

Evaluation of “Age-Friendly City” Indicators in Golestan Province From the Perspective of the Older Adult Population

Ali Moradi¹, Ali Akbari², Akram Sanagoo³, Maryam Abolghazi⁴, Homa Vodjani⁵, Anita Gharajeh⁶, Zahra Talebi⁶, Leila Jouybari⁷, Hossein Nasiri⁷, Fatemeh Mehravar^{8*}

¹Student Research Committee, Golestan University of Medical Sciences, Golestan, Gorgan, Iran

²Medical Surgical Nursing Department, Nursing and Midwifery Faculty, Tehran University of Medical Sciences, Tehran, Iran

³Faculty of Nursing and Midwifery, Golestan University of Medical Sciences, Islamic Azad University Gorgan, Iran

⁴Amirul Mominin Hospital, Kordkoi, Golestan

⁵Student Research Committee, Faculty of Nursing-Midwifery, Shahrood University of Medical Sciences, Shahrood, Iran

⁶Student Research and Technology Committee, Golestan University of Medical Sciences, Gorgan, Iran

⁷Faculty of Nursing and Midwifery, Golestan University of Medical Sciences, Gorgan, Iran

⁸Department of Biostatistics and Epidemiology, School of Health Ischemic Disorders Research Center, Golestan University of Medical Sciences, Gorgan, Iran

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*Corresponding Author:

Fatemeh Mehravar,
Email: Mehravar10261@Yahoo.
com

Abstract

Objectives: To evaluate age-friendly city indicators from the perspective of the older adults in Golestan province in 2023.

Design: A descriptive-analytical cross-sectional study.

Setting(s): Golestan province, Iran.

Participants: Individuals aged 60 years and above.

Outcome measures: A sample of 310 participants was selected using proportional stratified sampling. Data were collected with a validated age-friendly city questionnaire.

Results: The mean age of the participants in this study was 70.34 ± 7.73 years (ranging from 60 to 99), with 64.5% being male. Among the three examined components, the component of respect and social security had the highest average among the older adults (4.65 ± 17.72), followed by social participation (4.79 ± 16.30) and civic engagement and employment (4.052 ± 12.20). Age-friendly city indicators demonstrated statistically significant differences in variables such as city of residence ($P=0.02$), support source ($P=0.009$), income level ($P=0.001$), and marital status ($P=0.05$).

Conclusions: None of the examined age-friendly city components in Golestan province met the necessary standards. Recommendations include enhancing efforts by service organizations to improve conditions for older adults.

Keywords: Age-friendly city, Older adults, Urban planning, Golestan province

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Introduction

Aging is a pivotal life stage, representing a continuation rather than an end to the natural lifespan.^{1,2} The global demographic shift toward an aging population is a growing trend.³ Several societies are currently experiencing or will soon face the challenges of population aging. Iran, as a developing nation, is also contending with this phenomenon. In 2011, individuals aged 60 and above constituted 8.2% of Iran's total population.^{1,2} Aging is an inevitable and significant phase in human life, requiring

adept management through appropriate policies. Consequently, a novel urban planning approach known as an “age-friendly city” has emerged.^{4,5}

In recent years, the importance of age-friendly cities has escalated, leading to the development of various evaluation and monitoring methods for such urban areas. According to the World Health Organization (WHO), an age-friendly city is one that recognizes and meets the specific needs of the growing older adult population. Public services in these cities are tailored to align with the



requirements of older adults in all dimensions.^{5,6} These cities are structured to cater to the needs of older adults, with a focus on cultural and interpersonal communication aspects.^{1,2}

Urban living risks affect everyone, but older adults are especially vulnerable due to aging challenges. These include pollution, social isolation, mobility issues, high housing costs, and difficulty accessing healthcare and essential services. Combined with physical and cognitive declines, these factors require targeted interventions to ensure safer urban environments for the elderly.^{5,6}

The concept of age-friendly cities was initially introduced by the WHO to address global challenges posed by aging and urbanization. These cities encompass eight domains, including urban open spaces, buildings, transportation, safety, social respect, participation, health, and culture. The primary goal is to create environments that facilitate the aging process, considering the physical, mental, and social changes accompanying old age.^{4,7,8}

Ensuring that urban infrastructure meets the basic needs of older adults necessitates thorough research and planning. Understanding the essential needs of older adults is vital for promoting their psychological, mental, and social well-being. The transition from work to retirement in old age can result in job loss, income challenges, and a range of social, economic, and psychological issues. Adapting job opportunities to align with the capabilities and age of older adults can help alleviate these problems.⁹⁻¹¹

Assessing urban services provided to older adults is essential for achieving an age-friendly city. Evaluation and monitoring of cities from this perspective are crucial for creating suitable environments for this segment of society.^{12,13}

By focusing on a provincial scale rather than individual cities, the research aims to provide a comprehensive understanding of how well Golestan province meets the needs and preferences of its older population. This approach allows for a broader assessment that considers regional variations and specific challenges faced by older adults in urban and rural areas within the province. This study seeks to assess age-friendly city indicators from the viewpoint of older adults at the provincial level in Golestan Province, Iran, in 2023.

Methods

This study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology guidelines for cross-sectional studies.

This cross-sectional study employed a descriptive-analytical approach to evaluate various aspects of older adults' lives in Golestan province. The study was conducted in three regions of Golestan province, namely, the cities of Gorgan (central area), Gonbad (eastern region), and Kordkoi (western region). The study included 310 individuals aged 60 and above. The inclusion criteria were a willingness to participate, an ability to communicate

verbally, residency in Golestan province for at least one year, the absence of diagnosed psychiatric illnesses, and no hearing impairments affecting communication. An exit criterion was set for incomplete responses up to 10%.

The intended key variables were social participation, dignity and social support, and citizenship and employment participation. Data collection tools included a demographic information form and the Age-Friendly City Questionnaire. The demographic form was used to collect data on age, gender, marital status, education level, employment status, income, location of residence, ethnicity, insurance, and number of children. The Age-Friendly City Questionnaire, developed by Sharqi et al, consists of 102 items across eight domains. For this study, the focus was on the domains of social participation, dignity and social support, and citizenship and employment participation.

In this study, three components of the Age-Friendly City Questionnaire were specifically chosen due to their relevance to health and the comprehensive nature of the questionnaire. These components included social participation (8 items with a score range of 8–24), dignity and social security (9 items with a score range of 9–27), and citizenship and employment participation (8 items with a score range of 8–24).

Participants' responses were categorized into yes, to some extent, and no options, corresponding to scores of 3, 2, and 1, respectively. An average score of 2 was considered standard for each question and indicator. Total scores for each component ranged from 25 to 75, which aligns with the WHO standards designed to assess older adults' perspectives on various aspects of age-friendliness in urban settings.

The questionnaire demonstrated strong internal consistency, as indicated by Cronbach's alpha coefficients. The overall Cronbach's alpha for the entire questionnaire exceeded 90%, indicating extremely high reliability. Additionally, Cronbach's alpha for each domain (social participation, dignity, social security, citizenship, and employment participation) was above 70%, further validating the reliability of the questionnaire for assessing these specific domains among older adults in the study population.

A stratified proportional sampling method was used to minimize bias, and the data were collected in diverse and commonly frequented locations such as bus stations, healthcare centers, parks, and mosques. Sample size calculations were based on specific formulas for the domains of interest. Assuming a first-level error ($\alpha=0.05$), an absolute error ($d=0.05$), and a standard deviation of 0.35, the sample size was initially estimated at 188. Considering a clustered sampling method, a 10% dropout rate, and a design effect of 1.5, the final sample size was set at 310 cases.

Scores for social participation, dignity and social support, and citizenship and employment participation were quantified from 1 to 3, with total scores ranging

from 25 to 75 across the three components. An average score of 2 was considered standard for each question and indicator. The obtained data were analyzed using SPSS, version 26. Analytical methods utilized in this study encompassed measures of central tendency and dispersion indices, as well as independent t-tests, analysis of variance (ANOVA), and chi-square tests, which were all employed to evaluate relationships and differences among variables.

Results

In this study, 310 older adult individuals participated, with an average age of 70.34 ± 7.73 (age range: 60–99). Among the participants, 64.5% were male, and the remaining were female. The majority of participants held a diploma (27.1%), and 61% were identified as having Fars ethnicity. Participation rates were 36.1%, 35.8%, and 28.1% from Gorgan, Gonbad, and Kordkoi, respectively. Concerning income, 39% of the older adults had a monthly income between 5 and 10 million tomans, 34.2% had incomes exceeding 10 million tomans, and 21.6% had incomes below five million tomans. Approximately 60.6% of the older adults had some form of supplementary insurance. In terms of employment status, the majority were retired (23.9%), while 7.28% were unemployed or housewives. Financially, most older adults received pensions (38.7%), 14.2% were supported by their children, and others received assistance from welfare and relief committees.

Based on the data in Table 1, the overall average score of the assessment of the older adults in Golestan province from the age-friendly city was 45.02 ± 10.82 (with a score range of 28–80). The average scores in the domains of social participation and dignity and social security were 16.30 ± 4.79 and 17.72 ± 4.65 , respectively, and the corresponding scores in the domain of citizenship and employment participation were 12.20 ± 4.052 . Gorgan obtained a lower score in the evaluation of an age-friendly city compared to Gonbad and Kordkoi, and this difference was statistically significant ($P=0.002$).

To compare means using the ANOVA, no significant differences were observed in the three domains concerning demographic variables such as gender, ethnicity, education, type of insurance, and supplementary insurance. However, in the comparison of all three domains of the age-friendly city with variables such as city of residence ($P=0.02$), support source ($P=0.009$), income level ($P=0.001$), and marital status of the older adults ($P=0.04$), significant differences were identified as influential factors on the overall assessment score of the

age-friendly city (Table 2). Nevertheless, gender, ethnicity, education, and supplementary insurance revealed no statistically significant differences.

According to the results (Table 2), the total score of the elderly-friendly city of Golestan province belonged to the financial support source variable ($P=0.009$). The highest score was attributed to the other sources of support (47.94 ± 11.97), while the lowest score related to pensioners (42.77 ± 9.52) was found in the variable of marriage ($P=0.04$). Being single (47.15 ± 11.11) had the highest score, while being divorced represented the lowest score (39.74 ± 11.02). Further, in the variable of monthly income, the highest score of income share was 10 million and above (48.39 ± 12.87), whereas 0–5 million tomans obtained the lowest score (42.33 ± 9.29).

The occupational status of older adults was one of the influencing factors in the “dignity and social security” ($P=0.02$) and “citizenship and employment participation” ($P=0.002$) domains. Additionally, the financial support source for the older adults had a significant impact on the scores of “dignity and social security” ($P=0.02$) and “citizenship and employment participation” ($P=0.001$) domains.

Table 3 presents the average scores of the areas of old age and the correlation coefficient between them in the areas of the number of children, age, social participation, dignity and social security, citizenship, and employment.

Table 2. Mean Total Score of Age-Friendly City Evaluation, Differentiated by Influencing Factors in Golestan Province

Variables	Total Score of Age-Friendly City	Statistical Significance (P Value)
Financial support source	Welfare organization	43.75 ± 13.46
	Children's support	43.47 ± 8.34
	Relief committee	42.81 ± 10.46
	Pension receiver	42.77 ± 9.52
	Others	47.94 ± 11.97
Marital status	Single	47.15 ± 11.11
	Married	45.33 ± 11.02
	Widowed	46.10 ± 9.09
	Divorced	39.74 ± 11.02
Monthly income level	0–5 million tomans	42.33 ± 9.29
	5–10 million tomans	44.2 ± 9.33
	Above 10 million tomans	48.39 ± 12.87

Note. The asterisk (*) represents statistically significant differences with a P-value less than 0.05.

Table 1. Mean Scores of Age-Friendly City Domains Differentiated by Cities in Golestan Province

Age-Friendly City Domains	Gorgan (Mean \pm SD)	Gonbad (Mean \pm SD)	Kordkoi (Mean \pm SD)	Total Golestan Province (Mean \pm SD)	Statistical Significance (P Value)
Social participation domain	15.35 ± 3.83	16.85 ± 5.13	16.82 ± 5.28	16.30 ± 4.79	0.03*
Dignity and social security domain	16.47 ± 4.12	18.54 ± 5.06	18.31 ± 4.47	17.72 ± 4.65	0.004*
Citizenship and employment domain	11.13 ± 3.08	12.09 ± 4.47	12.70 ± 4.32	12.20 ± 4.05	0.002*
Total questionnaire score	41.93 ± 7.79	47.04 ± 12.59	46.45 ± 10.98	45.02 ± 10.82	0.002*

Note. SD: Standard deviation. The asterisk (*) indicates statistically significant differences with a P value less than 0.05.

Table 3. The Average Score of the Areas of Old Age and the Correlation Between Them From the Point of View of the Older Adults in Golestan Province

Domain	Mean	Standard Deviation	Minimum Score	Maximum Score	Correlation Coefficient	P Value
Child	70.34	7.73	60	99	0.13	0.03*
Age	3.84	1.90	0	9	0.14	0.02*
Social participation domain	16.30	4.79	9	27	0.85	0.001*
Dignity and social security domain	17.72	4.65	11	31	0.86	0.001*
Citizenship and employment domain	45.02	10.82	28	80	0.76	0.001*

Note. The asterisk (*) implies statistically significant differences with a *P* value less than 0.05.

According to the Pearson correlation test results, age ($r=0.14$, $P=0.02$) and the number of children ($r=0.13$, $P=0.03$) had a statistically significant relationship with the overall assessment score of the age-friendly city. In addition, the areas of social participation, dignity and social security, and citizenship and employment were observed to have a significant relationship (Table 3).

The key findings included disparities in age-friendly city assessments across different cities within the province. Specifically, Gorgan received notably lower scores compared to Gonbad and Kordkoi, with a statistically significant difference ($P=0.002$). This disparity suggests varying levels of infrastructure, community resources, or local policies that influence older adults' perceptions of their living environment's suitability.

The study also explored the impact of demographic and socio-economic factors on age-friendly city scores. While variables such as gender, ethnicity, and education showed no significant differences, factors such as city of residence ($P=0.02$), financial support source ($P=0.009$), income level ($P=0.001$), and marital status ($P=0.04$) emerged as significant influencers. For instance, older adults financially supported by welfare organizations or receiving higher incomes tended to rate their cities more positively in domains related to dignity, social security, and citizenship participation. These findings underscore the importance of economic stability and local policy in shaping older adults' perceptions of their city's age-friendliness.

Furthermore, correlation analyses revealed that age ($r=0.14$, $P=0.02$) and the number of children ($r=0.13$, $P=0.03$) were associated with higher overall age-friendly city assessment scores. These correlations suggest that being older and having more children may impact how older adults view the supportiveness and accessibility of their living environment. The study's robust statistical methods, including ANOVA and Pearson correlation tests, provided a rigorous basis for these conclusions, ensuring that observed differences were statistically meaningful rather than random variations.

In summary, the study's findings highlight significant disparities in age-friendly perceptions across cities within Golestan province and underscore the multifaceted influences of socio-economic and demographic factors on older adults' perceptions of their living environment. These insights can inform targeted policy interventions

aimed at enhancing age-friendliness and improving the quality of life for older populations in diverse urban settings.

Discussion

The findings revealed that among the three components of an age-friendly city, the components of dignity and social security had the highest average from the perspective of the older adults in Golestan province, followed by social participation components with an average score and civic engagement and employment. In a study conducted by Dellamora et al in London, social participation was the most desirable factor for older adults^{14, 15}. Johnson et al found that in the context of cities, responsiveness, transportation, and social participation scored the highest. Barriers to older adults' social participation included unavailability, lack of physical facilities in the living environment, boredom, costs, illness, lack of companionship in old age, skills and abilities, and financial status.¹⁶ Nasiri Hendeh Khaleh and Rezaali found that among the dimensions of respect and social security, social participation, and civic engagement and employment, the respect component had the highest average.¹⁷ In a study in Tehran, citizen participation and employment indicators were deemed highly inappropriate for older adults.¹⁸ In terms of citizen participation and employment, a study in Kermanshah revealed that due to high youth unemployment in the city, creating jobs for older adults is highly challenging and not a priority for managers.¹⁹ In a study by Sharqi et al, the components of respect, social security, and social participation were in a more favorable situation for older adults, while civic engagement and employment were in a crisis state compared to other components.¹⁴ Zarghani et al, using the WHO standard criteria, examined the age-friendly city component in Mashhad and showed that all social, cultural, and recreational indicators in this city had a relatively suitable status, nearly in line with the standards, while healthcare indicators were far from ideal.²⁰

In this study, a significant relationship was observed between the marital status of the older adults and the domains of social participation, dignity, and social security, but no meaningful relationship was found between marital status and civic engagement and employment. Asadollahi reported that the level of participation among older adult men was higher than that of older adult women, and a

significant relationship was observed between marital status and social participation.²¹ Additionally, regarding the variable of occupation, significant differences were found in the domains of dignity and social security and civic engagement and employment, while no relationship was noted with social participation. No relationship was detected between education level and the three components of an older adult's well-being. In studies by Asadollahi and Mansouri, there was no relationship between employment status and the level of education of older adults with social participation.^{21,22}

In the present study, no significant relationship was observed between the support source variable and the domain of social participation. However, a significant difference was found in the domains of social dignity, civic engagement, and employment. Additionally, there was a moderate correlation and a meaningful relationship between age variables and the issue of having children with these three domains. Other demographic variables, including gender, ethnicity, type of insurance, and supplementary insurance, represented no significant differences. Conversely, significant differences were detected with variables such as city of residence, support source, income level, and marital status.

These findings suggest that while certain demographic factors may not influence social participation directly, they play a crucial role in other aspects of social and civic life. The significant differences related to city of residence, support source, income level, and marital status indicate that these variables can impact an individual's sense of social dignity and engagement in civic and employment activities. This underscores the importance of considering a wide range of demographic factors when studying social dynamics and designing policies to enhance social inclusion and participation for various population groups.

Designing active urban spaces with older adults in mind is essential for creating an age-friendly city. This approach not only supports the autonomy and well-being of older adults but also enhances the overall inclusivity and functionality of urban environments for all age groups. Research indicates that accommodating the needs of older adults in urban planning benefits society as a whole, reflecting the universal nature of aging.²³ For example, Padeiro et al emphasized that urban spaces should be structured to enable older adults to access services independently and with minimal assistance.²⁴

Such design considerations include accessible transportation, safe pedestrian pathways, ample public seating, and easily navigable environments. These features not only cater to the physical needs of older adults but also promote social interaction and community engagement, which are crucial for mental and emotional well-being. Moreover, by prioritizing accessibility and usability in urban design, cities can create environments where individuals of all ages and abilities can thrive. This holistic approach ensures that as the population ages, the urban infrastructure remains resilient, adaptable, and inclusive,

thereby enhancing the quality of life for everyone.

Ultimately, incorporating the perspectives of older adults in the design of urban spaces is a forward-thinking strategy that yields broad societal benefits. By fostering independence and reducing the need for assistance, cities can become more vibrant, inclusive, and age-friendly, aligning with the universal nature of aging and the diverse needs of the community.

One limitation of this study was the evaluation of three out of eight domains of the Age-Friendly City Questionnaire.

Conclusions

Overall, none of the three examined components of age-friendly city indicators in Golestan province met the necessary standards. It is hoped that the results of this study will be utilized in constructing cities based on the desires and needs of older adult citizens. It is recommended that the managers of organizations providing services to older adults put in more effort to achieve desirable conditions. Additionally, using locally developed tools is suggested for future studies. The hope is that the results of this investigation will be valuable in identifying shortcomings and implementing practical solutions for the development of urban facilities.

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Author contributions

Conceptualization: Ali Moradi.

Data curation: Maryam Abolghazi, Homa Vojdani, Anita Gharajeh, and Ali Akbari.

Formal analysis: Fatemeh Mehravar.

Investigation: Zahra Talebi, Leila Jouybari, and Hossein Nasiri.

Methodology: Fatemeh Mehravar.

Project administration: Ali Moradi and Akram Sanagoo.

Resources: Akram Sanagoo.

Software: Fatemeh Mehravar and Ali Moradi.

Supervision: Fatemeh Mehravar.

Validation: Fatemeh Mehravar.

Visualization: Ali Moradi, Akram Sanagoo, and Leila Jouybari.

Writing-original draft: Ali Moradi.

Writing-reviewing and editing: All authors.

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Data availability statement

All data generated or analyzed during the study are included in this published article.

Ethical approval

The study was approved by the Ethics Committee of Golestan University of Medical Sciences, with the ethical code IR.GOUMS.REC.1402.009.

Consent for publication

Not applicable.

Conflict of interests

The authors declare that there is no conflict of interests.

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