Research Paper

Predictors of Active Aging Among Community-dwelling Older Adults in Qazvin City, Iran, 2023

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ABSTRACT

Objectives: This study aims to determine the predictive factors of active aging among older people in Qazvin City, Iran.

Methods: This study, conducted in 2023, included individuals aged >60 years in Qazvin City. Participants were selected using cluster sampling in three zones of Qazvin City. Older adults were selected from mosques and parks in each zone. Data were collected using a demographic information checklist, an Iranian active aging questionnaire, a multidimensional scale of perceived social support (MSPSS) and the World Health Organization (WHO) disability assessment schedule (WHODAS 2.0). A multiple linear regression was performed using R software, version 4.2.3 to detect predictors of active aging.

Results: The mean age of the patients was 66.78±6.22 years. A total of 178 patients (61.6%) were men and 207(71.6%) were married. The mean score for active aging was 109.18±24.15, indicating a moderate level. Multiple regression analysis showed that sex, marital status, educational level, economic situation, job, perceived health, disability and perceived social support were significant predictors of active aging

Discussion: Based on our results, active aging among older adults was moderate. We suggest that health policymakers pay more attention to older individuals with low literacy, low income, disabilities, and health problems when planning active aging programs. Additionally, increasing intergenerational support is vital to encourage social participation among older adults.

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Highlights

- Most of the participants had moderately active aging.
- The most active aging was physical-functional and social contact, and the least was social institutional participation.
- Older women, widowed, employed, or retired adults, and participants with higher education, economic situations, and social support were more active. Furthermore, disability has been identified as a risk factor for active aging among older people.

Plain Language Summary

Given the increasing trend among older adults, it is essential to pay attention to their physical and social activities. This study was conducted to detect the predictors of active aging among 289 older adults in Qazvin City, Iran, in 2023. The results showed that active aging among older adults was moderate. The results also indicated that sex, marital status, educational level, economic situation, job, perceived health, disability, and perceived social support were significant predictors of active aging.

Introduction

The global population is rapidly aging [1]. Between 2000 and 2050, the global population of older adults is projected to double, increasing from 11% to 22% [2]. The Asian population is aging faster than other regions [3]. The Asian Development Bank reported that by 2030, the Asian continent will have the world's largest older population, exceeding 4.9 billion people [4]. Iran has experienced this trend [5]. According to the 2016 census results in Iran, individuals aged >60 years account for over 9%, encompassing approximately 7 million people [6]. They are projected to reach 11% and 17% of the total population by 2036 and 2051, respectively [7]. Aging often changes family structure, living arrangements, work patterns, retirement, health, and identity [8]. Some older individuals adjust well to changes and have a successful aging experience. However, some struggle to cope with these transitions, leading to various physical, mental, and social health issues [9].

A new and positive perspective on aging is known in several terms, including healthy, productive, active, and successful aging [10]. Encouraging active aging enhances older adults' quality of life by promoting health, engagement, and safety [11]. The term "active" covers ongoing physical activity, workforce involvement and sustained engagement in society, politics, culture, spirituality, and civic affairs [12]. The participation of elderly in volunteer activities keeps them active and contributes to their social, physical, and psychological well-being [13]. Additionally, active aging significantly influences older adults' quality of life [14].

According to the World Health Organization (WHO), social support, social capital and contextual variables affect active aging [15] (Figure 1). Social support and social capital are crucial factors associated with active aging [16]. Social support includes emotional support, informational support, companionship, and perceived support [17]. Emotional support, which includes love, trust, intimacy, and encouragement from social networks, gives older adults a sense of value as members of society [18]. Informational support involves providing older adults with helpful information, guidance, and suggestions [19]. Companionship support motivates older adults to participate in groups and social activities [20]. Perceived support refers to financial assistance and access to social amenities and services. Social support is associated with reduced psychological problems among older adults [21]. Social support increases positive thoughts and self-confidence in older adults, contributing to active engagement. Older individuals receiving care from family or friends tend to engage in higher physical activity levels [18].

Disability is another factor that can significantly impact active aging. Disability refers to an older person's need for assistance from others in carrying out daily activities [22]. Disability results in higher dependence on nursing homes [2, 18], increased caregiving expenses, and financial stress on the healthcare system and families [19]. The number of older individuals experiencing disability is increasing, potentially because more individuals sur-

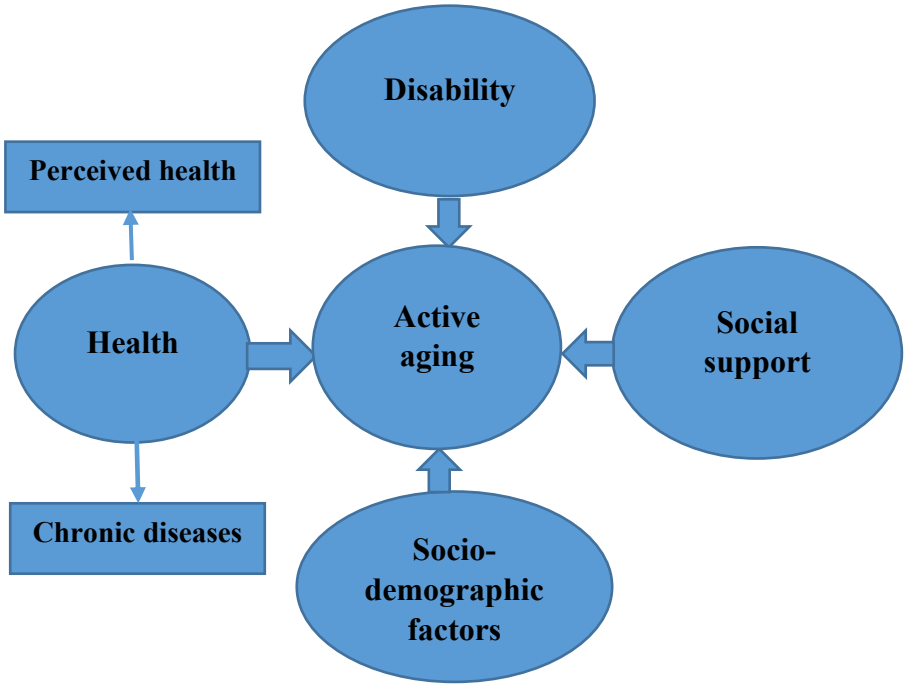

Figure 1. The conceptual framework of the study

vive multiple diseases, leading to sedentary lifestyles and lack of social support [23]. Prompt identification and management of disabilities can help reverse this trend and enhance the well-being of older individuals [24, 25].

Conflicting findings have been reported regarding the influence of demographic characteristics on active aging in older adults. For example, Shavaki and Salehi [26] indicated that older men are more active than older women, whereas Ayoubi-Mahani et al. [27] found the opposite. Moreover, Movahed and Majidi [28] reported a significant relationship between educational level and active aging, whereas Tajvar et al. [29] did not observe such a relationship.

Considering the increasing number of older adults, focusing on physical and social activities is critical. Various factors influence the level of active ageing. By identifying these factors, we can make suitable decisions and implement targeted interventions to elevate the activity levels of older adults, ultimately enhancing their overall quality of life. However, due to limited research and conflicting results on the factors affecting older adults' activity, this study aimed to determine active aging status and identify predictive factors among the elderly in Qazvin City, Iran.

Materials and Methods

This descriptive study, conducted in 2023, included 289 participants aged >60 years living in Qazvin City. Older individuals were selected using cluster sampling. Therefore, Qazvin City was divided into three municipal zones and several parks were randomly chosen from each zone based on population density. Eligible older adults were selected from each park.

The inclusion criteria included individuals aged 60 years or over willing to participate in the study and capable of answering questions. The exclusion criteria included older adults diagnosed with a mental illness (according to their self-report).

The sample size was calculated using α=0.05, β=0.05, and the correlation coefficient (r) of -0.7 between active aging and intergenerational social support [9]. This calculation resulted in a sample size of 240 individuals. Considering a 20% probability of non-response, 289 individuals were included in the study (Equation 1).

$$1.\ n=\frac{Z_{1-\alpha/2}+Z_{1-\beta})^2}{w^2}+3$$

Instruments

Data were collected using a demographic information checklist, an Iranian active aging questionnaire, a multidimensional scale of perceived social support (MSPSS),

and the WHO disability assessment schedule (WHO-DAS 2.0).

A 10-point Likert item assessed the perceived health status: "How do you evaluate your health status?" It was rated from poor to excellent.

Iranian active aging questionnaire

Mohammadi et al. developed an Iranian active aging questionnaire to assess active aging. This questionnaire comprises 40 items evaluated on a 5-point Likert scale (0=none, 1=little, 2=some extent, 3=greatly, 4=very highly). It covers six subscales: Social institutional participation (four items), active mind maintenance (six items), social contact (seven items), agent attitude (seven items), productive engagement (eight items), and physical functional activity (eight items). The scores range from 0 to 160, with higher scores indicating more active aging. Mohammadi et al. evaluated and confirmed its content validity, internal consistency, and test-retest reliability by Cronbach's α of 0.876, Pearson's correlation coefficient of 0.951, and the inter-cluster correlation coefficient of 0.996 [30].

MSPSS

The MSPSS was created to assess perceived social support. Each dimension of social support included four items, resulting in 12 items. The items were rated on a 7-point Likert scale, ranging from one (completely disagree) to seven (completely agree). Scores ranged from 12 to 84. Higher scores indicate more excellent social support [31]. The validity and reliability of the Persian version have been confirmed by Bagherian-Sararoudi et al. [32]. Ezati et al. [33] found that the questionnaire had a Cronbach's α of 0.82 when used with older adults.

WHODAS 2.0

The WHODAS 2.0 assesses disabilities in older adults. The questionnaire contains 12 items evaluated on a 5-point Likert scale, ranging from "without difficulty" to "extreme difficulty." Scores ranged from 12 to 60. The questionnaire assessed disability in six domains: Communication, mobility, self-care, interpersonal relationships, life activities, occupational activities, and participation in social and family activities. Higher scores indicated higher levels of disability [34, 35]. The questionnaire was validated by older Iranians [36].

Data analysis

The data were analyzed using R software, version 4.2.3 Descriptive statistics, such as Mean±SD, were used to summarize quantitative variables. Frequency and percentage distributions were utilized for qualitative/nominal variables. A multiple regression model was used to detect the predictors of active aging. A stepwise algorithm, guided by the Akaike information criterion, was utilized to choose the most suitable predictive model. A $P<0.05$ was considered to be statistically significant.

Results

Table 1 presents the characteristics of older individuals. The mean age was 66.78±6.22, ranging from 60 to 93.

According to Table 2, the older participants showed a mean score of 109.18±24.15 for active aging. Physical functional activity had the highest active aging, with a weighted mean of 3.08, followed by social contact, with a weighted mean of 2.94. The lowest level of active aging was found for social institutional participation, with a weighted mean of 1.84.

The mean disability and social support for older participants were 21.77±9.03 and 59.08±16.95, respectively. Friends reported the highest level of social support (21.35±6.15), followed by family (20.73±6.26), while others observed the lowest level (16.97±7.11).

The multivariate regression model results indicated that sex, marital status, employment, educational level, disability, economic situation, perceived health, and perceived social support were the most significant predictors of active aging. Older adults were more active if they were women (B=7.92, P=0.007), widowed (B=16.40, P=0.001), employed (B=8.30, P=0.020), or retired (B=8.04, P=0.016), had secondary (B=9.08, P=0.017) or academic (B=14.81, P=0.002) educational level, average (B=8.67, P=0.027), and good (B=14.18, P=0.001) or excellent (B=11.84, P=0.037) economic situations. Older adults with better-perceived health (B=2.14, P<0.001), higher social support (B=0.38, P<0.001) and lower disability (B=-0.72, P<0.001) had significantly higher levels of active aging (Table 3).

Discussion

This study was conducted to identify predictive factors for active aging in older individuals living in Qazvin City. The results showed that active aging among older adults was moderate. Additionally, the results revealed

Table 1. The demographic information of participants (n=289)

Variables		Mean±SD/No. (%)
Age (y)		66.78±6.22
Number of children		3.29±1.95
Gender	Female	111(38.4)
	Male	178(61.6)
Marital status	Married	207(71.6)
	Single	8(2.8)
	Divorced	14(4.8)
	Widowed	60(20.8)
Educational level	Illıtrate	40(13.8)
	Reading and writing ability	62(21.5)
	Elementary	50(17.3)
	High school and diploma	93(32.2)
	Academic	44(15.2)
Job	Retired	123(42.6)
	Housewife	89(30.8)
	Employed	55(19.0)
	Unemployed	111(38.4)
Economic status	Poor	20(6.9)
	Average	172(59.5)
	Good	82(28.4)
	Excellent	15(5.2)
History of chronic diseases	0	18(6.2)
	1-2	152(52.6)
	≥3	119(41.2)

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statistically significant relationships between sex, marital status, educational level, economic situation, employment, perceived health, disability, perceived social support and active aging.

We found that older adults had moderately active aging. However, previous studies have reported different results. For example, Movahed and Majidi [28] found moderate active aging among older adults in Shiraz City. Tajvar et al. [29] reported that active aging among older adults in Tehran City, Iran, was below average. Additionally, Seyedjavadi and Pakfar [37] estimated the activity levels of older patients to be unsatisfactory. Asadi Shavaki and Salehi [26] also reported low physical activity among approximately half of the older participants. Most studies' low to moderate levels of active aging can be attributed to barriers, such as age-related disabilities, fear of falling, decreased energy levels, musculoskeletal pain, costs, and limited access to social activities [38].

Table 2. The level of active aging and its domains

Subscales	Mean±SD	Weighted Mean	Min	Max
Active mind maintenance (6 questions)	13.15±5.32	2.19	6	28
Agent attitude (7 questions)	20.33±5.79	2.90	8	35
Physical-functional activity (8 questions)	24.61±4.13	3.08	14	36
Social contacts (7 questions)	20.56±5.29	2.94	7	28
Productive engagement (8 questions)	23.21±6.09	2.91	9	39
Social institutional participation (4 questions)	7.37±3.74	1.84	4	20
Overall active aging (40 questions)	109.18±24.15	2.73	56	189

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Our results indicated that older women exhibit significantly more active aging than older men. This outcome can also be explained by the fact that, at older ages, men may reduce their physical and social activities due to retirement. At the same time, women continue to be involved in household responsibilities and caring for family members. Additionally, this result suggests that the women in this sample prioritize their health by remaining active. Previous studies have presented conflicting findings on sex differences in activity levels [26, 27, 39], potentially due to cultural variations among older populations.

We found that older adults with secondary and academic education demonstrated a significantly higher level of active aging than illiterate adults. Ayoubi-Mahani et al. [27] concluded that lack of knowledge is a barrier to active aging. Likewise, Lin et al. [40] identified high literacy levels as an influential factor in active aging among elderly people in Taiwan. Furthermore, Khazaeepool and Naghibi [41] stated that older adults with higher educational levels were more engaged in social participation. Higher education is associated with better socioeconomic status and enhanced communication skills, which can result in increased social involvement. Education can also lead to a healthier lifestyle, improved job prospects, and higher socioeconomic standing, all of which increase social engagement. Additionally, higher levels of education are associated with improved health literacy, which may explain why individuals with higher education are more physically and socially active [42].

In this study, older individuals with poor economic status tended to have lower levels of active aging, consistent with previous studies [27-29]. For instance, Movahed and Majidi [28] identified that a high-income level predicts active aging among older adults in Shiraz City. Ayoubi-Mahani et al. [27] also concluded that low income is a barrier to active ageing. Older people with better financial status access social and health services better and have more opportunities for social interaction [43]. High inflation, financial constraints, and increased expenses in old age can marginalize older individuals [27]. Income and additional earnings are vital aspects of security during active ageing. They contribute to financial well-being and participate fully in society [44, 45].

Our results indicated that employed and retired older individuals were significantly more active than housewives. Consistent with this result, Asadi Shavaki and Salehi [26] found that vigorous physical activity was significantly higher in employed older adults (workers and self-employed) than housewives. In addition, KhazaeePool and Naghibi [41] reported that employed older individuals had higher social participation. Occupation and income are factors that support increased social interaction among older adults. Employed older adults have more opportunities for social interactions due to their exposure to the outside environment and regular interactions with friends and colleagues at work. Retired older adults may also have higher levels of social activity owing to reduced job-related stress and more time for social interactions.

According to our results, divorced older adults were significantly more active than married adults. This is inconsistent with previous studies showing that married older adults tend to be more active than their unmarried counterparts. For example, Tajvar et al. [29] found that unmarried women scored lower on measures of active aging than married women. The discrepancy observed in this study could be attributed to the significant percentage of divorced older individuals employed, resulting in elevated scores for active aging.

Table 3. Predictive factors of active aging in older participants (n=289)

Variables		Model B (CI, 95%)		
		Univariate	Multivariate	Stepwise
Age		-1.00 (-1.43,-0.57) P<0.001	0.17 (-0.19,0.54) P=0.335	-
Children		-2.29 (-3.7,-0.88) P=0.002	0.68 (-0.48,1.84) P=0.253	0.76 (-0.32,1.84) P=0.167
Gender	Female	2.8 (-2.93,8.52) P=0.339	8.31 (2.47,14.16) P=0.006	7.92 (2.18,13.65) P=0.007
Marital status	Married	1	1	1
	Single	-13.15 (-29.54,3.24) P=117	11.44 (-0.63,23.5) P=0.064	11.99 (-0.04,24.02) P=0.052
	Divorced	0.98 (-11.58,13.54) P<0.001	15.21 (5.81,24.61) P=0.002	16.40 (7.2,25.61) P=0.001
	Widowed	-17.01 (-23.68,-10.34) P<0.001	0.57 (-4.76,5.91) P=0.833	1.45 (-3.72,6.62) P=0.583
Level of education	Illiterate	1	1	1
	Reading and writing	13.76 (6.06,21.46) P=0.001	5.05 (-1.75,11.85) P=0.147	4.12 (-2.58,10.82) P=0.230
	Elementary	13.55 (5.5,21.61) P=0.001	1.96 (-5.38,9.29) P=0.601	1.12 (-6.12,8.37) P=0.761
	Secondary and diploma	31.85 (24.67,39.03) P<0.001	9.78 (2.31,17.24) P=0.011	9.08 (1.68,16.48) P=0.017
	Academic	46.01 (37.72,54.3) P<0.001	15.42 (6.32,24.51) P=0.001	14.81(5.76,23.86) P=0.002
Economic situation	Low	1	1	1
	Average	20.47 (10.06,30.87) P<0.001	9.01 (1.36,16.66) P=0.022	8.67 (1.05,16.3) P=0.027
	Good	34.76 (23.77,45.74) P<0.001	14.89 (6.34,23.44) P=0.001	14.18 (5.72,22.63) P=0.001
	Excellent	31.5 (16.45,46.55) P<0.001	12.83 (1.6,24.06) P=0.026	11.84 (0.79,22.89) P=0.037
Job	Housewife	1	1	1
	Unemployed	-23.39 (-33.84,-12.94) P<0.001	-3.86 (-12.91,5.2) P=0.404	-4.06 (-13.1,4.98) P=0.379
	Retired	2.6 (-3.51,8.7) P=405	8.32 (1.79,14.86) P=0.013	8.04 (1.53,14.56) P=0.016
	Employed	15.81 (8.28,23.34) P<0.001	8.19 (1.14,15.24) P=0.024	8.30 (1.32,15.27) P=0.020
Chronic disease	No	-15.45 (-26.88,-4.01) P=0.009	-5.96 (-14.29,2.36) P=0.162	-
	1-2	1	1	-
	≥3	-24.1 (-35.7,-12.49) P<0.001	-5.72 (-14.6,3.17) P=0.208	-
Perceived health		6.44 (5.09,7.8) P<0.001	1.99(0.71,3.26) P=0.003	2.14 (0.95,3.33) P<0.001
Social support		0.79 (0.65,0.92) P<0.001	0.38 (0.23,0.53) P<0.001	0.38 (0.23,0.53) P<0.001
Disability		-1.57 (-1.82,-1.32) P<0.001	-0.72 (-1.02,-0.43) P<0.001	-0.72 (-1.02,-0.43) P<0.001

B: Unstandardized regression coefficient; CI: Confidence interval.

Our results showed that older individuals with a better understanding of their health tended to score higher on measures of active aging. Smith et al. [17] found that self-assessed health strongly correlated with physical activity. Health status plays a significant role in enabling or hindering participation in social activities [46]. As demonstrated by Vaartio-Rajalin et al., older adults participating in activities outside their homes reported better-perceived health than those engaging in activities at home or not participating [47].

Our results revealed that elderly individuals with higher disability levels scored lower in active aging. Ayoubi-Mahani et al. [27] also showed that disability is a significant barrier to active ageing. In older adults, disability can result in limitations or loss of ability to engage in work-related activities, fulfill social roles, and maintain independent living [48]. Aging-related physical problems can significantly impede previous social activities, leading individuals to rely more on others and have limited participation in various social situations [49]. Furthermore, physical disability among the elderly is commonly correlated with feelings of loneliness and isolation, increased dependence on others, and reduced social interactions [50].

Our results showed that social support predicted higher active aging in the elderly, consistent with other studies. For example, Movahed and Majidi [28] found that social support was one of the most significant predictors of active aging in Shiraz City. Jokar et al. [51] also observed a positive and significant correlation between social support and the ability to carry out daily activities in rural areas. Social support is an effective indicator of the consequences of ageing [52]. Having a strong social support system is directly connected to active coping with reduced functioning and disability. Support networks are crucial in older adults' overall health and daily activity performance [36]. Social participation is a key element in active aging [53]. Social support is vital for sustaining and enhancing physical and cognitive health by encouraging participation various activities [51]. Older individuals can rediscover purpose through social and emotional support and engaging in educational and social activities with loved ones [54].

Conclusion

Our research suggests that older adults engage in moderate physical activity. Interventions aimed at promoting active and healthy aging should focus on older men, people with disabilities, lower-income seniors and people dealing with health issues. Additionally, our study found that social support influences active ageing. Establishing support from family, companions and healthcare providers can help older adults gain confidence in starting and maintaining physical and social activities.

Limitations

This study was conducted on older adults in Qazvin City, which limits its generalizability to older adults in other Iranian cities or institutionalized older adults. Another limitation is the self-report nature of the questionnaires; some participants refrained from providing accurate responses. We encouraged them to provide honest and truthful answers by explaining the study's objectives. Additionally, numerous factors could affect the level of active aging; however, it was infeasible to consider all these factors due to time constraints. Future studies should focus on these factors.

Ethical Considerations

Compliance with ethical guidelines

The Ethics Committee of Qazvin University of Medical Sciences approved this study, Qazvin, Iran (Code: IR.QUMS.REC.1401.231). Older participants received thorough information about the study's goals and were assured that their data would remain confidential. Consent forms were collected from the participants to ensure full compliance with the study requirements

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Authors' contributions

Data collection: Zahra Shirshekan; Statistical analysis: Ahad Alizadeh; Methodology and writing the original draft: Zahra Shirshekan, Seyedeh Ameneh Motalebi and Fatemeh Mohammadi; Review and editing: Zahra Shirshekan, Seyedeh Ameneh Motalebi, Fatemeh Mohammadi and Mohammad Amerzadeh; Final approval: All authors.

Conflict of interest

The authors declared no conflict of interest.

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