

# Designing a Self-Care Culture Model for the Elderly with a Mixed Approach

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### ABSTRACT

**Objective:** The aim of the present study was to design a model of self-care culture for the elderly, which was conducted using a mixed approach.

**Methods:** This research is developmental in terms of its objective and is descriptive-correlational based on its methodology, utilizing Excel software for analysis. The statistical population in the qualitative section consisted of 28 academic experts in the fields of medicine, nursing, and sociology. These experts were selected based on criteria such as experience, relevance of academic discipline, educational degree, university teaching, and research and publication background in this area, using purposive and snowball sampling methods.

**Findings:** The output of this stage included 47 categories in the form of 6 components (self-care knowledge, self-care self-efficacy, self-care skills, spiritual self-care discipline, self-care self-centeredness, and social self-care norms). Self-care knowledge is the foundation for developing a self-care culture among the elderly. Spiritual self-care discipline and self-care self-centeredness fall into the dependent cluster, meaning they are primarily the result of the elderly self-care culture model and changes in other components of the model lead to changes in these components. Additionally, self-care self-efficacy is in the interdependent cluster, indicating that this component is dynamic and any change in it can affect the model. Self-care knowledge also lies in the independent cluster and influences other components.

**Conclusion:** The self-care culture model provides the groundwork for creating conditions and infrastructures that lead to the empowerment of individuals and society for self-care.

**Keywords:** Culture, Self-care, Grounded Theory, Interpretive Structural Modeling, MICMAC.

## 1. Introduction

Nowadays, the increase in the elderly population is so significant that it is referred to as the silent revolution. It is predicted that by 2050, approximately 17% of the world's population will be over 65 years old, and 4% will be 80 years old and above (Zhou et al., 2023). Therefore, population aging is associated with an increase in the prevalence of chronic diseases, heightened care needs, and a significant rise in healthcare costs (Li et al., 2023). Self-care is the most common behavioral response to illness and the most important form of care in both developed and developing countries (Zhou & Cao, 2023). Self-care can be defined as the abilities of individuals, families, and communities to promote health, prevent disease, maintain health, and cope with illness and disability with or without the support of a healthcare provider (Akter et al., 2023).

The aging process and the rapid increase in the elderly population are consequences of declining fertility rates and increased life expectancy. The global shift from communicable to chronic diseases is a worldwide issue that leads to a decrease in quality of life and an increased demand for services such as rehabilitation and disability-related services (Warner et al., 2023). In this context, specific attention to primary health services for the elderly becomes crucial. To provide specialized services to the elderly, the healthcare system must make appropriate changes in the structure and process of service delivery. Additionally, the elderly health service system, which is primarily responsible for patient care, must undergo fundamental changes to care for this vulnerable group (Graham et al., 2024). As age increases, physical dysfunction becomes more common, leading to problems that reduce the elderly's ability to maintain independence and increase their need for assistance. The United Nations recommends that care for the elderly should go beyond medical treatments and consider their complete physical, mental, and social well-being (Ekkel et al., 2023).

The importance of this issue becomes more evident when looking at statistics and figures. The United Nations reported that the total number of elderly people worldwide was 687,923,000 in 2006, which will double by 2025 and reach two billion by 2050, with this increase being much more intense in developing countries (Cheng et al., 2022). The 2016 results indicate that the population over 60 years old in Iran is 4,871,518 people (Ghorbani et al., 2021; Salarvand et al., 2023). Therefore, Iran is not an exception, and without planning and attention to this issue, the problems arising

from the increasing elderly population will soon affect the country (Ghorbani et al., 2021). In Iran, the focus is more on medical treatment of diseases; thus, institutionalizing the culture of self-care to reduce the financial and psychological burden on patients is of particular importance (Sayadi et al., 2023).

The necessity of examining self-care becomes more tangible when the results of studies in Mexico show that self-care is the most common behavioral response to illness. The most important factors in self-care include social, economic, and residential conditions, which are especially significant among poorer populations and rural areas. This indicates that self-care is an integral part of all levels of primary and specialized healthcare and that even slight facilitation in its implementation can improve the health, economic, and social status of the entire population (Li et al., 2023). The main achievement of strengthening the self-care approach is that people make the right decisions about the proper use of healthcare services and appropriately choose and implement self-care behaviors. Self-care clearly increases people's efficiency and individual skills and should not be seen as part of healthcare interventions that no one is willing to undertake or that the government cannot train enough specialists to implement. On the other hand, widespread self-care activities can lead individuals to maintain health and well-being, increase adaptability to illness, enhance self-care ability, and reduce the disability and healthcare costs of patients (Wang et al., 2023).

Therefore, self-care is an act in which each individual uses their knowledge, skills, and abilities as a resource to independently care for their health. Independence means making decisions about oneself and relying on oneself. This decision-making can include consulting and obtaining specialized or non-specialized help from others (whether experts or non-experts) (Fukunishi & Kobayashi, 2023). Although self-care is an activity that people undertake to provide, maintain, and promote their health, sometimes this care extends to their children, family, friends, and fellow citizens. In any case, the following five characteristics are inherent in the definition of self-care: 1) it is a voluntary behavior; 2) it is a learned activity; 3) it is a universal right and responsibility to maintain the health of oneself, family, and close ones; 4) it is a part of the care for infants, children, adolescents, and the elderly; 5) adults who cannot perform self-care need to receive healthcare services from social or healthcare providers (Andrade & Neves, 2022).

According to the person-centered health promotion model, when faced with a health problem and to maintain

and promote health, individuals have five main resources: themselves, other ordinary people, specialists, available information, and the environment. Self-care means an action in which a person uses themselves as a resource and independently cares for their health. Here, independence means making decisions for oneself and relying on oneself but also includes consulting and obtaining specialized or non-specialized help from others (whether non-experts or specialists) (Sharareh & Mohadese, 2021). Although self-care is a general strategy in the treatment process of individuals, its specific instances must be personalized according to each patient's and individual's conditions and are not the same for everyone. Hence, the role of public health education in this area is of great importance (Das et al., 2023). In a general classification, self-care is divided into three categories: physical, emotional, and social.

**Physical Self-Care:** The most fundamental method of self-care is maintaining a healthy life and using natural and organic foods. Nutrition plays an important role in the self-care program. In this regard, the elderly should consume healthy and natural foods. In this way, they can prevent various diseases.

**Emotional and Spiritual Self-Care:** This includes aspects such as self-confidence, a sense of satisfaction, and happiness. If the elderly do not pay enough attention to their psychological aspects, they may face various diseases. One of the main diseases that most elderly people face is depression.

**Social Self-Care:** This type of self-care relates to the social environment in which the elderly live. The social environment includes people and the living environment. Efforts should be made to design the elderly's surroundings in such a way that negative influences are minimized. Additionally, the elderly should avoid socializing with negative individuals. The living environment of the elderly can be made more attractive in this context (McNabney et al., 2022).

Mehrdadian et al. (2023) suggested designing interventions for physicians to increase their interaction with patients, given the impact of physicians' recommendations and behaviors on patients' decisions to participate in self-care and attend educational programs (Mehrdadian et al., 2023). Sayadi et al. (2023) stated that the self-care status and health literacy of the elderly in Iran are at a low level and are related to various factors. Therefore, attention to factors that positively impact self-care literacy and health, such as educational intervention programs, is recommended (Sayadi et al., 2023). Zahed Nakhjiri et al. (2022) indicated that the

self-care status of patients with heart failure is generally satisfactory. Despite these results, more attention in nursing and medical care to improve self-care status in the elderly, especially in self-care behaviors related to exercise and daily weighing, is necessary (Zahed Nakhjiri et al., 2021). Shovaichi (2020) found a significant difference between the experimental and control groups in both self-care and emotional self-regulation variables. Accordingly, reality therapy training is effective in self-care and emotional self-regulation in physically disabled men (Shovaichi, 2020). Younesi Boroujeni et al. (2020) showed that the 29-question questionnaire designed to measure elderly self-care has four factors, and according to the results, these four factors explain 44.68% of the variance in elderly self-care, with each factor explaining a significant portion of the total variance (Factor 1: 18.65%, Factor 2: 18.54%, Factor 3: 15.67%, and Factor 4: 15.56%). The results indicate that the content, face, and construct validity of the designed questionnaire for the elderly are acceptable (Younesi Boroujeni et al., 2020). Salarvand et al. (2023) stated that traditional beliefs, collectivism, family and kinship relationships, destiny, cultural norms, and normative thinking play an important role in medication adherence and the use of alternative complementary medicines as cultural and normative factors related to self-care (Salarvand et al., 2023). Cuevas Garcia et al. (2023) found that availability, caregiving knowledge, balancing safety needs and empowerment, and interaction with specialists are factors related to self-care (Cuevas García et al., 2023). Katz et al. (2023) identified social support, self-care knowledge, self-confidence, hospital characteristics, and social and clinical features as predictors of self-care behaviors in patients (Katz et al., 2023). Fukunishi and colleagues (2023) showed that strictness, role talk, emotional management in caregiving, compassion, capability to perform this work, compassionate care, well-being, and emotional management are indicators of self-care (Fukunishi & Kobayashi, 2023). Li (2022) found that important predictors of self-care include gender, race, sexual orientation, employment status, health status, and current financial status (Li, 2022).

Regarding the culture of self-care, the results of previous research indicate that various factors exist in this area; however, no research has been conducted using an interpretive structural approach. Therefore, this research aims to identify the criteria for elderly self-care culture and develop it. The goal of this research is to design a model of elderly self-care culture using an interpretive structural approach.

## 2. Methods

### 2.1. Study Design and Participants

The present research is developmental in terms of its objective and descriptive-correlational based on its methodology, utilizing Excel software for analysis. The statistical population in the qualitative section consisted of 28 academic experts in the fields of medicine, nursing, and sociology. These experts were selected based on criteria such as experience, relevance of academic discipline, educational degree, university teaching, and research and publication background in this area, using purposive and snowball sampling methods.

This research was conducted in two steps. In the first step, through in-depth interviews with experts using the grounded theory method, the components of elderly self-care culture were identified. In the second step, to achieve the elderly self-care culture model, the interpretive structural modeling method was used. Interpretive structural modeling is an interactive learning process in which a set of various interrelated elements is structured in a systematic comprehensive model. This method helps to create and guide the complex relationships among the elements of a model and, using mathematical principles and expert opinions, facilitates the identification and explanation of the complex relationships between the elements of the model.

The steps of this research are as follows:

### 2.2. Step 1. Identifying the Components of Elderly Self-Care Culture

Through in-depth interview sessions with experts using the grounded theory method, after three stages of open, axial, and selective coding, the components of elderly self-care culture are identified.

### 2.3. Step 2. Designing the Elderly Self-Care Culture Model

First Stage: Creating the Structural Self-Interaction Matrix

In this stage, the problem variables are compared in pairs, and the relationships between the variables are determined using the symbols V, X, O, and A. The structural self-interaction matrix is obtained.

Second Stage: Access Matrix

In this stage, the structural self-interaction matrix is converted into a binary matrix. Thus, the initial access matrix is obtained. By converting the symbols V, X, O, and A into zeros and ones for each variable, the structural self-interaction matrix is converted into a binary matrix, which is called the initial access matrix (Table 5). After forming the initial access matrix and involving transferability in the variable relationships, the final access matrix is formed.

Third Stage: Determining the Relationships and Leveling Between Dimensions

To determine the relationships and leveling of dimensions, the output and input sets for each dimension must be extracted from the access matrix. The output set includes the dimension itself and the dimensions it influences. The input set includes the dimension itself and the dimensions that influence it.

### 2.4. Step 3. Drawing the Model and Interaction Network of Dimensions

After determining the relationships and level of variables, they can be depicted as a model. To do this, the variables are first arranged according to their levels from top to bottom, and using the leveling performed, a diagram titled the elderly self-care culture model is drawn.

Next, MICMAC analysis is performed, aiming to analyze the influence and dependence power of variables. Then, the dimensions are divided into four clusters. The first cluster includes criteria with weak influence and dependence power. The dependent variables are in the second cluster, which have weak influence but high dependence power. These dimensions are primarily the result of the model, meaning that changes in other elements of the model lead to changes in these variables. The third cluster includes linkage criteria with strong influence and dependence power. The fourth cluster includes independent criteria with high influence and low dependence power.

## 3. Findings and Results

Based on in-depth interviews using the grounded theory method with experts, the factors listed in Table 1 were identified as the components of the self-care culture for the elderly. Subsequently, the development of the self-care culture model for the elderly is addressed using interpretive structural modeling.

**Table 1**

*Components of Self-Care Culture for the Elderly Based on In-Depth Interviews with Experts*

Component	Category
Health Literacy	Self-care knowledge
	Health literacy
	Health awareness
	Dietary culture
	Educational courses
	Increase in self-care awareness
	Clinical awareness
Perceived Control	Utilization of health resources
	Self-care self-efficacy
	Precautionary planning
	Improved self-image
Self-Awareness	Independence in activities
	Past experiences
	Self-care skills
	Coping skills
	Establishing interpersonal relationships
	Maintaining family balance
	Creating a collaboration network with health specialists
Confidence	Communication skills
	Interaction between doctor and elderly
	Spiritual self-care discipline
	Willingness to live
	Love and affection
	Life satisfaction
	Giving meaning to life
	Positive attitude towards life
	Spiritual beliefs
	Enthusiasm for life
	Peaceful and quiet environment
	Prayer and connection with God
	Participation in religious rituals
	Nutrition and Healthy Eating
Adopting a healthy lifestyle	
Proper use of medications	
Adequate sleep and rest	
Correct medication consumption	
Physical activities and exercises	
Psychological Support	
	Family psychological support
	Learning from others
	Positive social acceptance
	Adapting to changes
	Maintaining friendships and connections
	Participation in social events
	Spending quality time with friends
	Emotional connection with others
	Maintaining family relationships
	Responsibility towards family

The experts then used [Table 2](#) to determine the relationships between the variables, resulting in the structural self-interaction matrix.

**Table 2**

*Symbols Used in Designing the Interpretive Structural Model*

Symbol	Description
V	Variable i influences j

A	Variable j influences i
X	Mutual relationship
O	No relationship

**Table 3**

*Structural Self-Interaction Matrix*

No.	Components	1	2	3	4	5	6
1	Self-care knowledge	1	V	V	O	V	O
2	Self-care self-efficacy		1	A	X	X	A
3	Self-care skills			1	O	X	O
4	Spiritual self-care discipline				1	O	X
5	Self-care self-centeredness					1	O
6	Social self-care norms						1

Based on Table 3, if the entry (i,j) in the structural self-interaction matrix is V, the entry (i,j) in the initial matrix is 1, and the entry (j,i) is 0. If the entry (i,j) is A, the entry (i,j) in the initial matrix is 0, and the entry (j,i) is 1. If the entry

(i,j) is X, the entry (i,j) in the initial matrix is 1, and the entry (j,i) is 1. If the entry (i,j) is O, the entry (i,j) in the initial matrix is 0, and the entry (j,i) is 0 (Table 4).

**Table 4**

*Initial Access Matrix*

No.	Components	1	2	3	4	5	6
1	Self-care knowledge	1	1	1	0	1	0
2	Self-care self-efficacy	0	1	0	1	1	0
3	Self-care skills	0	1	1	0	1	0
4	Spiritual self-care discipline	0	1	0	1	0	1
5	Self-care self-centeredness	0	1	1	0	1	0
6	Social self-care norms	0	1	0	1	0	1

In Table 4, secondary relationships and transitivity should be controlled for verification. Transitivity means that if

variable A influences B and B influences C, then A should also influence C.

**Table 5**

*Final Access Matrix*

No.	Components	1	2	3	4	5	6
1	Self-care knowledge	1	1	1	1	1	0
2	Self-care self-efficacy	0	1	1	1	1	1
3	Self-care skills	0	1	1	1	1	0
4	Spiritual self-care discipline	0	1	0	1	1	1
5	Self-care self-centeredness	0	1	1	1	1	0
6	Social self-care norms	0	1	0	1	1	1

In Table 5, after determining the input and output sets, the intersection of these sets for each dimension is determined. Dimensions with completely similar output sets and intersections are at the highest level. To find the components of the next level of the system, the highest-level components

are removed from the mathematical calculations, and the operations for determining the next level components are performed as with the highest-level components. This process is repeated until all system levels are identified.



**Table 6**

*Determining the Relationships and Levels of Self-Care Culture Components for the Elderly*

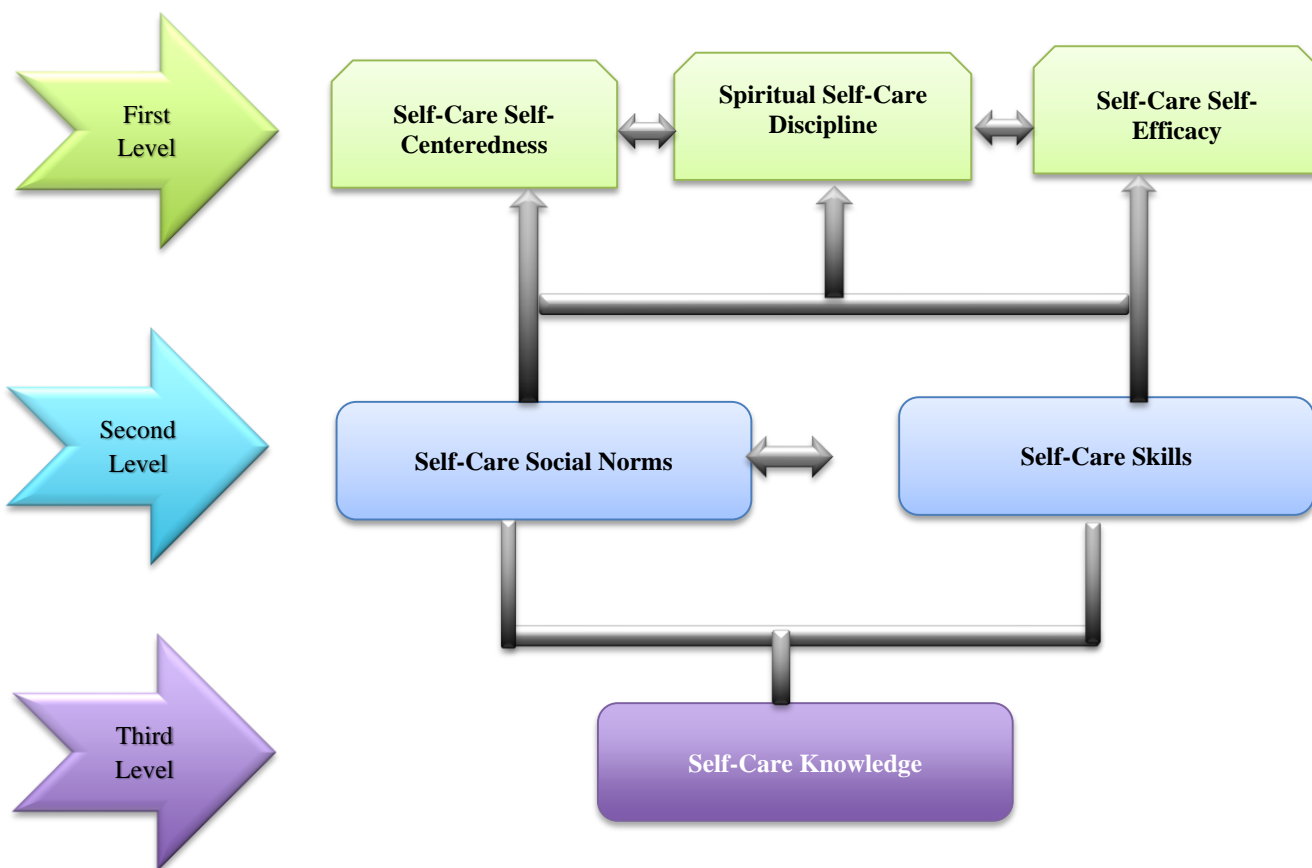
Components	Rows (Output Set)	Columns (Input Set)	Intersection	Level
1. Self-care knowledge	1	1	1	3
2. Self-care self-efficacy	2-3-4-5-6	1-2-3-4-5-6	2-3-4-5-6	1
3. Self-care skills	3	1-3	3	2
4. Spiritual self-care discipline	2-4-5-6	1-2-3-4-5-6	2-4-5-6	1
5. Self-care self-centeredness	2-3-4-5	1-2-3-4-5-6	2-3-4-5	1
6. Social self-care norms	6	6	6	2

Based on the leveling done in Table 6, the elderly self-care culture model was drawn. According to the model presented in Figure 1, the lower a variable is in the levels, the more influence it has and the less it is influenced. Thus, it can be said that the foundation of the self-care culture

model for the elderly is primarily self-care knowledge, followed by self-care skills and social self-care norms, and lastly self-care self-efficacy, spiritual self-care discipline, and self-care self-centeredness.

**Figure 1**

*Model of Elderly Self-Care Culture*



The influence and dependency power of the components of the proposed model in Figure 1 are then calculated. In Table 7, the sum of the row numbers indicates the influence

power, and the sum of the column numbers indicates the dependency power of the dimensions.

**Table 7**

*Influence–Dependency Power of Components*

Components	1	2	3	4	5	6
Influence Power	5	5	4	4	4	4
Dependency Power	1	6	4	6	6	3

Based on [Figure 2](#), spiritual self-care discipline and self-care self-centeredness fall into the dependent cluster, self-care self-efficacy is in the linkage cluster, and self-care knowledge is in the independent cluster, while self-care

skills and social self-care norms are in the autonomous cluster. Thus, it can be said that self-care knowledge has the most influence in the elderly self-care culture model.

**Figure 2**

*Influence–Dependency Matrix*

Influence Power	6		Independent				Linkage
	5	1					2
	4						5-4
	3			6	3		Dependent
	2						
	1		Autonomous				
		1	2	3	4	5	6
		Dependency Power					

**4. Discussion and Conclusion**

The aim of this study was to design a model of self-care culture for the elderly using an interpretive structural approach. The results of the grounded theory method in this research showed that the elderly self-care culture is categorized into six components (spiritual self-care discipline, self-care skills, self-care self-centeredness, social self-care norms, self-care self-efficacy, and self-care knowledge). Regarding the spiritual self-care discipline factor, 11 indicators were identified and categorized based on the interviews. These indicators, in order of highest priority, are: confidence, willingness to live, love and affection, life satisfaction, giving meaning to life, positive attitude towards life, spiritual beliefs, enthusiasm for life, peaceful environment, participation in religious rituals. This finding aligns with the prior results ([Fukunishi & Kobayashi, 2023](#); [Salarvand et al., 2023](#)). For the self-care skills factor, 7 indicators were identified and categorized. These indicators, in order of highest priority, are: communication skills, interaction between doctor and elderly, creating a

collaboration network with health specialists, coping skills, maintaining family balance, self-awareness, and establishing interpersonal relationships. This finding is consistent with the prior results of ([Cuevas García et al., 2023](#)). For the self-care self-centeredness factor, 6 indicators were identified and categorized. These indicators, in order of highest priority, are: nutrition and healthy eating, adopting a healthy lifestyle, proper use of medications, adequate sleep and rest, correct medication consumption, and physical activities and exercises. This finding aligns with the prior results ([Katz et al., 2023](#); [Li et al., 2023](#)). For the social self-care norms factor, 10 indicators were identified and categorized. These indicators, in order of highest priority, are: family psychological support, learning from others, positive social acceptance, adapting to changes, maintaining friendships and connections, participation in social events, spending quality time with friends, emotional connection with others, maintaining family relationships, and responsibility towards family. For the self-care self-efficacy factor, 5 indicators were identified and categorized. These indicators, in order of



highest priority, are: past experiences, precautionary planning, independence in activities, improved self-image, and perceived control. This finding aligns with the prior results (Salarvand et al., 2023). For the self-care knowledge factor, 8 indicators were identified and categorized. These indicators, in order of highest priority, are: health literacy, health awareness, utilization of health resources, increase in self-care awareness, clinical awareness, health literacy, dietary culture, and educational courses. This finding aligns with the prior results (Cuevas García et al., 2023; Katz et al., 2023).

Additionally, the results of the interpretive structural modeling showed that the elderly self-care culture model consists of three levels. The components that are lower in the levels have more influence and are less influenced. Therefore, it can be said that self-care knowledge is the foundation of developing the self-care culture for the elderly. The results of the MICMAC analysis also showed that spiritual self-care discipline and self-care self-centeredness are in the dependent cluster, meaning they are mainly the result of the elderly self-care culture model and changes in other components of the model lead to changes in these components. Moreover, self-care self-efficacy is in the linkage cluster, indicating that this component is dynamic and any change in it can affect the model. Self-care knowledge is also in the independent cluster and influences other components. Based on the results obtained from the research, the authors present three general recommendations: First, to increase the self-care culture of the elderly, their limitations and capabilities should be identified and accepted. Second, self-care information should be taught to the elderly and their families through workshops, educational sessions, or utilizing the capacity of other related organizations, especially the media. Finally, self-care requires appropriate awareness and performance in managing needs. Therefore, if the elderly learn how to adapt to elderly life, they can better adjust factors that reduce their quality of life. Thus, health team members should pay special attention to enhancing the elderly's awareness and improving their self-care performance.

## 5. Suggestions and Limitations

Regarding the research limitations, the authors acknowledge that data collection was done using questionnaires, which might have led some individuals to refrain from providing genuine responses and instead give false answers. Additionally, the large number of questions in

the questionnaires prolonged the completion time, which may have affected the accuracy of participants' responses. Furthermore, this research was conducted within a specific time frame (2017 to 2022), which is another limitation.

Future research should explore longitudinal studies to examine the long-term effectiveness of self-care interventions among the elderly, considering the dynamic and evolving nature of aging and health conditions. Additionally, investigating the role of technological advancements, such as telemedicine and health apps, in enhancing self-care practices could provide valuable insights. Researchers should also examine cultural differences in self-care behaviors and how these differences influence the design and implementation of self-care programs. Comparative studies between urban and rural populations can reveal specific challenges and needs, leading to tailored interventions. Furthermore, exploring the impact of social support networks, including family and community involvement, on the success of self-care initiatives would be beneficial.

The findings of this study underscore the importance of integrating self-care education into public health policies and programs targeting the elderly. Healthcare providers should be trained to recognize and promote self-care practices among their elderly patients, emphasizing the development of self-care knowledge and skills. Policymakers should consider creating supportive environments that facilitate self-care, such as community centers offering regular workshops and resources on health literacy and self-care strategies. Moreover, leveraging media and technology to disseminate self-care information can enhance reach and engagement. By prioritizing self-care in healthcare systems, we can improve the quality of life for the elderly, reduce healthcare costs, and promote a more proactive approach to managing aging and chronic diseases.

## Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

## Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

## Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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### Declaration of Interest

The authors report no conflict of interest.

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### Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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