 31.5% no longer employed, 15.5% maintained usual work, 3% managed minor work challenges, and 2.5% held insecure part-time positions (Figure 7).

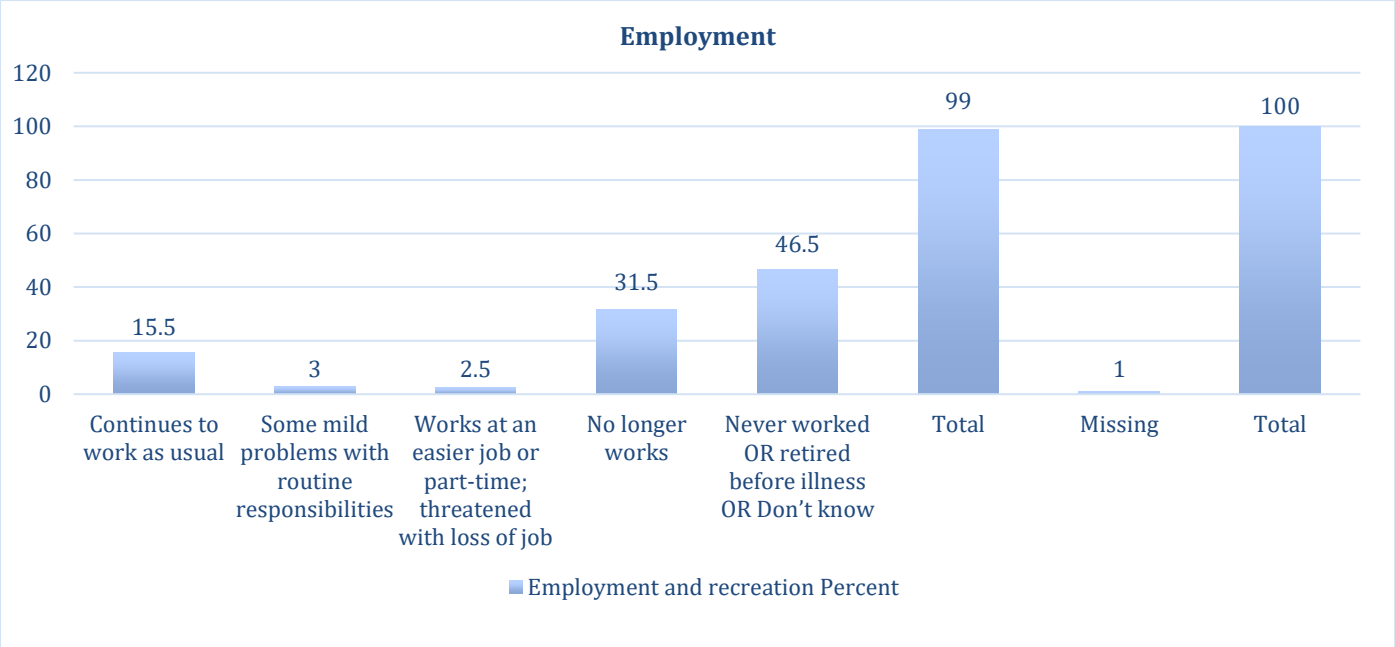

Figure 7. Employment for the participants.

For recreation, 36.5% continued participation, 28% ceased, 17% never participated/unsure, 16.5% reduced participation (due to skill loss), and 2% needed encouragement as indicated in Figure 8.

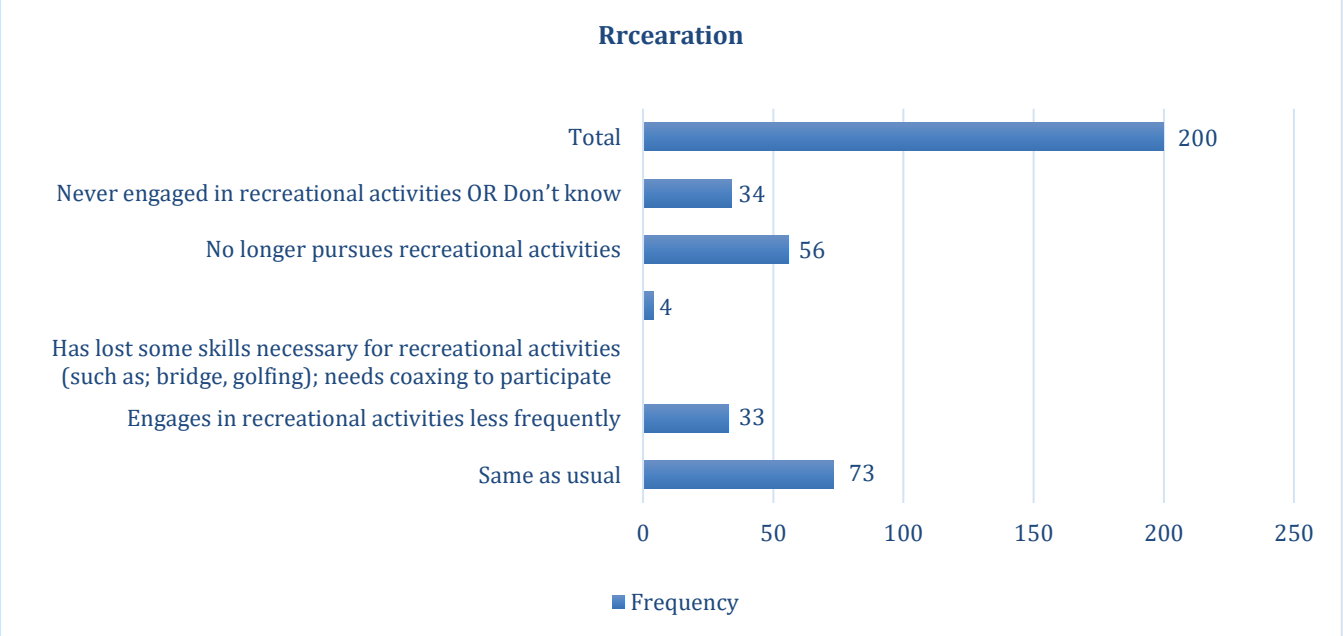

Figure 8. Recreation done by the participant.

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

https://doi.org/10.54361/ajmas.258211

Regarding meeting participation, the data reveal the following distribution: 38.5% of respondents reported never participating or being unsure of their participation status; 24.5% attended meetings regularly; 20% were former attendees; 10% attended less frequently; and 7% participated occasionally (Figure 9).

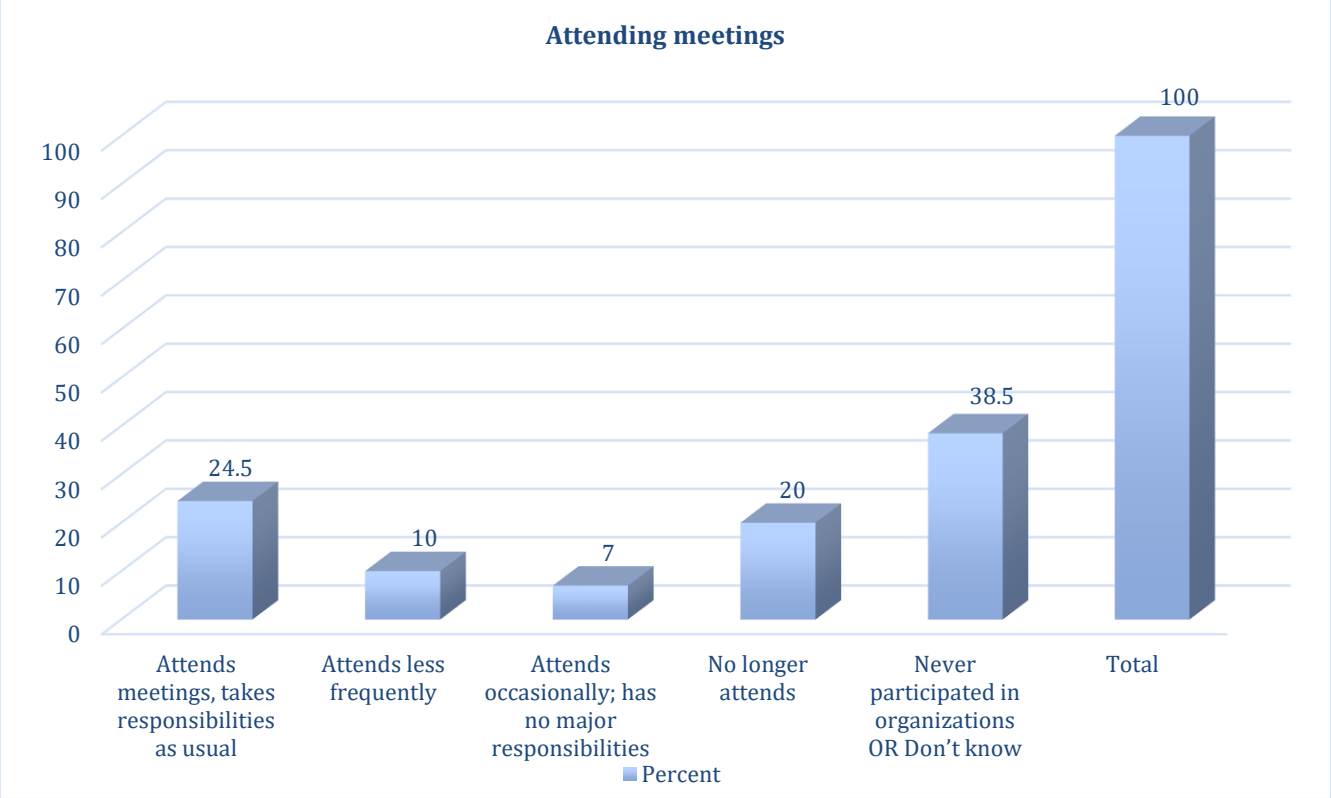

Figure 9. Organization done by the participant

Figure 10 reveals that the majority of respondents (67%) maintained usual mobility outside the home, while 20% relied on others for transportation. Notably, 8.5% reported limited mobility between home and hospital, and 1.5% utilized a wheelchair for mobility.

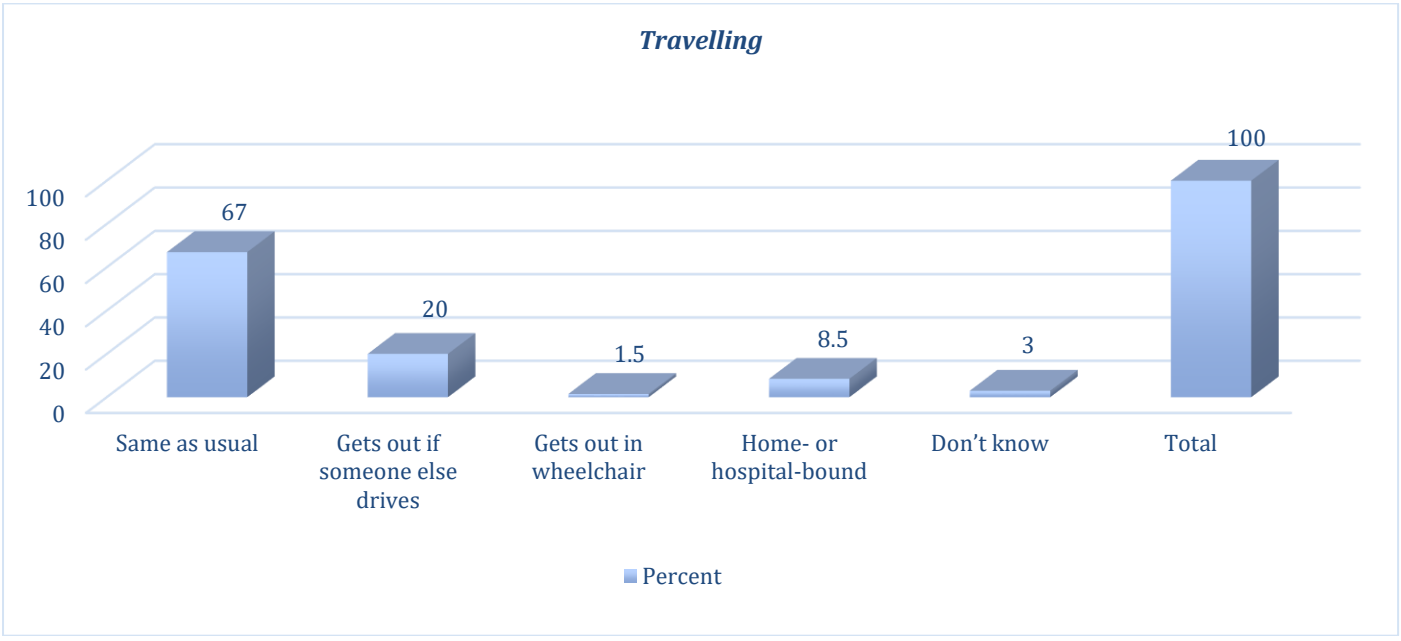

Figure 10. Travelling answers by the participant.

For shopping activity, 45% reported no difficulties, 29.5% ceased shopping, 11% never shopped/unsure, and 3.5% experienced cognitive difficulties (Table 7).

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

https://doi.org/10.54361/ajmas.258211

Table 7. Shopping and money 'Food shopping' answers by the participant.

Variables	Frequency	Percent
No problem	90	45.0
Forgets items or buys unnecessary items	7	3.5
Needs to be accompanied while shopping	22	11.0
No longer does the shopping	59	29.5
Never had responsibility in this activity OR don't know	22	11.0

Regarding financial management (Figure 11), 80.5% of respondents reported ease in handling cash, and 48.5% managed financial affairs (including bill payments and banking services) independently. However, significant proportions reported either cessation of independent financial management (32%) or never having assumed responsibility for these tasks (16%).

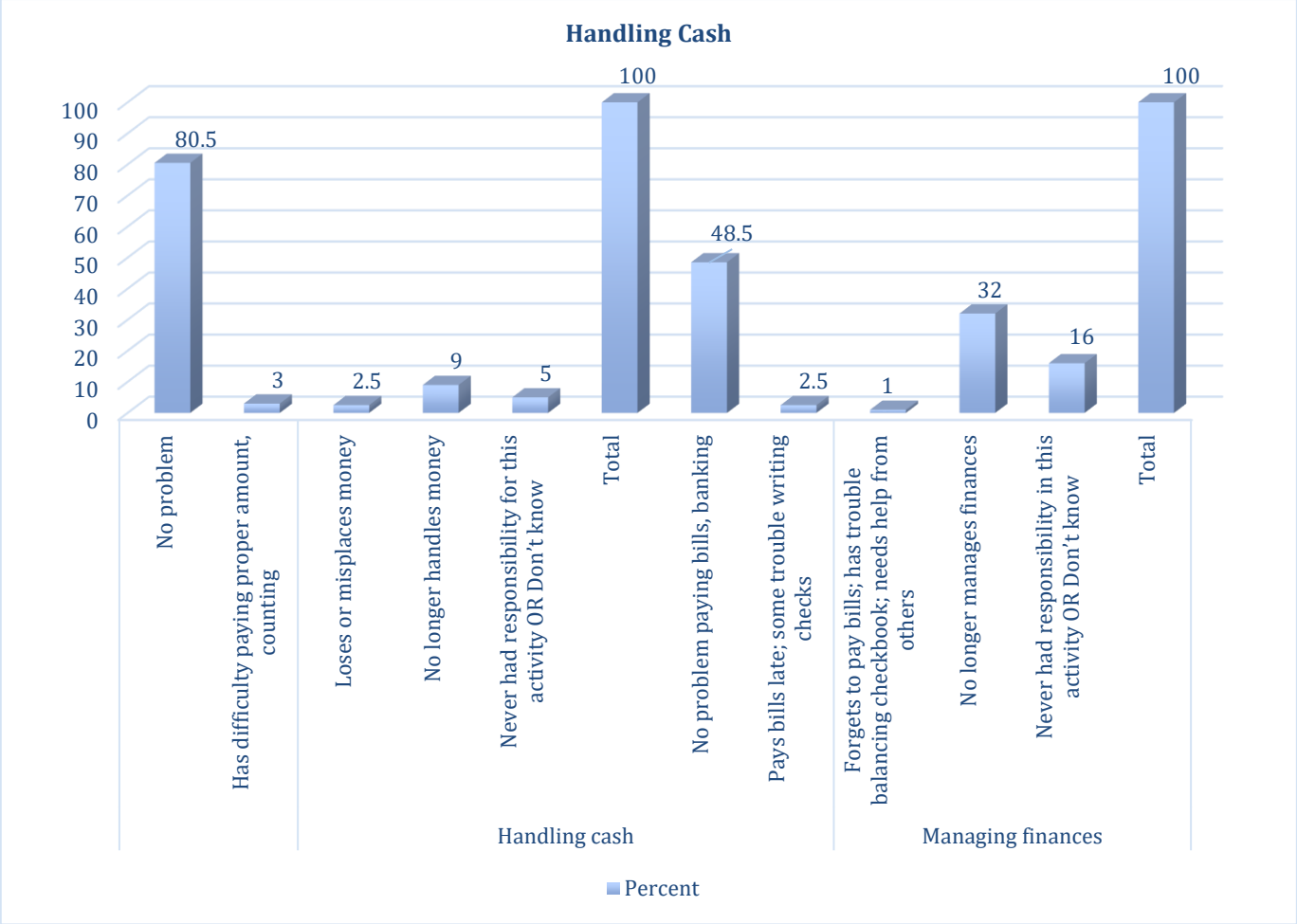

Figure 11. Shopping and money ' Handling cash' answers by the participant.

In the case of public transportation (Figure 12), the largest proportion of respondents (41%) did not use it regularly or were unsure. 36% no longer used it, 16.5% used it as usual, and 0.5% reported past disorientation due to public transport use. For private driving, 47.5% had never driven or were unsure, 23% drove as usual, 17.5% no longer drove, 10% drove cautiously, and 1% drove less cautiously/experienced disorientation.

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

https://doi.org/10.54361/ajmas.258211

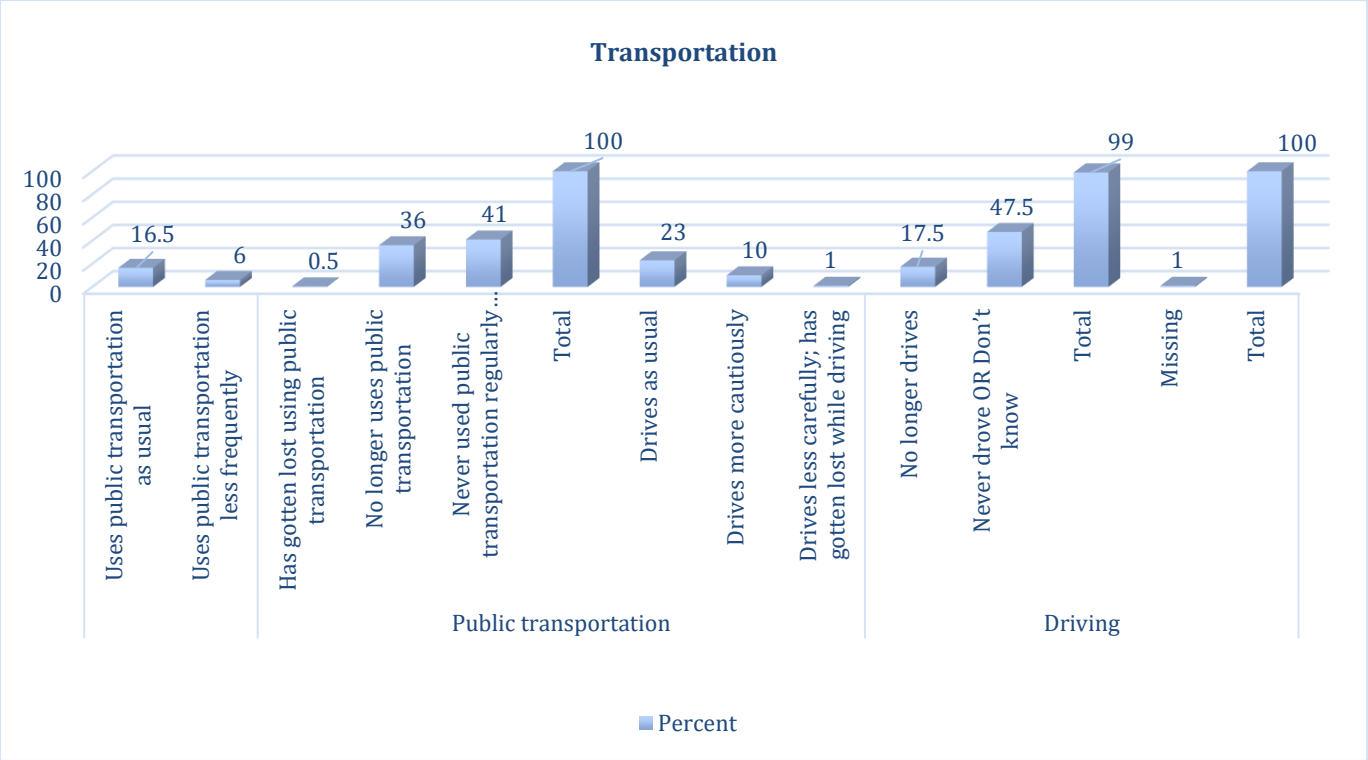

Figure 12. Mobility around the neighbourhood and travel outside the familiar environment was answered by the participants.

Concerning mobility and travel patterns (Table 8), 51.5% of respondents maintained usual neighborhood mobility, and 41% traveled outside familiar areas without difficulty. However, significant proportions reported reduced mobility (33.5% within neighborhoods, 24% outside) and experienced confusion/disorientation, especially in unfamiliar locations.

Table 8. Transportation habits of the participant.

Transportation habits		Frequency	Percent
Mobility around the neighborhood	Same as usual	103	51.5
	Goes out less frequently	67	33.5
	Has gotten lost in the immediate neighborhood	1	0.5
	No longer goes out unaccompanied	18	9.0
	This activity has been restricted in the past, OR don not know	10	5.0
	Total	199	99.5
	Missing	1	0.5
	Total	200	100.0
Travel outside a familiar environment	Same as usual	82	41.0
	Occasionally gets disoriented in strange surroundings	10	5.0
	Gets very disoriented but can manage if accompanied	37	18.5
	No longer able to travel	48	24.0
	Never did this activity, OR don't know	23	11.5
	Total	200	100.0

Moreover, when respondents were asked about communication skills, specifically phone usage and interpersonal interactions (Table 9). The majority (62.5%) reported usual phone usage, while 86% engaged in verbal conversations without difficulty. However, notable proportions experienced communication challenges, including difficulties remembering words and names (5%), incomprehensible speech (4.5%), and impaired perception and understanding (17.5% requiring repetitions for clarity, 4.5% experiencing occasional difficulties, and 0.5% frequently struggling to understand conversations).

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

https://doi.org/10.54361/ajmas.258211

Table 9. Communication answers by the participant.

Variables		Frequency	Percent
Using the telephone	Same as usual	125	62.5
	Calls a few familiar numbers	19	9.5
	Will only answer the telephone (won't make calls)	36	18.0
	Does not use the telephone at all	19	9.5
	Total	199	99.5
	Missing	1	0.5
	Total	200	100.0
Talking	Same as usual	172	86.0
	Less talkative; has trouble thinking of words or names	10	5.0
	Makes occasional errors in speech	5	2.5
	Speech is almost unintelligible	9	4.5
	Don't know	1	0.5
	Total	197	98.5
	Missing	3	1.5
	Total	200	100.0
Understanding	Understands everything that is said as usual	152	76.0
	Asks for repetition	35	17.5
	Has trouble understanding conversations or specific words occasionally	9	4.5
	Does not understand what people are saying most of the time	1	0.5
	Total	197	98.5
	Missing	3	1.5
	Total	200	100.0

Figure 13 presents the prevalence of specific health conditions among respondents, including low blood pressure, dizziness, heart disease, cancer, seizures, arthritis, osteoporosis, and fractures. The results show that 50% of respondents reported having one or two of these conditions. This was followed by those reporting no prior health conditions, while the smallest group consisted of individuals with three or more current conditions.

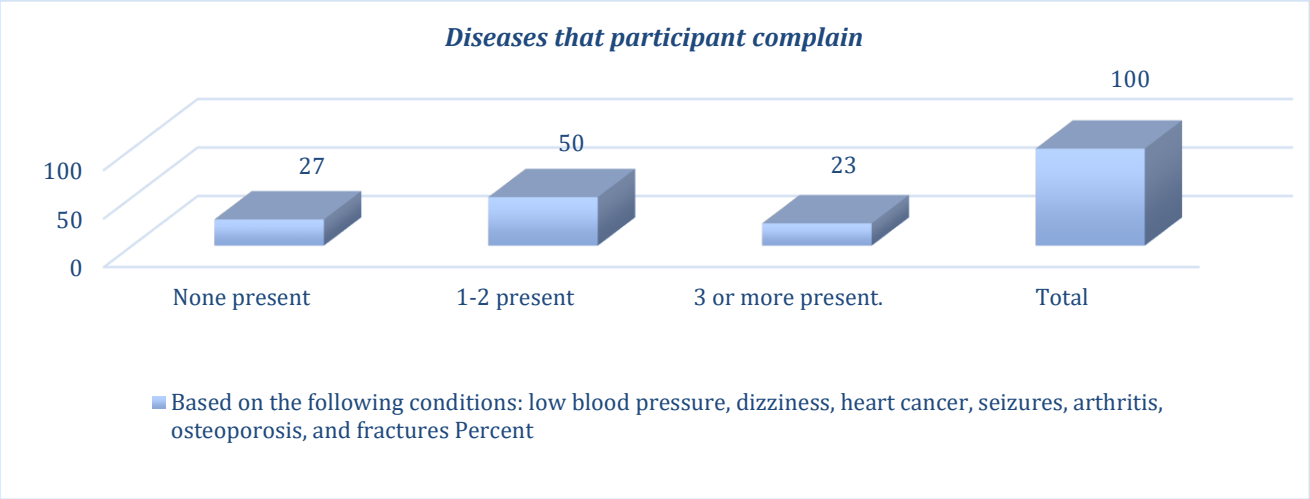

Figure 13. Diseases that participant complain.

Figure14 examines respondents' reading and writing behaviors. Regarding reading habits, 44.5% reported reading as usual, while 29.5% read infrequently or were uncertain. Additionally, 16% read less often, 9.5% identified as non-readers, and 0.5% experienced comprehension or memory difficulties. For writing, 46% wrote as usual, 23% wrote infrequently or were uncertain, 18.5% never wrote, and 12% limited their writing to names and signatures. A small fraction (0.5%) did not respond regarding writing activities.

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

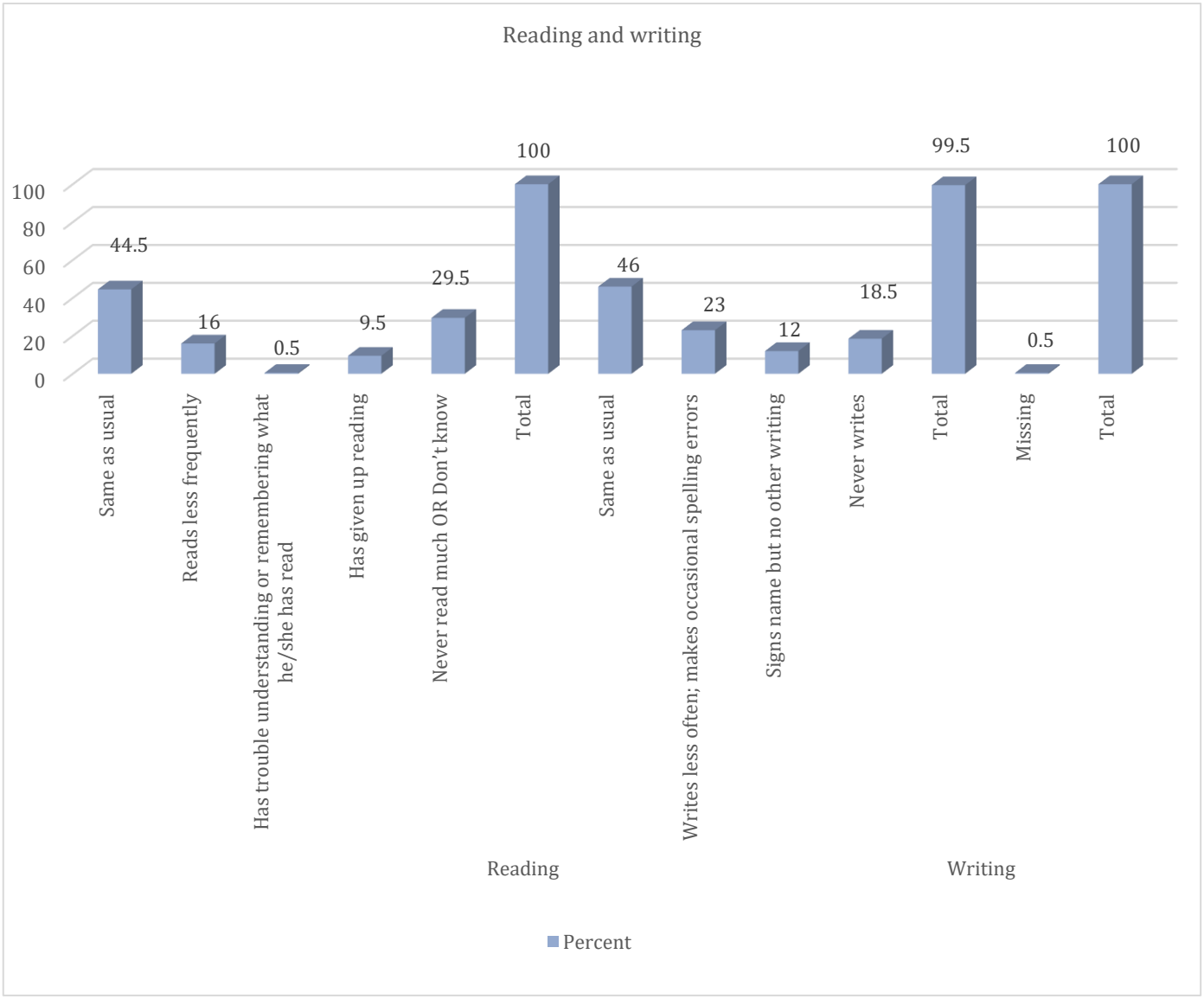

Figure 14. Communication answers 'Reading and Writing' by the participant.

Table 10 highlights statistically significant differences in responses regarding psychological stress or acute illness and neuropsychological problems over the past three months. The t-value for psychological stress or acute illness was -5.618 (p=0.000), favoring no reported experience (mean=1.32; relative weight=66%). For neuropsychological problems, the t-value was 29.727 (p=0.000), indicating significant differences favoring the absence of such issues (mean=2.74; relative weight=91.33%).

Table 10. Psychological stress among the participants

Neuropsychological problems		Statistical characterization						One-Sample Test	
		Frequency	Percent	SMA	standard deviation	relative weight	sample orientation	T-value	significance level
Has suffered psychological stress or acute disease in the past 3 months?	No	137	68.5	1.32	0.46	66	No	-5.618	0.000
	Yes	63	31.5						
	Total	200	100.0						
Neuropsychological problems	Severe dementia or depression	15	7.5	2.74	0.59	91.33	No psychological problems	29.727	0.000
	Mild dementia	22	11.0						
	No psychological problems	162	81.0						
	Total	199	99.5						
	Missing	1	0.5						
	Total	200	100.0						

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

https://doi.org/10.54361/ajmas.258211

Table 11 identifies statistically significant differences in responses to two questions: reduced food intake over the past three months due to appetite loss, digestive issues, or difficulty chewing/swallowing, and weight loss during the same period. The t-value for reduced food intake was 11.590 (p=0.000), indicating strong significance, with responses reflecting a moderate decrease in food intake (mean=2.11; relative weight=70.33%).

Table 11. The relation of food intake and weight loss

Food intake and Weight loss		Statistical characterization						One-Sample Test	
		Frequency	Percent	SMA	standard deviation	relative weight	sample orientation	T-value	significance level
Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties**?**	severe decrease in food intake	44	22.0	2.11	0.74	70.33	Moderate decrease in food intake.	11.590	0.000
	moderate decrease in food intake	87	43.5						
	no decrease in food intake	66	33.0						
	Total	197	98.5						
	Missing	3	1.5						
	Total	200	100.0						
Weight loss during the last 3 months	weight loss greater than 3 kg	23	11.5	3.1	1.08	77.5	Weight loss between 1 and 3 kg.	10.786	0.000
	weight loss between 1 and 3 kg	50	25.0						
	no weight loss	98	49.0						
	does not know	28	14.0						
	Total	199	99.5						
	Missing	1	0.5						
	Total	200	100.0						

Table 12 highlights statistically significant differences across most assessed items, except for "getting to a chair or getting out of it" and "extending your hand to something above your head or to the ground." Social participation in events (e.g., religious gatherings) showed a t-value of -3.37 (p=0.001) with a mean of 3.26 and relative weight of 81.5%. Visiting friends yielded a t-value of -3.26 (p=0.000), favoring minimal concern. Reaching above head level was not significant (t=-1.56, p=0.121), with moderate anxiety (mean=3.13). Similarly, "getting to a chair" was insignificant (t=-0.81, p=0.419). Significant anxiety was observed in activities like walking on uneven (t=-6.94, p=0.000) or slippery surfaces (t=-8.79, p=0.000), and slopes (t=-9.25, p=0.000), with relative weights below 60%. Overall, the sample exhibited moderate anxiety across activities (mean=2.77; relative weight=69.25%).

Table 12. Differences in the activity of daily living questions by the participants.

Variables		Statistical characterization						One-Sample Test	
		Frequency	**Percent**	**SMA**	**standard deviation**	**relative weight**	**sample orientation**	**Approximate value**	**significance level**
Getting in or out of a chair	Not at all concerned	112	56.0	3.07	1.22	76.75	Somewhat Concerned	-0.81	0.419
	Somewhat Concerned	33	16.5						
	Fairly concerned	10	5.0						
	Very concerned	44	22.0						
	Total	199	99.5						
	Missing	1	0.5						
	Total	200	100.0						
Going up or down stairs	Not at all concerned	81	40.5	2.74	1.25	68.50	Somewhat Concerned	2.94	0.004
	Somewhat Concerned	41	20.5						
	Fairly concerned	23	11.5						
	Very concerned	55	27.5						
	Total	200	100.0						
Reaching for something above your head or on the ground	Not at all concerned	110	55.0	3.13	1.13	78.25	Somewhat Concerned	-1.56	0.121
	Somewhat Concerned	36	18.0						
	Fairly concerned	21	10.5						
	Very concerned	32	16.0						
	Total	199	99.5						
	Missing	1	0.5						
	Total	200	100.0						

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

Walking on a slippery surface (e.g. wet or icy)	Not at all concerned	41	20.5	2.26	1.18	56.50	Fairly concerned	8.79	0.000
	Somewhat Concerned	49	24.5						
	Fairly concerned	30	15.0						
	Very concerned	79	39.5						
	Total	199	99.5						
	Missing	1	0.5						
	Total	200	100.0						
Visiting a friend or relative	Not at all concerned	127	63.5	3.26	1.12	81.50	Not at all concerned	-3.26	0.001
	Somewhat Concerned	30	15.0						
	Fairly concerned	11	5.5						
	Very concerned	32	16.0						
	Total	200	100.0						
Walking in a place with crowds	Not at all concerned	68	34.0	2.57	1.24	64.25	Somewhat Concerned	4.82	0.000
	Somewhat Concerned	36	18.0						
	Fairly concerned	34	17.0						
	Very concerned	59	29.5						
	Total	197	98.5						
	Missing	3	1.5						
	Total	200	100.0						
Walking on an uneven surface (e.g. rocky ground, poorly maintained pavement)	Not at all concerned	54	27.0	2.40	1.21	60.00	Fairly concerned	6.94	0.000
	Somewhat Concerned	38	19.0						
	Fairly concerned	40	20.0						
	Very concerned	66	33.0						
	Total	198	99.0						
	Missing	2	1.0						
	Total	200	100.0						
Walking up or down a slope	Not at all concerned	46	23.0	2.20	1.22	55.00	Fairly concerned	9.25	0.000
	Somewhat Concerned	35	17.5						
	Fairly concerned	32	16.0						
	Very concerned	87	43.5						
	Total	200	100.0						
Going out to a social event (e.g., religious service, family gathering, or club meeting)	Not at all concerned	122	61.0	3.26	1.09	81.50	Not at all concerned	-3.37	0.001
	Somewhat Concerned	36	18.0						
	Fairly concerned	12	6.0						
	Very concerned	29	14.5						
	Total	199	99.5						
	Missing	1	0.5						
	Total	200	100.0						
The general direction of the axis as a whole				2.77	1.25	69.25	Somewhat Concerned		

Discussion

Falls among the elderly represent a significant public health concern, contributing to injuries, psychological challenges, and social isolation. This study examined factors associated with falls among individuals aged 60 years and above in Libya, utilizing a sample of 200 participants, representing 4.05% of the total population. Findings highlighted physical issues such as balance impairments, mobility limitations, vision deficits, sensory problems in the feet, and medication-induced dizziness. Additional contributors included sleep disturbances, muscle weakness, cardiovascular conditions, and environmental hazards like poor lighting, slippery floors, and cluttered spaces. The risk of falling increases with age [15], who identified depression, nutritional status, and medical history as contributing factors. Our study revealed that 53% of participants were male and 47% female, with the majority aged 60–70 years (60%). Tripoli accounted for the highest participation rate (77%). These results aligned with Al-Kharaz study [15] regarding sample size but differed in gender distribution. Employment status also influenced fall risks; 46.5% of respondents reported being unemployed or retired due to illness, in contrast with Al-Kharaz study [15], where 63.5% had ceased working. Mobility assessments showed that 73.5% of participants did not use assistive devices, while 26% relied on walking aids findings comparable to Alzaabi's study [16], where 71.4% did not use devices. The World Health Organization (WHO)[1]emphasized that falls affect all genders and regions, with males more likely to experience fatal falls and females more prone to non-fatal injuries. Further noted that falls account for two-thirds of injury-related deaths among adults aged 65 and older, with serious injuries occurring in 5–10% of cases[17]. These findings underscore the multifactorial nature of fall risks among the elderly and highlight the need for targeted interventions addressing physical health, environmental safety, and awareness to mitigate fall-related consequences.

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

Conclusion

In conclusion, gait and balance impairments are prevalent among the elderly and become increasingly pronounced with age, significantly affecting mobility and quality of life. These changes, including slowed gait patterns, reflect a reduced capacity to adapt to environmental challenges and suggest a strong correlation between falls, gait, and balance. Vision plays a critical role in maintaining walking stability and is closely linked to fall risk. This study identified several factors contributing to fall severity in elderly Libyans, including age, history of falls, balance limitations, mobility restrictions, visual deficits, muscle weakness, pathological and psychological conditions, and certain medications. These findings align with prior research emphasizing the multifactorial nature of fall risks in aging populations. Further investigations are essential to develop targeted interventions aimed at mitigating fall risks and improving the safety and well-being of the elderly.

Acknowledgments

Many thanks and gratitude to all the following hospitals; National Center for Diabetes and Endocrinology, University Medical Hospital, Joint Clinics on Airport Road, Tripoli Central Hospital, University Hospital. Accidents and Fractures, Dar Al-Wafa for the Care of the Elderly and the Elderly, Libyan Swiss Center, Al-Mufassal Center for Physical Therapy, Maitika Military Hospital and Rehabilitation, Olympic Center, Al-Yaqeen Center for Physical Therapy and Rehabilitation for their cooperation in completing this study.

Conflicts of Interest

None.

References

[1] WHO, "WHO global report on falls prevention in older age," *publications-detail,* 10 5 2022.

[2] Rubenstein LZ. Falls in older people: epidemiology, risk factors and strategies for prevention. Age and ageing. 2006 Sep 1;35(suppl_2):ii37-41.

[3] Chang NT, Yang NP, Chou P. Incidence, risk factors and consequences of falling injuries among the community-dwelling elderly in Shihpai, Taiwan. Aging clinical and experimental research. 2010 Feb;22:70-7.

[4] Stel VS, Smit JH, Pluijm SM, Lips P. Consequences of falling in older men and women and risk factors for health service use and functional decline. Age and ageing. 2004 Jan 1;33(1):58-65.

[5] Osoba MY, Rao AK, Agrawal SK, Lalwani AK. Balance and gait in the elderly: A contemporary review. Laryngoscope investigative otolaryngology. 2019 Feb;4(1):143-53.

[6] Ferreira RN, Ribeiro NF, Santos CP. Fall risk assessment using wearable sensors: a narrative review. Sensors. 2022 Jan 27;22(3):984..

[7] Balcı LA, Soğukkanlı K, Burcu S, Hanoğlu L. Effects of single-task, dual-task and successive physical-cognitive training on fall risk and balance performance in older adults: a randomized trial. Journal of Exercise Therapy and Rehabilitation. 2022 Apr 29;9(1):1-1.

[8] Yi D, Jang S, Yim J. Relationship between associated neuropsychological factors and fall risk factors in community-dwelling elderly. InHealthcare 2022 Apr 14 (Vol. 10, No. 4, p. 728). MDPI.

[9] Bergland A. Fall risk factors in community-dwelling elderly people.

[10] Hernandez SS, Coelho FG, Gobbi S, Stella F. Efeitos de um programa de atividade física nas funções cognitivas, equilíbrio e risco de quedas em idosos com demência de Alzheimer. Brazilian Journal of Physical Therapy. 2010;14:68-74.

[11] Ehn M, Eriksson LC, Åkerberg N, Johansson AC. Activity monitors as support for older persons' physical activity in daily life: qualitative study of the users' experiences. JMIR mHealth and uHealth. 2018 Feb 1;6(2):e8345.

[12] Nagarkar A, Kulkarni S. Association between daily activities and fall in older adults: an analysis of longitudinal ageing study in India (2017–18). BMC geriatrics. 2022 Mar 14;22(1):203.

[13] Rolland Y, Pillard F, Klapouszczak A, Reynish E, Thomas D, Andrieu S, Rivière D, Vellas B. Exercise program for nursing home residents with Alzheimer's disease: A 1-year randomized, controlled trial. Journal of the American Geriatrics Society. 2007 Feb;55(2):158-65.

[14] Tornero-Quiñones I, Sáez-Padilla J, Espina Díaz A, Abad Robles MT, Sierra Robles Á. Functional ability, frailty and risk of falls in the elderly: relations with autonomy in daily living. International journal of environmental research and public health. 2020 Feb;17(3):1006.

[15] Al-kharaz , L. ; Zaid , R. ; saify, R. ; Shafai, D. ; Dardouk, A. ; Abu qarin, R. and Swailem ,S , "Risk factors associated with a history of falls among older people in Palestine," Research Square , 2022.

[16] Alzaabi, Halima Saeed ; Walton, Lori Maria ; Arumugam, Ashokan, "Association between demographic characteristics, lower limb range of motion, functional performance, ability to dual task, quality of life and risk of falls in older adults of the United Arab Emirates - A cross-sectional study," *Elsevier BV,* 2022.

[17] Deandrea S, Bravi F, Turati F, Lucenteforte E, La Vecchia C, Negri E. Risk factors for falls in older people in nursing homes and hospitals. A systematic review and meta-analysis. Archives of gerontology and geriatrics. 2013 May 1;56(3):407-15.

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*

https://doi.org/10.54361/ajmas.258211

المستخلص

تشكل السقوط تهديدا كبيرا للحياة المستقلة وتساهم بشكل كبير في معدلات الاعتلال والوفيات بين كبار السن. بحثت هذه الدراسة المقطعية العلاقة متعددة العوامل بين خطر السقوط والأنشطة اليومية والحالة الغذائية واستخدام الأدوية والتاريخ الطبي لدى 200 فرد ليبي تم اختيارهم عشوائيا تبلغ أعمارهم 60 عاما فأكثر. تم جمع البيانات باستخدام أدوات موحدة، بما في ذلك استبيان النشاط البدني الدولي (IPAQ) ومقياس فعالية السقوط الدولي (FES-I) والتقييم الغذائي المصغر (MNA) وتقييم أنشطة الحياة اليومية (ADL). كشف التحليل الإحصائي، الذي أجري باستخدام برنامج SPSS v24، عن ارتباطات مهمة ($p> 0.05$) بين خطر السقوط والعديد من العوامل، بما في ذلك العمر والجنس والتاريخ الطبي ومستويات النشاط البدني والحالة الغذائية واستقلالية أنشطة الحياة اليومية. تؤكد هذه النتائج على التفاعل المعقد للعوامل التي تساهم في خطر السقوط لدى كبار السن الليبيين وتسلط الضوء على الحاجة إلى تدخلات شاملة ومتعددة الجوانب للتخفيف من هذا الخطر وتحسين نوعية الحياة.

Received*: 11-01-2025 -* ***Accepted****: 06-04-2025 -* ***Published****: 15-04-2025*