**Bagh-e Nazar**
DOI: 10.22034/bagh.2025.449834.5583

Bagh-e Nazar, *22*(148), 5-28 / 2025
Persian translation of this paper entitled:
فراتحلیل و مرور نظام‌مند تأثیر کیفیت مسکن و ویژگی‌های خانوار بر انتخاب و ترجیحات فضای مسکونی (در شهرهای مطالعه شده در ایران)
is also published in this issue of journal.

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# A Meta-analysis and Systematic Review on the Impact of Housing Quality and Household Characteristics on Residential Space Choices and Preferences in Iranian Cities

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Received: 15/04/2025 Accepted: 31/05/2025 Availableonline: 23/09/2025

## Abstract

**Problem statement:** The decision made by designers and architects to prioritize housing attributes desired by users is one of the pressing issues in housing design. For this purpose, both the role of housing quality and its associated attributes affecting housing choices and preferences have been examined in various studies. However, these studies have not been able to meet the challenges of designers and architects adequately due to the diversity of methods, lack of attention to architectural design attributes, different definitions of factors affecting housing quality, as well as inconsistencies in results.

**Research objective:** This study aims to identify, compare, and examine the results of research related to the impact of effective attributes on the quality of residential architecture through the lens of users in choosing or preferring housing. This research identifies gaps and presents inconsistencies in previous studies and ultimately provides the results that can be used in housing design in the investigated cities and contribute to future research.

**Research method:** This study adopted a meta-analysis and systematic qualitative and quantitative review method. For this purpose, all research related to the roles of "housing quality" and "household characteristics" in "housing choice" or "housing preferences" was reviewed. The studies were published in scientific research articles in Iran from 2009 to 2023 and were limited to attributes related to the interior space of residential units and buildings.

**Conclusion:** The results indicate a gap in the investigated issue in large cities. Moreover, inconclusive reports on the impact of various housing attributes and household characteristics on housing selection or preference were revealed by the city. The attributes of unit size and area, number of bedrooms in the residential unit area, safety and security considerations, and facade were the most frequently mentioned, while attributes such as functional relationships of spaces, architectural flexibility, building orientation, smart home, participation in design, etc. received the least attention in the studies, and the average number of attributes in housing selection studies was reported to be less than in housing preference studies.

**Keywords:** *Meta-analysis, Systematic review, Housing quality attributes, Housing choices, Housing preferences, Household attributes, Housing users.*

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## Introduction

Traditional houses, which represent the culture of the people, the form and interior design of houses, as well as their layout, can serve as a factor reflecting the culture and needs of that society (Rapoport, 1969). However, due to the mass construction caused by urbanization over time, and the limited communication between the designer and the end consumer, there is a concern that the decisions of urban designers and planners do not align with the wishes, needs, and culture of the residents and cause dissatisfaction. In today's world, the success of housing construction projects depends on understanding the housing choices and preferences of individuals regarding "housing quality" (Mulliner et al., 2018, 153). Therefore, using the scientific method to delve into the views of housing users is a solution, and a desirable design cannot be achieved solely with an export-oriented perspective. Individuals' views on the quality of housing and its qualitative attributes are neither absolute nor static because they may vary from one country to another, also even from specific groups of people to another in the same country at a point in time and over long periods (Lawrence, 1995, 1658). Referring to various studies, it has been proven that different groups of users have different views on their preferences for housing attributes (Poordehghan et al., 2019). Despite the importance of this issue, Moghimi et al. argue that housing designs are often carried out without considering future users and their values regarding housing quality (Moghimi et al., 2016). To address this problem, various studies have been conducted so far on the role of housing quality and consumers' household characteristics on housing preferences and choices, but these studies were unable to meet the needs of housing designers and planners due to gaps, completely contradictory results, contradictions in the definitions and factors affecting housing attributes and a lack of attention to architectural design attributes.

Coolen and his associate state that individuals' housing preferences and choices operate within the framework of preferences and choices for housing characteristics (Coolen & Hoekstra, 2001, 285). The conceptual framework for this study focuses on "housing preferences and choices based on housing characteristics". In this regard, two series of studies in Iran and research related to the role of architectural quality of residential units and residential buildings on "housing choices" and "housing preferences" were examined to understand consumers' perspectives. The features studied are limited to the attributes that the architect decides on in the design process. The reason for examining these two lines of research on "choice and preference" is rooted in the fact that an individual faces two challenges in housing: 1- The housing he desires, and 2- The housing that he is able to choose despite the limitations. Molin et al. state that "choices reflect preferences" (Molin et al., 1996). Residential preferences represent the individual's ideal state of mind about housing, which may come true or remain a mental image, but ultimately preferences guide the individual's motivation to choose the right house (Jansen et al., 2011, 1-9). The samples analyzed in this study were the articles available from 2009 to 2013 in different cities of Iran, which were searched and screened among the databases Normags, Mag Iran, Jihad Daneshgah Scientific Information Electronic Database, Tehran University Scientific Journals Publication System, Internet sources, Google Scholar, Scopus, Web of Science, ISC, and ScienceDirect (Fig. 1). The sampling method, research methodology, data collection method, analytical tools, attributes of housing, and results in these studies were used as the primary data of this study. Existing research in this field has been conducted in the cities of Tehran, Mashhad, Tabriz, Isfahan, Shiraz, Torbat-e-Jam, Neyshabur, Bojnourd, Hamedan, and Ahvaz. However, there is a gap on this issue in other cities that can be addressed in future research.

This research adopted an applied perspective, integrating the results of existing articles and comparing them to present a more comprehensive and reliable result and reduce possible errors. It is hoped that such results can be ultimately applied to the housing design process that meets consumer needs and prevents continuous trial and error in design and waste of capital in the housing sector. The main questions in this research are: Which housing quality (attributes related to residential units and residential buildings) and household characteristics have

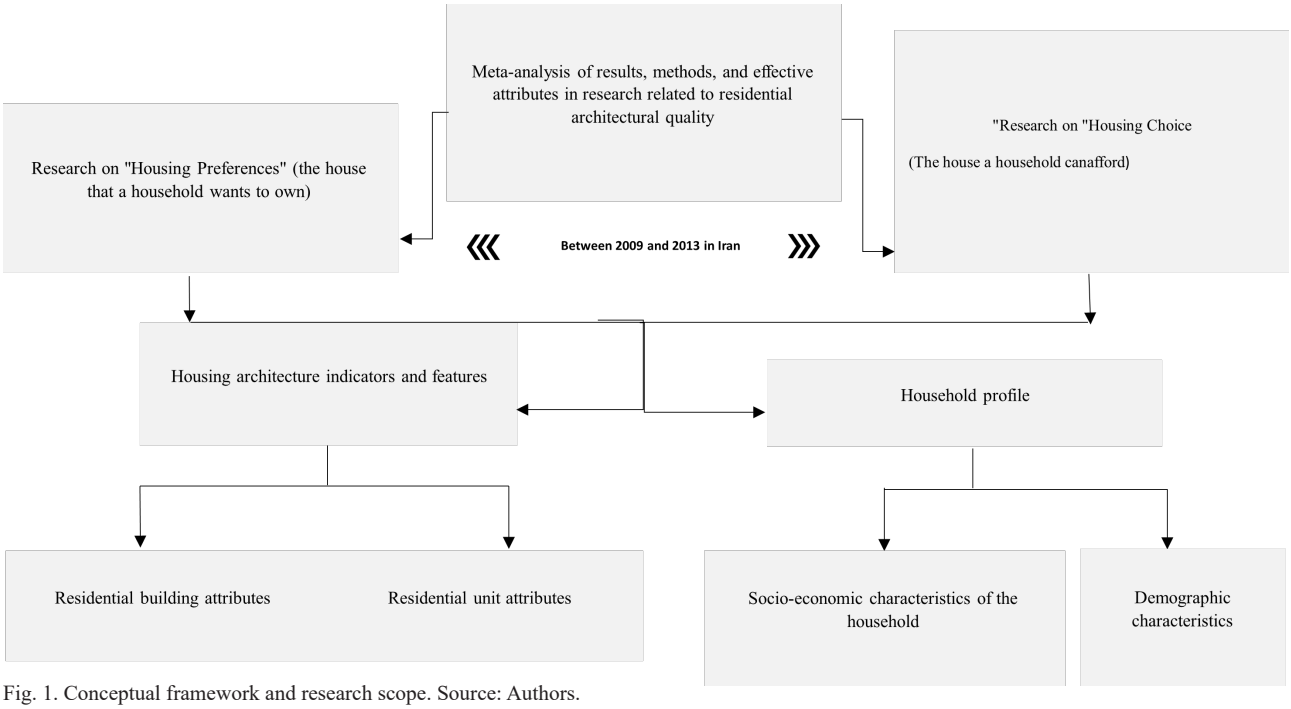


Fig. 1. Conceptual framework and research scope. Source: Authors.

had the most effect on housing choices and preferences in the research conducted? What have been the effects of housing attributes on housing choices or preferences in various studies in Iranian cities? Based on existing studies, which attributes in which cities have received less attention? What are the existing studies in terms of time, place, geographical distribution, specialized areas, and methods used in these studies? What knowledge do the results of these articles provide us with to design residential architecture that aligns with consumers' needs in Iranian cities?

## Theoretical Foundations of Housing Choice, Preferences, and Housing Quality

Researchers have considered housing quality as a subset of quality of life and quality of urban environment (Jalali et al., 2019, 23). Measuring housing quality indicators is an effective method for measuring housing quality. Researchers have considered housing attributes as a subset of quality of life and quality of urban environment (Lotfi, 2009, 70; Jalali et al., 2019, 23) . Measuring housing attributes using indicators is an effective method to measure housing attributes that are unmeasurable and unobservable, but the causes and indicators of housing quality are highly observable and measurable (Goodman, 1987; Coolen & Hoekstra, 2001, 285; Mulliner et al., 2018; Miralaei et al., 2019; Farokhi Soumeh et al., 2021; Asadi et al., 2021). Therefore, based on a review of domestic and international literature, housing characteristics and indicators are important for understanding housing preferences and choices for consumers which are influenced by three general categories of indicators: indicators associated with the residential unit, indicators associated with the surrounding environment, neighborhood and accessibility, and household demographic and socio-economic (Jansen et al., 2011, 30-31; Mulliner et al., 2018; Mohammadzadeh et al., 2015; Miralaei et al., 2019) (Fig. 2). Louviere and Timmerman (1990) also divide the indicators of choices or preferences of residential environments into four subgroups: housing attributes, residential environment, socio-economic, and location. Also, Cupchik et al. (2003) and (Heidari et al., 2019) organize housing characteristics into two main categories: internal housing indicators and external housing indicators.

There is discrepancy between the attributes of the housing desired by the consumer and the subjective and objective ideal and the level of aspiration. The subjective ideal housing is the housing feature that is ideal for the household based on its specific attributes, regardless of housing supply or budget constraints. The objective ideal

housing is considered ideal by experts and is designed based on economic, planning, and other criteria that are considered important for the particular household (Jansen et al., 2011, 9 ) (Fig. 3).

Housing preferences have a great impact on individuals' housing choices (Rostaei et al., 2023). "Housing choice" research usually refers to individuals' actual decision-making, but "housing preference" studies have a long-term and idealistic perspective. The "revealed preferences" theory by American economist Paul Samuelson (1938) assumes that consumer preferences can be revealed by examining their purchasing habits. "Revealed preferences" are used as a measure to assess housing choices (in the past) by focusing on the results of the choice process, while "stated preferences" focus on wants and desires about housing (Mulder, 1996; Timmermans et al., 1994). In the research literature, "housing choices" and "housing preferences" are used interchangeably (Council, 2015, 4). The difference between preference and housing choice research is the discrepancy between the desire and ability of households to have the qualitative attributes of their desired home. Housing preferences have a great impact on individuals' housing choices (Rostaei et al., 2023). "Housing choice" research usually refers to individuals' actual decision-making, but "housing preference" studies have a long-term and idealistic perspective. The "revealed preferences" theory by American economist Paul Samuelson (1938) assumes that consumer preferences can be revealed by examining their purchasing habits. "Revealed preferences" are used as a measure to assess housing choices (in the past) by focusing on the results of the choice process, while "stated preferences" focus on wants and desires about housing (Mulder, 1993; Timmermans et al., 1994). In the research literature, "housing choices" and "housing preferences" are used interchangeably (Council, 2015, 4). The difference between preference and housing choice research is the discrepancy between the desire and ability of households to have the qualitative attributes of their desired home.

## Research Methodology

Meta-analyses are powerful study designs that integrate existing published studies. A review of previous studies, which is conducted following predefined steps (i.e., a systematic review), and an analysis of the results is called a meta-analysis (Hernandez et al., 2020, 97-98). Studies associated with the humanities include a wide range of results due to multiple attributes and sometimes do not have conclusive findings. To resolve these contradictions, the meta-analysis method can take steps

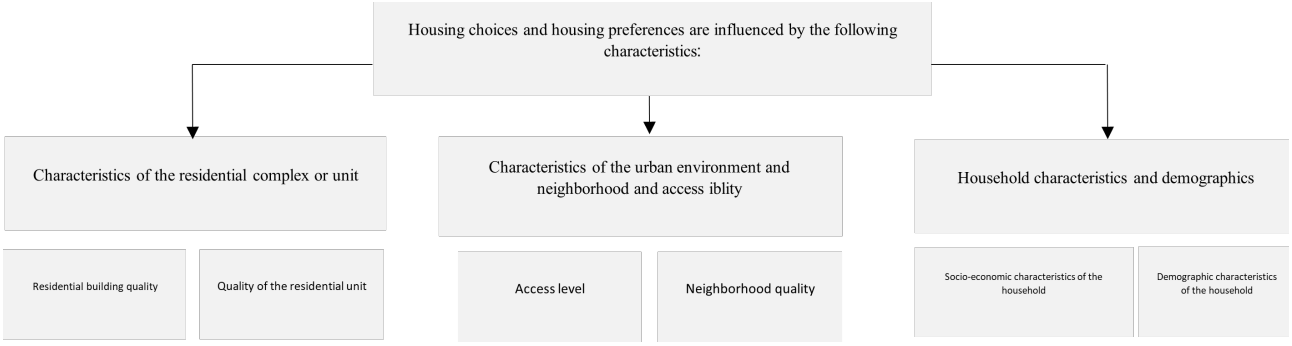


Fig. 2. The role of housing quality, neighborhood, and household characteristics on housing choice and housing preferences. Source: apadated and adopted by Athours from Jansen et al., 2011: 30-31, Mulliner et al., 2018.

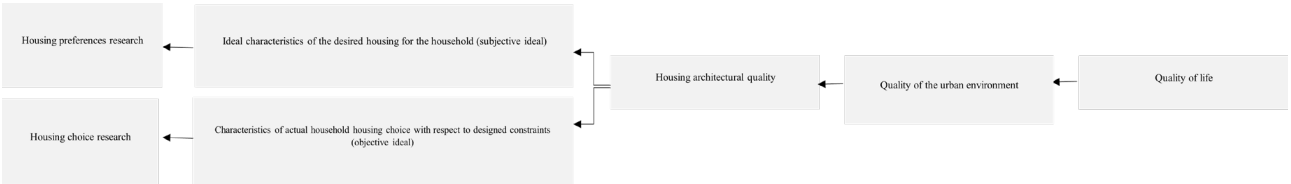


Fig. 3. The communication loop and upstream discussion of housing architectural quality and housing choicse and preferences. Source: Authors adapted from Jansen et al., 2011, 9.

while finding new knowledge by collecting the findings of other studies in the desired field and integrating them (Shafia et al., 2013, 22). Meta-analysis and systematic review help to organize scattered results to come up with a common conclusion and reveal scientific gaps in the research topic (Iman, 2006, 83; Vadadhir, 2011, 37). Its important function is to integrate the results of different studies to make sense of them. A systematic review includes several steps: defining a clear research question, describing the search strategy, defining clear inclusion and exclusion criteria for studies, using multiple search engines for searches, independently selecting studies, extracting study data and results, and gauging the risk of bias in studies (Hernandez et al., 2020, 97). In general, a systematic review includes all the steps of searching, selecting, evaluating, and qualitative analysis, but meta-analysis refers to the use of statistical methods to integrate the results of the studies which is only one part of a systematic review (Liberati et al., 2009, 2). Therefore, in this study, first, a systematic review was conducted to carefully examine the existing resources to analyze the studies and their results qualitatively. Then, frequently repeated attributes were ranked using Excel software, and the research gaps in this field were identified quantitatively.

- **Search strategies to identify relevant studies and set eligibility criteria for the final selection of studies**

To analyze the role of housing quality and household characteristics in housing choices and preferences in Iranian cities, scientific studies published between 2009 and 2013 in the Ministry of Science's reputable databases were examined using the terms "housing choices", "preferences", "prioritization", "selection" and "housing quality" in the title, abstract and keywords of the articles. The scope of the research was limited to Iran. At this stage, 74 articles related to housing quality from the perspective of users were identified. Then, other sources were added to the list through forward and backward searches in the references and articles used. At the screening stage, 28 articles that matched the research objectives and questions were selected. The selection criteria in the final stage included the following: 1) Focusing on the relationship between housing quality attributes and users' choices or preferences (taking into account the equivalence of the terms "preferences" and "priorities" in the literature) and eliminating articles that only addressed satisfaction or evaluation; 2) Having a scientific research rank and higher; 3) Focusing on attributes related to the interior space of residential units and buildings. Finally, 20 articles with these characteristics were selected. The validity and inclusiveness of the results were also ensured by repeating the search in the desired domains and confirming them by five members of the academic board in the fields of architecture, urban planning, and statistics using an expert survey method (Fig. 4).

## Findings of the Study

The research findings are presented in six sections of structural analysis of articles and one section of analysis of results and attributes using diagrams and tables. The conclusion section includes the structure of the articles, location, and geographical distribution, specialized field of the journal, and authors of the articles, research attributes, research method, data collection, and finally, a comparison of results and classification of attributes and their significance.

## Structure of Articles

- **Time**

The period chosen for the selected articles was from 2009 to 2013. The first article that directly addressed the issue of housing preferences and priority was written in 2009, and after that, the number of articles in this field has increased over time (Fig. 5).

- **Location and geographical distribution**

Given that the choices of housing depend on the culture and the desires and needs of the housing users (Li & Wu, 2004; Chen, 2009), to understand the expectations of users better, studies conducted in the context of Iran were selected (Fig. 6). Examining the locations of the studies shows that major metropolitan cities and provincial centers in Iran have been focused on; one of the reasons for this is the presence of universities and graduates capable of research in these cities. This

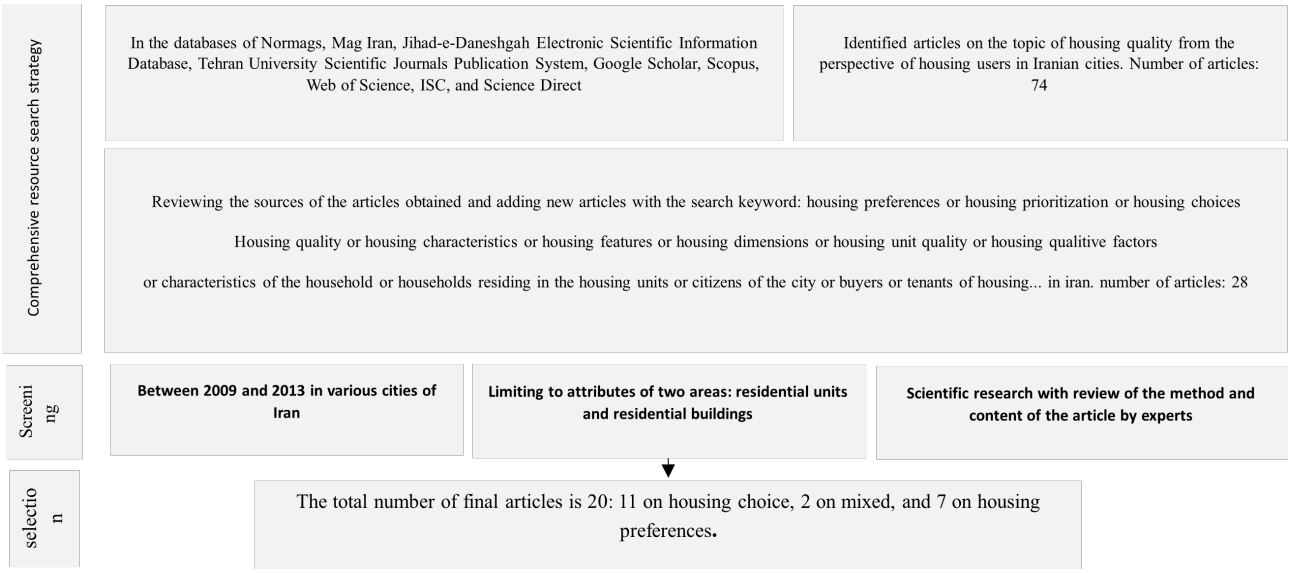


Fig. 4. Search strategies to identify relevant studies and set elegibility criteria and prevent bias in the final selection of studies. Source: Authors.

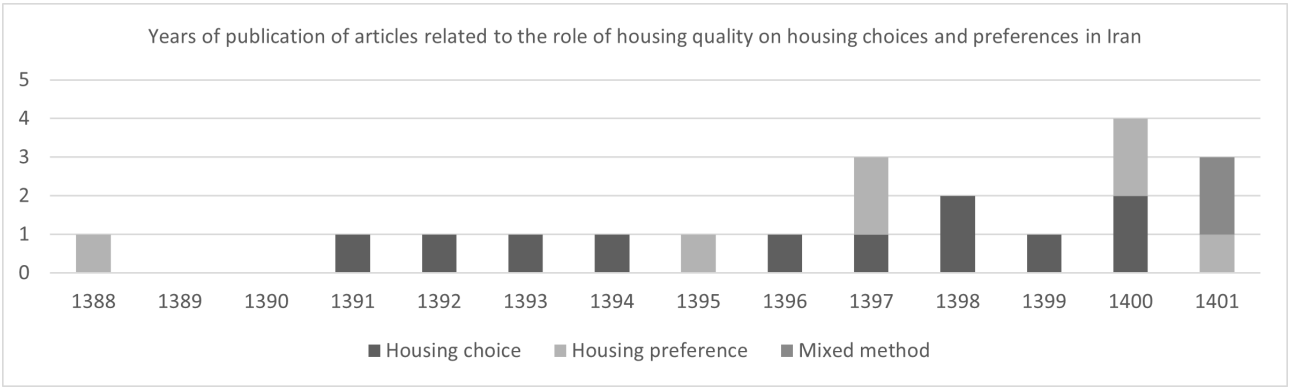


Fig. 5. Years of publication of articles related to the role of housing quality on housing choices and preferences in Iran. Source: Authors.

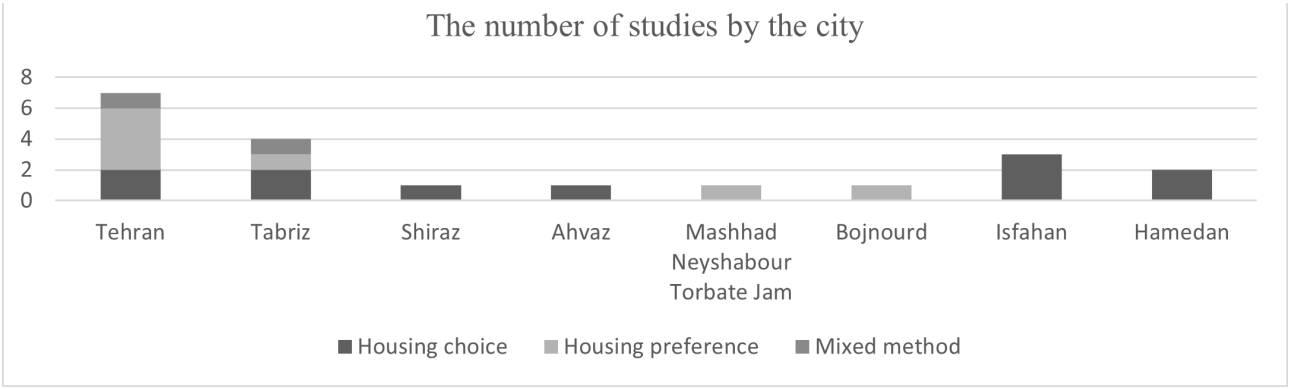


Fig. 6. Studies conducted on the role of residential architectural quality on housing choices and preferences by the city. Source: Authors.

issue reveals the research gap in small cities and other provincial centers that have specific identities and cultures.

- **Journal's scopes and authors**

The first and second most published articles on housing choice are from journals on geography, urban planning, and urban economics, while the articles on housing preferences are from journals on art, architecture, and urban studies. Such a discrepancy can be explained by the fact that urban planners and economists pay attention to the real housing choice for better planning, while architects and urban designers pay attention to the desires, hopes, and aspirations of

users to achieve an ideal design. Similarly, the largest number of authors in housing choice articles are from economics, geography, and urban planning, and the authors in housing preference articles are primarily experts in architecture, followed by urban planning (Tables 1 to 3).

**• Research on attributes and their conceptual structures in the articles**

In the research conducted, eleven articles were related to housing choice, seven articles were related to housing preferences, and two articles were combined. Two articles on housing choice used raw income cost

Table 1. Journals and journal publishers of selected articles, number of articles 20. Source: Authors.

| Publisher | Scientific research journals: Housing Choice |
|---|---|
| University of Mazandaran | Urban Structure and Function Studies |
| Azad University of Sciences and Research | Urban Management Studies |
| Hamedan Azad University | Haft Hesar Environmental Studies |
| Khwarizmi University | Applied Research in Geographical Sciences |
| Iranian Urban Economics Scientific Association | Urban Economics and Management |
| Marvdasht Azad University | Urban Planning and Research |
| Isfahan University | Urban Economics |
| Kurdistan University | Urban Studies |
| Tarbiat Modares University | Economic Research |
| University of Tehran | Economic Research |
| Springer | Operational research |
| **Publisher** | **Scientific Research Journals Housing Preferences** |
| Mustafa Behzadfar | Architecture and Urban Planning of Utopia |
| University of Tehran | Business Management |
| Institute of Geography | Geography and urban planning research |
| Organization of Municipalities and Rural Districts of the Country | Urban management |
| Tabriz University of Islamic Arts | Islamic culture, architecture, and urban planning |
| Ferdowsi University of Mashhad | Knowledge and development |
| Elsevier | Building Engineering |
| **Publisher** | **Hybrid scientific research journals** |
| University of Tabriz | Geography and urban planning |
| Mustafa Behzadfar | Architecture and Urban Planning of Utopia |

Table 2. Expertise of the authors of the selected articles. Source: Authors.

| Number | Filed | Specified scope |
|---|---|---|
| 3 | Architecture | Authors of Housing Choice Research |
| 6 | Urban Planning | |
| 9 | Geography and Urban Planning | |
| 9 | Economics | |
| 1 | Surveying | |
| 2 | Industries-Socio-Economic Systems | |
| 10 | Architecture | Authors of Housing Preferences Research |
| 4 | Urban Planning (Islamic) | |
| 1 | Economics | |
| 3 | Management | |
| **Number** | **Filed** | **Specified scope** |
| 3 | Architecture | Authors of mixed Research |
| 3 | Geography and Urban Planning | |
| 1 | Urban Planning | |

Table 3. Field of expertise of selected articles. Source: Authors.

| Numbers | Topics | Specified scope |
|---|---|---|
| 5 | Geography and urban planning | Housing Choice Articles |
| 4 | Economics and Urban Economics | |
| 1 | Operations Research | |
| 1 | Urban Management | |
| 1 | Science and Economics | Housing Preferences Articles |
| 3 | Art and Architecture (Islamic) | |
| 1 | Urban Studies and Architecture | |
| 1 | Building and Environment | |
| 1 | Management | |
| 1 | Architecture | Mixed Articles |
| 1 | Geography and Urban Planning | |

data from the Statistical Center of Iran as a reference for data collection, and the reason for this, according to the definitions mentioned, is that housing choice refers to the past and reality. Therefore, the available information was examined as revealed preferences. Seven other articles addressed the issue of housing choice using the method of expressed preferences. In one case, household heads and in four cases, residents of housing were studied regardless of whether they were owners or tenants, and one case specifically targeted tenants with the justification that tenants are more likely to choose housing than owners (Taghipour et al., 2020). In contrast to this argument, two other articles studied owner-occupier households with the justification that owners who purchase a house give more importance to the qualitative characteristics of housing than tenants (Miralaei et al., 2019 a & b). In the articles on housing preferences, five articles had a statistical population of residents, but two other articles studied housing seekers, one of which was based on the assumption that the existing houses introduced by real estate consultants did not meet their needs (Farahmand Faqhi, 2009) (Table 4).

- **Research method and data collection method**

The articles were applied in terms of purpose and

Table 4. Dependent and controlling variables in studies on the role of housing attributes in housing choices and preferences. Source: Authors.

| No | City | Controlling variable | Dependent | Independent |
|---|---|---|---|---|
| 2 | Tehran | Household heads in urban areas 1 and 19 in Tehran (Faraji & Arvin, 2019), | Housing Choices (11 articles) | Housing quality |
| 1 | Shiraz | Raw data on income expenditure in 2011, Statistical Center of Iran, Households in Tehran (Asadi et al., 2021) | | |
| 2 | Tabriz | Residents of housing in Tabriz (Farokhi someh et al., 2021; Mohammadzadeh et al., 2015) | | |
| 1 | Ahvaz | Residents of housing in Ahvaz (Ziari et al., 2017) Residents of run-down areas in Isfahan (Akbari et al., 2013) | | |
| 3 | Isfahan | Landlords searching for housing to buy in Isfahan (Miralaei et al., 2019a, b) Residents of rented housing in Shiraz (Taghipour et al., 2020) | | |
| 2 | Hamedan | Landlords and tenants' community in Hamadan City (Shekarian, 2015) Income expenditure information of Hamadan city residents (Gholizadeh et al., 2012) | | |
| 1 | Tehran | Residents of districts 1, 6, 13, and 22 in Tehran (Lotfi-Mehr et al., 2022) | Mixed (2 articles) | |
| 1 | Tabriz | Residents of Tabriz City (Rostaei et al., 2023) | | |
| 1 | Torbat-e-jam, Mashhad, and Neyshabur | Housing residents in Mashhad, Torbat-e-Jam, and Neyshabur (Heidari et al., 2019) | Housing Priorities and Preferences (7 articles) | |
| 4 | Tehran | Seekers of renting or buying housing in Tehran (Salehi Sadaghiani et al., 2016) Residents of a complex in Tehran with an environmental approach (Dadashi et al., 2018) Apartment dwellers in Tehran (Zarrabi et al., 2021) Young and married personnel residin`g in corporate houses of the armed forces of Tehran (Asadi Mahal-Chali, 2021) | | |
| 1 | Bojnourd | Low-income residents in Bojnourd (Alalhesabi et al., 2022) | | |
| 1 | Tabriz | Applicants and visitors to housing agencies in Tabriz have an assumption that the existing houses do not meet their needs (fegh-hi farahmand, 2009) | | |

descriptive-analytical in terms of the method and the study of the effect of several attributes on housing choices or preferences. The research strategy was a survey, and the data collection methods included interviews, questionnaires, and income cost data from the Statistics Center of Iran. In articles on housing choices, data selections were based on revealed preferences in 3 articles, and the rest were based on stated preferences in the questionnaire (Table 5).

Most of the research on housing choices (five cases reviewed) is based on discrete choice models, especially the multinomial logit model (MNL) and the mixed multinomial logit model (MMNL). These models are designed based on the principle of maximizing utility and were first introduced and developed by McFadden. This means that problems associated with housing choices are formed in the process of comparing selectable items and evaluating them in terms of their utility function. Gholizadeh et al. (2012) used a fuzzy model rather than these models. While research on housing choices usually uses econometric models, Shekarian (2015) used the VIKOR method as a multi-criteria decision-making method (MCDM). Two articles on housing choices also used structural equations and path analysis, while articles on housing preferences included qualitative analysis methods, cluster and factor analysis, ANOVA, Friedman, AHP, and other statistical analyses.

## Discussion and Qualitative Synthesis of the Results

Pertinent studies were reviewed separately for each city to answer the research questions because housing choices and preferences are influenced by the context and dominant culture of that city. Similarly, contradictions and similarities between the results of the studies were examined, and finally, from the similarities in the results, codified knowledge in housing design was presented for each city, and contradictions in the results were introduced as the subject of further research to understand the origin and motivations of their emergence. Also, in four separate tables, the effect of qualitative attributes of the residential unit, residential building, demographic characteristics, as well as socio-economic characteristics of the household on housing selection and preferences was shown, and then in the next stage, the frequency distribution of these attributes was analyzed.

### • Discrepancies and similarities in research on the role of housing quality in housing choices and preferences based on the city

In this section, studies related to the separation of the cities of Tehran, Ahvaz, Isfahan, Bojnourd, Tabriz, Mashhad, Torbat-e-jam, Neyshabur, Shiraz, and Hamedan and the main results and key attributes that had a more important rank than the others, expression and contradictions, similarities and main points in housing design were explained.

**- Tehran**

Examining household-related attributes shows that in Tehran, elderly people were interested in “living in an apartment”. Families with students preferred to live in a “house of 60 to 90 meters” and tended to make their house larger when their children entered school. Increasing “education” was reported to affect housing choices for a house with “higher square footage” and

Table 5. Review of research methods and data collection in selected studies. Source: Authors.

| Research Methodology | Housing Choice | Mixed | Housing Preferences |
|---|---|---|---|
| Research Purpose | Applied (11) | Applied (2) | Applied (7) |
| Research Method | Descriptive-Analytical (11) | Descriptive-Analytical (2) | Descriptive-Analytical (7) |
| Research Strategy | Survey (11) | Survey ((2 | Survey (7) |
| Research Data Collection Method | Questionnaire (5)<br>Income Expenditure Documents and Statistical Center Maps (3) | Questionnaire (1)<br>Questionnaire and Interview (1) | Questionnaire (6)<br>Questionnaire and in-depth interview (1) |
| Data Selection | Stated Preferences (8)<br>Revealed Preferences (3) | Stated preferences (2) | Stated preferences (7) |

a "stronger frame". If the head of the household was "employed" and belonged to the "high-income decile" or had " a private car", the probability of choosing a "house over 90 meters" increases (Asadi et al., 2021).

Scrutinizing the attributes of residential buildings shows that 73 percent of people believed that "common spaces between units" were small, 43 percent wanted to have a "space for interacting with neighbors" such as a meeting room, and 78 percent of residents wanted a "single-unit space" (Dadashi et al., 2018). Housing seekers in Tehran considered the "housing price" factor to be an important economic factor. In another study, among the external space factors, "quality of the exterior facade" and "type of building facade" were more important, and it was also proven that "number of floors of the building" and "the floor on which the unit is located" were less effective in choosing housing than other factors (Salehi-Sadeghiani et al., 2019). In terms of physical appearance, "age of the building" was assessed as the most important indicator in District 19 of Tehran, but in District 1, "elevator" ranked first. In terms of economic aspects, "equality of residents" was less important than other economic attributes from the perspective of residents of both regions. In District 1, this indicator was less important than in District 19, which contradicts the findings of the study by Taghipour et al. in Shiraz. In District 1, the least important factor is "yard space", while this issue is more important in District 19 Faraji & Arvin (2019).

From the perspective of attributes related to the residential unit: 98% of residents were willing to use "natural light" for lighting, 51% preferred "warm colors," and 45% considered "stone and ceramics" suitable for floors (Dadashi et al., 2018). Similarly, in the discussion of housing preferences, attributes related to mental health, such as "natural light", "vision, and sound privacy," are of particular importance (Zarabi et al., 2021). In another study, among the attributes of interior space, the "number and size of rooms" were assessed as more important than the others (Salehi-Sedghiani et al., 2016). In District Nineteen, the least important was "luxury facilities such as swimming pool and sauna", while in District One, this issue was important (Faraji & Arvin, 2019). In another study, a group with poor financial ability gave importance to "parents' rooms and living room" among the different housing sections because they had more comings and goings. The second group, with average financial conditions and one or two children, was found to give more importance to "parents' bedrooms" because they had average comings and goings. In the third group, due to their strong economic status and fewer social relationships, a "children's bedroom" was more important (Asadi Mahal-Chali, 2021, 109-110).

In a comparative study between different regions of Tehran, no significant differences were found among different regions in terms of housing preferences; this result contradicts the results reported by Taghipour et al. (2002) in Shiraz and the results of Faraji & Arvin, (2019), in Tehran, who found significant differences in consumer preferences among different regions of the city (Lotfi-Mehr et al., 2022).

**- Ahvaz**

Although in the study of Faraji & Arvin, 2019 the physical and economic dimensions were important in regions one and nineteen, respectively, in the city of Ahvaz, due to ethnic issues, the most importance in choosing housing was given to issues related to the "social and cultural" dimension, and after that, the "physical" and "environmental" attributes were considered (Faraji & Arvin, 2019).

**- Isfahan**

The most important indicator in choosing housing from a demographic perspective was "family and the number of people in it" (Miralaei et al., 2019a). Mohammadzadeh (2015) also found the effect of the "household dimension" in Tehran. According to another study, it was found that people paid more attention to "location" than "housing quality" when it comes to choosing housing. Similarly, with an increase in "housing cost", the probability of choosing housing decreases, but with an increase in housing price, the probability of choosing a smaller amount decreases. The reason for this is that, according to Mohammadzadeh et al. (2015), high housing prices are seen as higher housing quality in the people's views (Miralaei et al., 2019b). In another study in a run-down area, the highest priority in housing selection was given to "residential unit area" followed by "accessibility", which is in contrast to the study by Miralaei et al., which

evaluated environmental attributes as preferable than internal housing attributes (Akbari et al., 2013).

**- Bojnourd**

In line with the research of Miralaei et al., another study in Bojnourd found that housing users gave more importance to the "residential environment" than to the "quality of the residential unit" among the relevant attributes so that 75% of the attributes were allocated to environmental features (Alalhesabi et al., 2022).

**- Tabriz**

Examining household-related attributes shows that increasing the "household dimension" leads to the selection of areas with higher transaction value because the chance of "employment" and "income" of the household increases with the increase in the number of family members, and also from the perspective of individuals, a higher "price" means a more suitable house, and as a result, the possibility of selection increases (Mohammadzadeh, 2015).

Scrutinizing the attributes of residential buildings shows that 42 percent of the research population in Tabriz believed that "housing location" is very important in housing selection, which is inconsistent with the research of Miralaei et al. (2019), in which 77.5 percent of household priorities were evaluated against "housing quality attributes." Those who chose the developed areas of Tabriz prioritized "parking with access to the unit" and "security cameras" (Farokhi Someh et al., 2021). Another point is that with an increase in the value of urban areas, the tendency to "live in apartments" compared to "villas increases," and the reason for this is probably the high value of land and the tendency to construct high-rise buildings to maximize the use of the buildings. "Land area of the residential unit" harmed housing selection because when housing prices rise, the probability that a household chooses a smaller area for housing increases, but the "useful infrastructure area of the housing" can have a positive effect (Mohammadzadeh, 2015).

Attributes of the residential unit show that In a study in Tabriz, it was determined that "housing screen" is the most important issue, and other studies (Heydari et al. 2018, Ziari et al. 2017, Taghipour et al. 2020, and Dadashi et al. 2018) had also pointed out the issue of lack of privacy and visual privacy, but the importance of this indicator in this study ranked first (Farahmand Faqhi, 2009), and "the number of bedrooms" had a positive effect on housing selection in most urban areas. In the two regions where "increasing the number of rooms" in Tabriz did not increase the probability of housing selection, it can be interpreted as meaning that up to 3 bedrooms are probably enough for the household, and after that, the family is looking for a larger "hall, reception and kitchen" (Mohammadzadeh, 2015).

**- Mashhad, Neyshabur, Torbat-e-Jam**

Attributes related to residential buildings show that in these three cities, people first give importance to choosing a "residential unit" and finally to a "residential building". In choosing a residential building, the indicator "type of facilities and equipment of the building" is considered the most important factor. In addition, in Torbat-e-Jam, "the degree of recognition of neighbors" and "neighborhood with people of the same class" were of great importance, while in Mashhad, this issue was less important. From the perspective of attributes related to residential units, in small cities, there is a greater tendency to choose "large houses with more rooms". In the large city of Mashhad, "facilities and equipment" and "lighting" were of particular importance. In the city of Torbat-Jam, factors such as "dimensions of the residential unit" and "number of rooms" were important (Heidari et al., 2019).

**- Shiraz**

Attributes related to residential buildings show that the "safety" component was proposed as the most important dimension of "physical health". Also, "security" as the most important dimension of social health and "desire to socialize with neighbors" had the least importance in the two affluent and middle classes. On the other hand, the "similarity to neighbors" index, despite being of second importance for the affluent class, had the least importance for the poor class. Also, in a study by Salehi-Sadeghiani for housing seekers in Tehran, it was shown that the "social level of neighborhood residents" index has the first importance among environmental attributes. In terms of "mental health", the "view" indicator was the most important component in the affluent areas and "security" in the poor and average areas. Also, in affluent

areas, the "separation of public and private space", in the average area "flexibility", and in the poor area "green space" were the least important (Taghipour et al., 2020).

**- Hamedan**

A study in Hamedan showed that heads of households with an average education level choose residential units "larger than 120 square meters". Also, residential units from " 61 to 90" and " 91 to 120" square meters are the best choice for the low and high-education groups, respectively (Shekarian, 2015).

**• Studies on the role of housing quality and household characteristics in housing choice and preferences**

In Tables 6 to 9, the attributes evaluated in 20 selected articles are shown, and the effect of these attributes on housing choice and housing preferences is examined. Finally, in Table 12, a summary of the results for each city is briefly presented for design in the cities under study to identify research gaps and contradictions in these tables and to be used in future studies. In the graphical tables, the upward arrow means that as the index increases, its desirability increases in the eyes of the user and vice versa. Also, cases where the researcher has proven only the existence of a significant relationship are shown with a solid circle, and cases where it has been proven that a factor or indicator does not affect housing choice or preference are shown as a hollow circle (Tables 6 to 9).

Table 6. Investigated attributes associated with the impact of residential building attributes on housing preferences and choices. Source: Authors.

| Investigated attributes associated with the impact of residential building quality on housing preferences and choices (authors' source) | Faraji & Arvin, 2019 | Asadi et al., 2021 | Ziari et al., 2017 | Farokhi someh et al., 2021 | Mohammadzadeh et al., 2015 | Miralaei et al., 2019 | Miralaei et al., 2019 | Taghi-Pour et al., 2019 | Akbari et al., 2013 | Gholizadeh et al., 2012 | Shekarian, 2015 | Rostaei et al., 2023 | Lotfi-Mehr et al., 2022 | Heydari et al., 2019 | Salehi-Sadeghiani et al., 2019 | Dadashi et al., 2018 | Alalhesabi et al., 2022 | Fegh-hi Farahmand, 2009 | Asadi Mahal Chali, 2021 | Zarabi et al., 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age of the building | ▼ | | ▼ | | | | | | | | | | • | ▼ | | | | | | |
| Type of materials | ▲ | | ▲ | | | | | | | | | | | | | | | | | • |
| Size and area of the land | | | | | ▼ | | | | | | | | | | ▲ | | | | | |
| View | ▲ | | ▲ | | | | | | | | | | ▲ | | ▲ | ▲ | • | • | • | |
| Quality of the entrance or lobby | | | | • | | | | | | | | | ▲ | | | | | | • | • |
| Elevator | ▲ | | ▲ | | | | | | | • | | | ▲ | | | | | | | |
| Building orientation | | | | | | | | | | | | | ▲ | | | | | | | |
| Number of units | ▼ | | ▼ | | | | | | | | | | ▲ | • | | | | | | |
| Separate parking | ▲ | | ▲ | ▲ | | | | | | | | | ▲ | ▲ | | | | • | • | |
| Auxiliary and luxury facilities | ▲ | | ▲ | ▲ | | | ▲ | | | • | • | | ▲ | ▲ | | | | | | |
| Fire alarm system | | | | | | | | | | | | | | | | | | • | | |
| Touchless faucet | | | | | | | | | | | | | | | | | | | | • |
| Garbage chute | | | | | | | | | | • | | | | | | | | | | |
| Possibility of repair or replacement of facilities | | | | | | | | | | | | | | | | | | • | | |
| Warehouse | ▲ | | ▲ | | | | | | | | | | ▲ | ▲ | ▲ | | | • | • | |
| Framed building | | • | | | | | | | | | | | | | | | | | | |
| Villa or apartment building | | | | | • | | • | | | | | | | | | | | | | |
| Open space | | | | | | | | ▲ | | | | • | | ▲ | ▲ | | | | • | |
| Landscaping and landscaping inside and around the complex | | | | | | | • | | | | | | ▲ | | | | | • | | |

Rest of Table 6.

| Investigated attributes associated with the impact of residential building quality on housing preferences and choices (authors' source) | Faraji & Arvin, 2019 | Asadi et al., 2021 | Ziari et al., 2017 | Farokhi someh et al., 2021 | Mohammadzadeh et al., 2015 | Miralaei et al., 2019 | Miralaei et al., 2019 | Taghi-Pour et al., 2019 | Akbari et al., 2013 | Gholizadeh et al., 2012 | Shekarian, 2015 | Rostaei et al., 2023 | Loffi-Mehr et al., 2022 | Heydari et al., 2019 | Salehi-Sadeghiani et al., 2019 | Dadashi et al., 2018 | Alalhesabi et al., 2022 | Fegh-hi Farahmand, 2009 | Asadi Mahal Chali, 2021 | Zarabi et al., 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Indoor green space for organic food | | | | | | | | | | | | | | | | | | | | • |
| Smart home | | | | | | | | | | | | | | | | | | | | • |
| Unit floor location and number of floors | | | | | | | | | | | | | ▲ | ▲ | ▲ | | | | | |
| Structure and skeleton | | • | | | | | | | | | | | ▲ | | | | | | | |
| Strength and safety of residential units | | | | | | | | | | | | | | | | | • | • | | |
| Earthquake resistance | | | | | | | | | | | | | | | | | | • | | |
| Energy loss | | | | | | | | | | | | | | | | | | • | | • |
| Space for socializing with neighbors | ▲ | | ▲ | | | | | ▲ | | | | • | | ▲ | | ▲ | | | | |
| Safety and security | | | | • | | | ▲ | ▲ | ▲ | | | • | ▲ | ▲ | ▲ | ▲ | • | • | | |
| Liveliness | | | | | | | | | | | | | ▲ | | | | | | | |
| Alignment of neighbors | ▲ | | ▲ | | | | | ▲ | | | | | | ▲ | | | • | | | |
| A sense of belonging and identity created by familiar elements | | | | | | | | | | | | | ▲ | | | ▲ | | | | |
| Participation in design | | | | | | | | | | | | | | | | ▲ | | | | |

With regard to the question of the present study, some studies showed different results regarding the effect of household demographic and socio-economic attributes on housing choices and preferences. "Age" had a significant effect in the studies carried out by Faraji & Arvin, (2019), Miralaei et al. (2019), and Taghipour et al.(2020), while "age" had no significant effect in the studies by Asadi et al. (2021) and Rostaei et al.(2023). "Gender" had a significant effect in the studies by Faraji & Arvin, (2019), Miralaei et al. (2019), (Farokhi someh et al., 2021), and no significant effect was reported in the study carried out by Asadi et al.(2020). "Household dimension" had a positive effect on housing choice except for one area in Tabriz in the article (Mohammadzadeh et al., 2015; Miralaei et al., 2019) and had no effect in the research (Akbari et al., 2013; Rostaei et al., 2023). Similarly, "income" had a significant effect on housing choice and preferences except in one study by Akbari et al. (2013) (Tables 9 & 10).

In Tables 11 and 12, the frequency distribution of attributes is presented separately for housing choice studies and housing preferences, as well as for each city. These tables show that the average number of attributes in housing choice studies is less than that for housing preferences. Tehran has the largest number of studies in this field. Isfahan and Hamedan also have the lowest average number of attributes in the two sectors of residential units and residential buildings. Referring to Table 5, all five studies in these two cities are on housing choice research, the reason for the low number of these attributes is related to the limitations of the number of attributes in the econometric models of housing choice, and as the authors of these articles were mostly in the field of urban planning and economics, attributes related to architecture have received less attention. In the meantime, the gap in many Iranian cities with different cultures in the field of housing is clearly visible, which highlights the need for future research in these areas.

Table 7. Investigated attributes associated with the impact of residential unit quality on housing preferences and choices. Source: Authors.

| Investigated attributes associated with the impact of housing unit quality on housing preferences and choices | Faraji & Arvin, 2019 | Asadi et al., 2021 | Ziari et al., 2017 | Farokhi someh et al., 2021 | Mohammadzadeh et al., 2015 | Miralaei et al., 2019 | Miralaei et al., 2019 | Taghi-Pour et al., 2019 | Akbari et al., 2013 | Gholizadeh et al., 2012 | Shekarian, 2015 | Rostaei et al., 2023 | Lotfi-Mehr et al., 2022 | Heydari et al., 2019 | Salehi-Sadeghiani et al., 2019 | Dadashi et al., 2018 | Alalhesabi et al., 2022 | Fegh-hi Farahmand, 2009 | Asadi Mahal Chali, 2021 | Zarabi et al., 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit size and area | ▲ | • | ▲ | | ▲ | • | ▲ | ▲ | ▲ | • | | • | ▲ | ▲ | ▲ | | | | | |
| Dimensions of interior spaces | | | | | | | | ▲ | | | | | ▲ | | | | | | | |
| Functional relationships of spaces | | | | | | | | | | | | | ▲ | | | | | | | |
| Quality of communication spaces | | | | | | | | | | | | | ▲ | | | | | | | |
| Quality of facilities and heating, and cooling | | | | | | | | | | | | | | | | | | • | | |
| Ventilation of toilets and kitchens | | | | | | | | | | | | | | | | | | | | • |
| Number of bedrooms | ▲ | | ▲ | | ▲ استثنا | | | | | • | • | • | ▲ | ▲ | ▲ | | | | | |
| Bedroom size | | | | | | | | | | | | | | | ▲ | | | | | |
| Children's bedrooms | | | | | | | | | | | | | | | | | | | • | |
| Parents' bedrooms | | | | | | | | | | | | | | | | | | | • | |
| Bathroom and toilet | | | | | | | | | | | • | | | | | | | | • | • |
| Living room | | | | | | | | | | | | | | | | | | | • | |
| Dining room | | | | | | | | | | | | | | | | | | | • | |
| No steam from the bathroom to the rooms | | | | | | | | | | | | | | | | | | • | | |
| Interior plan | ▲ | | ▲ | | | | | | | | | | | | | ▲ | | | | |
| Quality of interior architecture | | | | | | | | | | | | | | | | | • | • | | |
| Existence of intermediate spaces | | | | | | | | | | | | | | | | ▲ | | | | |
| Interior and exterior design | ▲ | | ▲ | | | • | ▲ | | | | | | | ▲ | | | | | | |
| Visual proportions | | | | | | | | | | | | | ▲ | | | | | | | |
| Lighting | ▲ | | ▲ | | | | | ▲ | | | | • | | ▲ | | | • | • | | • |
| Openings and ventilation | | | | | | | | | | | | | ▲ | | | | • | • | | • |
| Height and perspective | ▲ | | ▲ | | | | | ▲ | | | | | | ▲ | | ▲ | | | | • |
| Quality of building materials | | | | | | | | ▲ | ▲ | | | | ▲ | ▲ | ▲ | | | | | |
| Kitchen (today) | ▲ | | ▲ | | | | | | | | | | | | | | | | • | |
| Closed kitchen | | | | | | | | | | | | | | | | | | | | • |
| Balcony | | | | | | | | | | | | | ▲ | | | | | • | • | • |
| Separation of public and private space | | | | | | | | ▲ | | | | | | | | ▲ | | | | |

Rest of Table 7.

| Investigated attributes associated with the impact of housing unit quality on housing preferences and choices | Faraji & Arvin, 2019 | Asadi et al., 2021 | Ziari et al., 2017 | Farokhi someh et al., 2021 | Mohammadzadeh et al., 2015 | Miralaei et al., 2019 | Miralaei et al., 2019 | Taghi-Pour et al., 2019 | Akbari et al., 2013 | Gholizadeh et al., 2012 | Shekarian, 2015 | Rostaei et al., 2023 | Lotfi-Mehr et al., 2022 | Heydari et al., 2019 | Salehi-Sadeghiani et al., 2019 | Dadashi et al., 2018 | Alalhesabi et al., 2022 | Fegh-hi Farahmand, 2009 | Asadi Mahal Chali, 2021 | Zarabi et al., 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architectural flexibility | | | | | | | | | | | | | | | | | | • | | |
| Appropriate communal space and reception | | | | | | | | | | | | | | | | ▲ | | | • | |
| Relaxing and private space, and acoustic privacy | | | | | | | | ▲ | | | | • | | | | | | • | | • |
| No dust penetration | | | | | | | | | | | | | | | | | | • | | |
| Workplace as a separate area | | | | | | | | | | | | | | | | | | | | • |
| Vicinity of the toilet to the rooms | | | | | | | | | | | | | | | | | | | | • |
| Kitchen flexibility | | | | | | | | | | | | | | | | | | | | • |
| No overlooking and visual privacy | ▲ | | ▲ | | | | | ▲ | | | | | | | | ▲ | | | | |
| Changeability and flexibility | | | | | | | | ▲ | | | | | | | | ▲ | | | | |
| Housing privacy | | | | | | | | | | | | | | | | | | • | | |

Table 8. Investigated attributes associated with the impact of household demographics on housing preferences and choices. Source: Authors.

| The impact of household demographic attributes on housing preferences and choices | Faraji & Arvin, 2019 | Asadi et al., 2021 | Ziari et al., 2017 | Farokhi someh et al., 2021 | Mohammadzadeh et al., 2015 | Miralaei et al., 2019 | Miralaei et al., 2019 | Taghi-Pour et al., 2019 | Akbari et al., 2013 | Gholizadeh et al., 2012 | Shekarian, 2015 | Rostaei et al., 2023 | Lotfi-Mehr et al., 2022 | Heydari et al., 2019 | Salehi-Sadeghiani et al., 2019 | Dadashi et al., 2018 | Alalhesabi et al., 2022 | Feqhi Farahmand, 2009 | Asadi Mahal Chali, 2021 | Zarabi et al., 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age | • | ○ | | | | ▼ | | | | • | | ○ | | | | | | | | |
| Gender | • | ○ | | • | | ▲ | | | | | | | | | | | | | | |
| A family with children under 6 years old or 6 years old | | | | | ▲ به جز ۲ منطقه | | | | | | | | | | | | | | | |
| A family with a student | | • | | | | ▲ | | | | | | | | | | | | | | |
| A family with children over 18 | | | | | | ▲ | | | | | | | | | | | | | | |
| Family size | | | | | ▲ به جز ۱ منطقه | ▲ | | | ○ | | | ○ | | | | | | | | |
| Marriage | | | | | | ▲ | | | | | | | | | | | | | | |

By ranking the attributes under study, it was determined that in the residential unit sector, “unit area index”, “number of bedrooms” and “sunlight” had the highest frequency in studies, and the attributes “functional relationships of spaces”, “quality of communication spaces”, “quality of facilities and heating and cooling”, “toilet and kitchen ventilation”, “bedroom size”, “children’s bedrooms”, “parents’ bedrooms”, “living room”, “dining room”, “no steam from the bathroom entering the rooms”,

Table 9. Investigated attributes associated with the impact of socio-economic attributes on housing preferences and choices. Source: Authors.

| The impact of socio-economic attributes on housing preferences and choices | Faraji & Arvin, 2019 | Asadi et al., 2021 | Ziari et al., 2017 | Farokhi someh et al., 2021 | Mohammadzadeh et al., 2015 | Miralaei et al., 2019 | Miralaei et al., 2019 | Taghi-Pour et al., 2019 | Akbari et al., 2013 | Gholizadeh et al., 2012 | Shekarian, 2015 | Rostaei et al., 2023 | Lotfi-Mehr et al., 2022 | Heydari et al., 2019 | Salehi-Sadeghiani et al., 2019 | Dadashi et al., 2018 | Alalhesabi et al., 2022 | Feqhi Farahmand, 2009 | Asadi Mahal Chali, 2021 | Zarabi et al., 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ability to pay for housing or rent | ▼ | | ▼ | | ▲ | • | ▼ | | ▼ | • | | • | • | ▼ | • | | | • | | |
| Number of times a home has been purchased. | | | | | | ▲ | | | | | | | | | | | | | | |
| Years of residence | | | | | | | | | | | | ○ | | | | | | | | |
| Homeownership | | | | | | | | | | | | ○ | | | | | | | | |
| Education | • | • | | | | ▲ | | | | • | • | | | | | | | | | |
| Income | • | • | | • | • | ▲ | | • | ○ | | | | | | | | | | | • |
| Occupation | | | | | | | | | ○ | | | | | | | | | | | ○ |
| Average monthly household expenses | | | | | | | | | ○ | | | | | | | | | | | |
| Households with a car | • | • | | | | ▼ | | | | | | | | | | | | | | |

Guide to Tables 7, 8, 9, and 10: • A significant relationship ○ No significant relationship ▲ Direct significant relationship ▼ Inverse significant relationship •

Table 10. Frequency distribution of attributes and identification of research gaps by the city regarding the impact of residential building quality on housing preferences and choices. Source: Authors.

| Frequency distribution of attributes and identification of research gaps by the city regarding the impact of residential building quality on housing preferences and choices | Frequency of attributes (20) | Housing Choices (11) | Housing preferences(7) | Mix-method studies(2) | Tehran (7 studies) | Tabriz (4 studies) | Isfahan (3 studies) | Hamedan (2 studies) | Shiraz (1 study) | Bojnourd (1 study) | Ahvaz (1 study) | Mashhad, Torbat Jam, and Neyshabur (1 study) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Safety and Security | 11 | 4 | 5 | 2 | 3 | 3 | 2 | 0 | 1 | 1 | 0 | 1 |
| View | 8 | 2 | 5 | 1 | 5 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| Amenities and Luxury | 8 | 6 | 1 | 1 | 2 | 1 | 1 | 2 | 0 | 0 | 1 | 1 |
| Separate parking | 7 | 3 | 3 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 1 |
| Storage | 7 | 2 | 4 | 1 | 4 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| Space for socializing with neighbors | 6 | 3 | 2 | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| Open space | 5 | 1 | 3 | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| Alignment of neighbors | 5 | 3 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| Age of building | 4 | 2 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Quality of the entrance or lobby | 4 | 1 | 2 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Elevator | 4 | 3 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Number of units | 4 | 2 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Type of materials | 3 | 2 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Landscaping and landscaping inside and around the complex | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Location of the unit floor and number of floors | 3 | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Size and area of land | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Villa or apartment | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Structure and skeleton | 2 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Strength and safety of residential units | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |

Rest of Table 10.

| Frequency distribution of attributes and identification of research gaps by the city regarding the impact of residential building quality on housing preferences and choices | Frequency of attributes (20) | Housing Choices (11) | Housing preferences(7) | Mix-method studies(2) | Tehran (7 studies) | Tabriz (4 studies) | Isfahan (3 studies) | Hamedan (2 studies) | Shiraz (1 study) | Bojnourd (1 study) | Ahvaz (1 study) | Mashhad, Torbat Jam, and Neyshabur (1 study) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Energy loss | 2 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| A sense of belonging and identity created by familiar elements | 2 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Building orientation | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fire alarm system | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Touchless faucet | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Garbage collection | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Possibility of repairing or replacing facilities | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Framed building | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Indoor green space for organic food | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Smart home | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Earthquake resistance | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vitality | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Participation in design | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 105 | 41 | 44 | 20 | 49 | 18 | 5 | 5 | 4 | 4 | 10 | 10 |
| Average number of attributes per study | 5.25 | 3.72 | 6.28 | 10 | 7 | 4.5 | 1.67 | 2.5 | 4 | 4 | 10 | 10 |

Table 11. Frequency distribution of attributes and identification of research gaps by the city regarding the impact of residential unit quality on housing preferences and choices. Source: Authors

| Investigated attributes associated with the impact of housing unit quality on housing preferences and choices | Number of attributes (20) | Housing choice (11) | Housing preference (7) | Combination (2) | Tehran (7 studies) | Tabriz (4 studies) | Isfahan (3 studies) | Hamedan (2 studies) | Shiraz (1 study) | Bojnourd (1 study) | Ahvaz (1 study) | Mashhad, Torbat Jam, and Neyshabur (1 study) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit size and area | 13 | 9 | 2 | 2 | 4 | 2 | 3 | 1 | 1 | 0 | 1 | 1 |
| Number of bedrooms | 9 | 5 | 2 | 2 | 3 | 2 | 0 | 2 | 0 | 0 | 1 | 1 |
| Lighting | 8 | 3 | 4 | 1 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 |
| Height and view | 6 | 3 | 3 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| Interior and exterior design | 5 | 4 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 |
| Quality of building materials | 5 | 2 | 2 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| Openings and ventilation | 4 | 0 | 3 | 1 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Balcony | 4 | 0 | 3 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Relaxing space and privacy, and sound privacy | 4 | 1 | 2 | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| No overlooking and visual privacy | 4 | 3 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Bathroom and toilet | 3 | 1 | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Interior plan | 3 | 2 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Kitchen (today) | 3 | 2 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Dimensions of interior spaces | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Quality of interior architecture | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Separation of public and private space | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Appropriate communal space and reception | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Variability and flexibility | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

Rest of Table 11.

| Investigated attributes associated with the impact of housing unit quality on housing preferences and choices | Number of attributes (20) | Housing choice (11) | Housing preference (7) | Combination (2) | Tehran (7 studies) | Tabriz (4 studies) | Isfahan (3 studies) | Hamedan (2 studies) | Shiraz (1 study) | Bojnourd (1 study) | Ahvaz (1 study) | Mashhad, Torbat Jam, and Neyshabur (1 study) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Functional relationships of spaces | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Quality of communication spaces | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Quality of facilities and heating, and cooling | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ventilation of toilets and kitchens | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bedroom size | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Children's bedrooms | 1 | 0 | 1 | . | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Parents' bedrooms | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Living room | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dining room | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No bathroom steam in the rooms | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existence of intermediate spaces | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visual proportions | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Closed kitchen | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Architectural flexibility | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| No dust penetration | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Workplace as a separate space | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vicinity of the toilet to the rooms | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kitchen flexibility | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Housing privacy | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 100 | 38 | 45 | 17 | 48 | 16 | 6 | 4 | 9 | 3 | 8 | 6 |
| Average number of attributes in each study | 5 | 3.45 | 6.42 | 8.5 | 6.85 | 4 | 2 | 2 | 9 | ۳ | ۸ | 6 |

"the existence of intermediate spaces", "visual proportions", "closed kitchen", "architectural flexibility", "no dust penetration", "workplace as a separate space", " Vicinity of the toilet to the rooms ", "kitchen flexibility" and "housing privacy" had the lowest frequency. In the residential building sector, "safety and security", "view" and "additional and luxury facilities" had the highest frequency in studies; While the attributes of "building orientation", "fire alarm system", "touchless faucet", "garbage collection", "possibility of repairing or replacing facilities", "framed building", "covered green space for organic food", "smart home", "earthquake resistance", "vitality", "participation in design" were less addressed. Therefore, by referring to Tables 11 and 12, it is possible to obtain gaps and infrequent attributes in housing choice and preference studies in Iranian cities.

## Summary of the results of the articles based on prioritization in housing selection and preferences in frequently occurring attributes

By analyzing research based on prioritization and ranking of housing and with a qualitative method (which is briefly mentioned for further study in Table 12) and categorizing similar points in them, general results were obtained for some attributes.

- **Socialization and alignment of neighbors**

In general, in the cities mentioned in the study, "socialization with neighbors" and the level of inclination towards this attribute show that in the cities of Mashhad, Tehran, and Shiraz, "socialization with neighbors" is less important than in smaller cities such as Bojnourd, Torbat-e-Jam, and Neyshabur. This issue can be justified by the fact that in small cities, proximity and communication with neighbors are among the desires of housing users,

Table 12. An examination of the prioritized indicators in housing choice and preference studies, confined to the field of architecture and building, which were based on ranking methods. Source: Authors.

| City and Region | Prioritizing and ranking | | |
|---|---|---|---|
| Bojnourd (low-income group) | Cultural harmony with neighbors, strength, and safety of residential units, quality of interior architecture, security of residential units, ventilation, and lighting, condition of facades (Alalhesabi et al., 2022) Housing privacy, earthquake resistance, appropriate utility system, open space, appropriate daylight and illumination, storage, interior design, no leakage of bathroom steam into rooms, safety, appropriate appearance and facade, presence of balcony, architectural flexibility, presence of parking (Farahmand Faghi, 2009) | | |
| Tabriz | Type of residential unit (in areas with high transaction value, there is a tendency to have a villa; in areas with high transaction value, there is a tendency to have an apartment). Land area of the residential unit (in areas with high transaction value, the possibility of choosing housing decreases with increasing land area). The total area of useful infrastructure (in all areas, there is a tendency to increase the area). Number of bedrooms (in most areas, except areas with high transaction value, increasing the number of bedrooms increases the possibility of choosing. Only in two areas with high transaction value, this does not apply, which is because, from a certain stage onwards, people want a large living room and kitchen (after providing 3 bedrooms) (Mohammadzadeh et al., 2015) | | |
| Mashhad | Lighting and exposure, dimensions of the residential unit, number of rooms, presence of a suitable view, quality of building materials, age of the building, floor (Heidari et al., 2019) | Additional facilities, including a parking lot, storage, appearance, number of units, yard, socializing with neighbors, and being on the same level as neighbors (Heidari et al., 2019). | |
| Neyshabur | Number of rooms, lighting, and exposure, dimensions of the residential unit, presence of a suitable view, quality of building materials, floor, and age of the building (Heidari et al., 2019) | Complex facilities, having a parking lot, appearance, storage, yard, socializing with neighbors, being on the same level as neighbors, and number of units (Heidari et al., 2019) | |
| Torbat-e-Jam | Dimensions of the residential unit, number of rooms, lighting and exposure, presence of a suitable view, quality of building materials, age of the building, floor (Heidari et al., 2019) | Complex facilities, socializing with neighbors, being on the same level as neighbors, having a parking space, storage, yard, facade, and appearance, number of units (Heidari et al., 2019) | |
| Tehran | Natural light, view, window facing the open space, acoustics, kitchen ventilation, natural ventilation, with terrace, toilet ventilation, energy loss, terrace size, floor/wall materials, entrance size, materials and accessories, touchless faucet, entrance space, indoor gardens for organic food, smart home, bathroom location, number of bathrooms/toilets, workplace as a separate room, toilets near/in rooms, flexibility, openness of workplace, kitchen flexibility, closed kitchen (Zarrabi et al., 2021) | Number of rooms, size of rooms, size of kitchen, size of building, and storage (Salehi Sedghiani et al., 2016). | The quality of the building facade, the type of building facade, the number of floors of the building, the presence of a courtyard, and the floor on which the unit is located (Salehi Sedghiani et al., 2016). In order to maintain privacy and create a sense of security, 78% of residents preferred a single-unit space. To provide light for the building environment, 98% of residents still preferred natural light (Dadashi et al., 2018). |
| Districts 1, 22, 6, and 13 of Tehran | Facilities and equipment, amenities, structure and skeleton, functional relationships of spaces, materials, openings, parking, entrance quality, visual proportions, unit floor, interior space dimensions, number of units, storage, grounds and landscaping, building age, facade style, quality of communication space, unit area and square footage, rooms, building orientation, number of floors, balcony (Lotfi-Mehr, 2022) | | |
| Tehran District 1 | Elevator, dimensions of the residential unit, having a parking lot, age of the building, interior design, house with 2 or more bedrooms, low number of residential units, interior layout, quality of building materials, exterior view, appearance and facade, storage, building orientation, luxury facilities, yard, practical facilities, economic equality of residents in the neighborhood (Faraji & Arvin, 2019) | | |
| Tehran District 19 | Age of the building, quality of materials, 2-bedroom house or more, dimensions of the house, internal plan of the house, number of low-rise residential units, interior design, elevator, parking, storage, exterior appearance and facade, view, yard, building orientation, ancillary facilities, luxury facilities, economic equality of the residents of the neighborhood (Faraji & Arvin, 2019) | | |
| Affluent / Shiraz | Security, landscape, dimensions, light, visual privacy, green space, pollution, sound, light, visual, sound privacy, separation of public and private space, existence of a relaxing space, flexibility (Taghipour et al., 2020) | Social security is more important in rich areas than in other areas. Similarity with neighbors is more important for the affluent. Interaction with neighbors is more important for the poor. The desire to socialize with neighbors is greater among the poorer. The need for space for interaction with neighbors is greater in the poorer (Taghipour et al., 2020) | |
| Average / Shiraz | Security, landscape, dimensions, light, visual privacy, green space, noise pollution, light, visual, sound privacy, separation of public and private space, existence of a relaxing space, Flexibility (Taghipour et al., 2020) | | |
| Poor/ Shiraz | Security, landscape, sound privacy, dimensions, separation of public and private space, the existence of relaxing space, light, visual privacy, flexibility, green space, noise, light, visual pollution (Taghipour et al., 2020) | | |
| Isfahan | Area, security, and quality of materials (Akbari, 2013) | External facilities of housing, type of housing, size of residential unit, internal condition of residential space (Miralaei et al., 2019 a, b) | |

but in large cities, "communication with neighbors" and proximity with them are less important. In Mashhad, although the desire to "align with other residents" is higher, the desire to communicate with them is lower than in Torbat Jam and Neyshabur, which shows that people in Mashhad do not want to communicate much with their neighbors, but they still want their neighbors to be similar to them economically more than in Torbat Jam and Neyshabur. In affluent areas of Tehran, "alignment with neighbors" is less important than in low-income areas, meaning that for the affluent class, being neighbors with people at their level is less important than for the poor class. It was also found that the affluent class in Tehran has less intention to communicate closely and socialize with neighbors, and "residential lobby" and "guest room" are the last priority for the affluent class. This issue was reported differently in the poor, middle, and affluent classes in Shiraz. In Shiraz, "similarity with neighbors" is more important for the affluent class, but space for "interaction with neighbors" is more important for the poorer class, and the desire to "socialize with neighbors" is more important for the poorer class. In a study in the entire city of Tehran, the "social level of neighborhood residents" was evaluated as the most important environmental factor, while in Bojnourd, the "similar cultural level" was given the first priority. Similar to Bojnourd, in Ahvaz, "cultural issues" became the first indicator due to ethnic issues.

- **Yard**

From the perspective of people in Mashhad and Tehran, having a "yard" is less important, while in small cities such as Torbat-e-Jam and Neyshabur, having a "yard" is a more important issue. Also, in Tehran, having a "yard" is less important in affluent areas. It seems that in the cities studied, having a "yard" in traditional and weaker contexts is a more important factor in economic terms. Although, in general, having a "yard" was not a major priority.

From the perspective of people in Mashhad and Tehran, having a "yard" is less important, while in small cities such as Torbat Jam and Neyshabur, having a "yard" is a more important issue. Also, in Tehran, having a "yard" is less important in affluent areas. It seems that in the cities studied, having a "yard" in traditional and economically weaker contexts is a more important factor. Although, in general, having a "yard" was not among the important priorities.

- **Dimensions of the residential unit**

In smaller cities such as Torbat Jam, the "large dimensions of the residential unit" are more important to users, while in Mashhad, this issue is less important. Also, in the traditional context of Isfahan, "residential dimensions" are an important priority. The poor in Tehran attach less importance to the "housing dimensions" indicator than the wealthy. This issue may be because in small cities and the traditional context of large cities such as Isfahan, a large house is more important due to greater family and family connections. Similarly, the poorer stratum in Tehran attaches less importance to a house with larger dimensions than the wealthy stratum due to economic issues, although they attach more importance to the reception and guest space.

- **Daylighting and lighting quality**

In Shiraz, the rich class gives more importance to the "lighting" and "lighting quality" attributes than the poor class. In the cities of Tehran and Mashhad, the priority is also "lighting" and "lighting quality", while in small cities such as Torbat Jam, Bojnourd, and Neyshabur, the importance of "lighting" has become weaker. 98 percent of residents in Tehran were willing to use "natural light" for "lighting", and the priority in another study in Tehran was "lighting" and "lighting quality". Therefore, in large cities and affluent areas, the "lighting" and "lighting quality" attributes are more important than in small cities and poor areas. One of the reasons for this could be that in large cities, due to the construction of tall towers and buildings and high density, the quality of lighting in buildings has declined and has become an important issue in housing selection and preferences, while in smaller cities, due to low density, this issue has not become a top-ranking indicator.

The security index in small cities such as Neyshabur, Bojnourd, and Torbat Jam is more important to individuals than in large cities such as Mashhad. In large cities such as Shiraz and the historical center of Isfahan, the "security" index is a more important concern for the poor. This may be because poorer areas have higher crime rates.

- **Low number of residential units**

The low "number of residential units" in Tehran in

regions 1 and 19 was ranked seventh among sixteen physical priorities. In another study in Tehran, 78 percent of people showed a tendency to build fewer units in Tehran. Similarly, in Mashhad, the issue of the "number of residential units" was reported to be a more important priority than in Torbat Jam and Neyshabur.

- **Storage**

"Having a storage room" was reported to be a more important priority in Mashhad than in Torbat Jam and Neyshabur, which are smaller cities. Similarly, "having a storage room" was a more important factor in Region 19 than in Region 1. This issue refers to the lack of space in large cities compared to small cities, and it is also possible that residents of minimal housing in poorer regions feel the need to "have a storage room" more.

This study examined existing studies on housing choices and preferences in Iran, focusing on building architecture. Based on the searches conducted, these studies (limited to scientific articles and research studies and above) have been conducted to date only in the cities of Tehran, Mashhad, Tabriz, Isfahan, Shiraz, Torbat Jam, Neyshabur, Bojnourd, Hamedan, and Ahvaz. As a suggestion for future research, it is possible to examine the choices and preferences of housing attributes in other Iranian cities with different cultures. Also, focusing on the contradictions in the findings and filling the gaps identified in the attributes section of this research can pave the way for future studies.

Finally, the Table 13 below lists the key points and attributes that were most important in each study for application in planning and architectural design based on studies of the effect of housing quality on housing choice and preferences, divided into the cities studied.

## Conclusion

The impact of "housing quality" on housing choices and preferences is an issue that has been studied in various ways in Iran and other countries. Individuals' preferences affect their housing choices, but not all of their housing preferences are likely to be fulfilled because housing choices do not occur in a vacuum. Simply put, restrictions and many economic and environmental factors and limitations affect the choices. By examining studies on the role of housing quality in housing choices and preferences in Iranian cities, the study found that related to the spatial, architectural, and constructional attributes of housing have received less attention. Perhaps the reason why such a lack exists is that Iranian society views housing as a good capital. That might explain why economic and non-qualitative aspects are more of a focus of researchers' studies than the spatial and architectural quality of buildings.

Also, it was determined that the most frequent attributes in studies of the impact of residential unit attributes on housing choices and preferences are "unit area index", "number of bedrooms", and "sunlight", respectively while the least amount of research is on the following attributes: "functional relationships of spaces", "quality of communication spaces", "quality of aminities and heating and cooling", "toilet and kitchen ventilation", "bedroom size", "children's bedrooms", "parents' bedrooms", "living room", "dining room", "no bathroom steam entering the rooms", "the existence of intermediate spaces", "visual proportions", "closed kitchen", "architectural flexibility", "no dust penetration", "workplace as a separate space", " Vicinity of the toilet to the rooms ", "kitchen flexibility" and "housing privacy". The most frequently recurrent attributes in studies of the effect of residential building attributes on housing choices and preferences were "safety and security", "view", and "auxiliary and luxury facilities" respectively whereas the least amount of research was conducted on the following attributes: "building orientation", "fire alarm system", "touchless faucet", "garbage collection", "possibility of repairing or replacing facilities", "framed building", "covered green space for organic food", "smart home", "earthquake resistance", "vitality", "participation in design". Thus, this report can present the gaps and shortcomings of research on the type of attributes and the city studied.

Similarly, in this study, the attributes of "neighborhood socialization and alignment", "yard", "residential unit dimensions", "daylighting and lighting quality", "security",

Table 13. Main and key results and important attributes related to the role of housing quality on housing choices and preferences by city for application in housing planning and design and future research. Source: Authors.

| City | Key findings and major indicators related to the role of housing quality in housing choice and preferences |
|---|---|
| Tehran | " Age of the building" and "age of the residential unit" were important in all regions of Tehran, and in District Nineteen of Tehran, the economic dimension and "having a yard" were of high priority, and in District One, the physical dimension and luxury facilities were more important, and alignment with residents in District One is less important compared to District Nineteen. According to Asadi et al.'s research, the elderly in Tehran were more interested in apartments than villas (Asadi et al., 2021). Families with students were looking for a larger and more solid house. Contrary to the research of Faraji & Arvin, 2019, in the research of Lotfi-Mehr et al., (2022) the criteria of "cultural", "social", "physical", "physical" and then "environmental" and "economic" were important in all regions of Tehran. In the "physical" and "physical" dimensions, the most important attribute was related to "welfare facilities". According to Lotfi-Mehr et al.'s (2022) research, the "housing price" factor was an important economic attribute, and among the interior space factors, "number and size of rooms" were more important than the others, and among the exterior space factors, "quality of exterior facade" and "type of building facade" were more important. In the study by Zarrabi et al., 2021 mental health-related attributes such as "natural light", "vision", "sound privacy", and "open or semi-open space" were more important. |
| Tabriz | In a study, "having a parking lot with access to the unit" and "security cameras" were more important for rich people in Tabriz. Similarly, with an increase in "family size", the tendency to choose areas with higher transaction value was augmented. In these areas, the tendency to "live in apartments" was higher. "Useful infrastructure area" and "number of bedrooms" also intensified such a tendency. In another study in Tabriz, "housing security" was introduced as the most important factor in housing preference. |
| Isfahan | According to the research of Akbari et al. (2013), the highest willingness to pay for the effective attributes in choosing housing in the run-down fabric of Isfahan belonged to the "residential unit area", followed by the "accessibility" indicator. In the research of Miralaei et al. (2019b), the "spatial" attributes were more important than the "housing attributes" in the city of Isfahan. |
| Shiraz | The "safety" component was the most important dimension of physical health and "security" was the most significant dimension of social health, and in the dimension of mental health, the "view" attribute was the most important component in the prosperous area and "security" was the most significant attribute in the poor and average areas of Shiraz. |
| Ahvaz | «Social " attributes were more important in Ahvaz than the others, followed by "physical" and "economic" attributes. |
| Torbat-e- Jam, Mashhad, and Neyshabur | In general, in these three cities, people first gave importance to "choosing a neighborhood," then "residential unit," and finally "residential building," and the smaller the scale of the city, the more people tended to choose "large houses with more rooms." In the large city of Mashhad, the three factors included "rent price," "facilities and equipment, and daylighting," and "lighting," and in the small city of Torbat-e-Jam, "dimensions of the residential units," "number of rooms," and "lighting and lighting» were significant. |
| Bojnourd | In this city, people gave more importance to the "residential environment" than to the "quality of the residential unit", 75 percent selected "environmental ". |
| Hamdan | People with a "high education" level chose "medium-sized" houses, while people with "medium education" chose "houses over 120 meters," and people with a "low education" level chose "houses between 60 and 90 meters." |

"fewer residential units in the building" and "security" were dealt with separately in a qualitative manner and based on ranked studies in the mentioned cities.

In terms of geographical distribution, studies on housing choices and preferences were conducted in large cities and metropolises, and the reason for this can be the presence of important universities and doctoral and master's students in these cities and the significance of their planning issues. Most studies on housing choices have been carried out by geography and urban planning, and urban economics experts, while studies on housing preferences have been conducted by architects and urban planners. Research on housing choice has gathered data on both revealed preferences and stated preferences, while studies on housing preference have been limited to stated preferences. Similarly, the average number of attributes in the studies of housing choices was less than the average in housing preference studies.

Studies also show that demographic and socio-economic attributes have different effects on housing choices and preferences. "Age" has been identified as an important indicator in some studies, while this relationship has not been significant in other studies. "Gender" has also been reported to be effective in some studies, but some findings show the opposite of this result.

Regarding "household dimension", most studies indicate a positive effect of this variable, although in some cases this relationship has not been confirmed. "Household income" has been identified as a determining attribute of housing choices in almost all studies, although there are exceptions in this regard. It seems that differences in methodology, characteristics of the studied samples, and geographical conditions could be the main reasons

for this heterogeneity in research results. These contradictions indicate the need for further studies with diverse samples and the same methods to achieve generalizable results.

## Declaration of No Conflict of Interest

The authors declare that they have no conflict of interest in conducting this research.

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**HOW TO CITE THIS ARTICLE**

Mokhtari, M., Miralayi, S.M., & Nasr Isfahani, R. (2025). Meta-analysis and systematic review of the impact of housing quality and household characteristics on residential space choices and preferences (in studied cities in Iran). *Bagh-e Nazar*, *22*(148), 5-28.

**DOI:** 10.22034/bagh.2025.449834.5583
**URL:** https://www.bagh-sj.com/article_224509.html?lang=en