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*Research Article*

# The Relationship between the Perception of Aging and Death Anxiety in the Older Adults of Eastern Iran during COVID-19

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The perception of aging is widely acknowledged as a key determinant of personal satisfaction with the aging process, and it marks an individual's adaptability to life changes. As older adults encounter psychophysical changes and disabilities, thoughts surrounding mortality often become more pronounced, leading to a surge in death anxiety, which is recognized as prevalent psychological distress among this population. This study aimed to investigate the relationship between aging perception and death anxiety among older adults in Eastern Iran during coronavirus disease 2019 (COVID-19). This descriptive-analytical study included 300 older adults (118 men and 182 women) using a stratified random sampling method. Data were collected using a demographic survey, Barker's Ageing Perceptions Questionnaire (APQ), and Templer's Death Anxiety Scale (DAS). Data were analyzed in SPSS software (V.22) using Pearson's correlation coefficient, independent $t$-tests, analysis of variance (ANOVA), and linear regression. The mean aging perception score was $102.50 \pm 15.55$. After normalizing the scores, while the highest mean was related to the chronic and acute dimensions ($65.32 \pm 16.31$), the lowest was related to the positive results dimension ($65.29 \pm 18.71$). Also, the death anxiety score was $6.35 \pm 1.99$. The results from the linear regression analysis indicated an increase in negative emotions, correlating with an uptick in the death anxiety score ($P = 0.001$). Furthermore, retired individuals had a higher death anxiety score than those still working ($P = 0.02$). According to the results of this study, older adults with more negative emotions toward aging had higher death anxiety levels. Hence, interventions to foster positive emotions and attitudes towards aging are crucial to healthy aging. Moreover, considering the high level of death anxiety among retired people, further studies are required to investigate the mental health of this population.

## 1. Introduction

Old age represents a pivotal stage in life, a reality increasingly confronted by many societies [1]. This garners attention from health professionals, policy-makers, and the general public [2]. Old age profoundly influences an individual's life and mental health. Older adults with greater flexibility and readiness often adapt more effectively to these changes [3]. The global population is aging at a remarkable pace. Projections indicate that people aged 60 and older will surpass two billion by 2050, up from 841 million [4]. Statistics from the Iranian Census reveal a similar trend, showing that the population of individuals aged 60 increased from 3.5% in 1956 to 9.3% in 2016. Predictions suggest that this demographic will constitute 21.7% of the Iranian population by 2050 [5]. Furthermore, statistical estimates predict that older adults will comprise 26% of Iran's population within 30 years [6].

Over the past decade, gerontologists have shown a keen interest in successful aging. Perception stands out among the many factors studied as indicators of successful aging [7]. This perception serves as a crucial metric for gauging satisfaction with the aging process. It reflects their adaptability to this period's changes [8]. This concept is intrinsically linked to older adults' experiences, cognitive function, mental health, and physical health and can cause significant alterations [9]. Mead [10] was the inaugural proponent of a theory related to this concept. His theory postulates that one's attitude towards aging, whether positive or negative, is an internalized reaction and forms part of an older individual's identity [10]. Several factors can shape this perception, such as attitudes towards old age, satisfaction with aging, adaptability to this stage, and awareness of aging-related changes, including muscle weakness and disease development. Generally, the perception of aging can indicate the level of satisfaction with old age and the extent of one's adaptation to this period [11].

Positive and negative attitudes of individuals toward their aging represent an internal response and a significant part of one's perception of aging. A positive perception of aging can lead to mental well-being and life satisfaction. So, any senior who is content with their age and maintains a positive attitude toward this stage of life will generally experience better psychological health than someone with a negative attitude toward aging [12]. An unfavorable perception of aging can lead to a negative attitude toward aging, resulting in decreased functionality, reduced quality of life, and increased mortality risk [9]. Overall, various studies have demonstrated that the perception of aging can influence mental health, anxiety, and depression in older adults [12].

Perception of aging is a good predictor of death anxiety [9, 13, 14], which is one of the most common mental disorders of old age [15]. Inevitably, the reality of death becomes more prominent in old age, necessitating adaptation [9]. The psychophysical changes and disabilities encountered during this life stage often trigger increased contemplation and discourse about mortality [16]. Some degree of death anxiety, or contemplation about death, is typical among older adults. However, when these feelings exceed acceptable limits, they can undermine effective adaptation [17]. Death anxiety is defined as an irrational fear of death, often accompanied by dread or apprehension when contemplating dying or postmortem scenarios [18]. Anxiety can provoke fear, disappointment, worry, and discomfort and trigger negative emotional responses alongside stress and anxiety [19]. Death anxiety is one of the most prevalent anxiety disorders among older adults, highlighting the necessity to identify and fortify factors that can mitigate it [16]. Accordingly, aging perception can influence mental health and anxiety disorders, including death anxiety, in later life.

Although some studies have explored the connection between aging perception and death anxiety [2], it is essential to note that these variables are not identical across all societies. Social status, religion, and culture can significantly shape an individual's perception of aging [11]. Notably, cultural variances can affect individual aging experiences and perceptions. Cultures emphasizing physicality and appearance may cultivate more negative stereotypes among older adults. Conversely, cultures that associate wisdom and knowledge with age often foster a more positive understanding of aging [20].

The Self-Concept Enhancement Tactician (SCENT) model by Sedikides et al. [21] may provide the most comprehensive depiction of the psychological process through which an individual's culture influences attitudes toward aging [21]. This model posits that each society's culture defines the characteristics of a respected, accepted individual, thereby influencing societal behavior [22]. This results in differing attitudes towards older adults and old age across societies with varied cultural backgrounds. Moreover, a study comparing perceptions of aging across 26 cultures, including Asian and Western countries, revealed that variations in aging perceptions correlated with factors such as population aging, education levels, values, and national character stereotypes [23].

Religious and cultural beliefs also impact an individual's death anxiety. Numerous studies indicated that individuals with stronger religious convictions typically experience lower anxiety levels than those with weaker beliefs [24]. As such, the need for additional research across diverse societies is clear.

In Iran, a study conducted in Gonabad city showed that the perception of aging is a strong predictor of death anxiety. Older adults who are aware of the natural aging process and have accepted their physical and mental conditions in this phase of life reported lower anxiety levels, even when facing unfavorable physical and mental conditions. This is because they viewed death as an approach to a better life and an escape from their painful circumstances [13].

During the coronavirus disease 2019 (COVID-19) pandemic, people experienced high death anxiety, and older people were one of the groups with the highest death anxiety levels [25]. Physical problems, movement limitations, and dependence on others to do daily tasks were among the reasons for high death anxiety in older adults [15, 26]. The interruption of social communication during the COVID-19 pandemic exposed older adults to psychological distress, loneliness, and social isolation, which increased their death anxiety level [27, 28]. Another factor related to death anxiety is self-perceptions of aging [14, 29]. The mentioned results were obtained before the COVID-19 pandemic, and the relationship between these two variables has not been investigated during the COVID-19 pandemic in Iran. Several interventions for death anxiety, such as reminiscence therapy [30] and spiritual and behavioral treatments [2], have been conducted in Iran, which can help reduce anxiety and assist older adults in adapting to the aging process. Accordingly, this study aimed to examine the relationship between the perception of aging with demographic factors and death anxiety among older adults during the COVID-19 pandemic in Esfarayen, Iran.

## 2. Methods

This descriptive-analytical study was conducted on older adults (over 60 years) living in Esfarayen, a city in Eastern Iran, in 2022. Using the G*Power 3.1.9.4 software [31], we determined the minimum sample size to be 270 people. Considering a 10%

nonresponse rate, the final sample size was 300. Due to the limited educational background of the participants, all questionnaires were completed by trained interviewers who visited the participants' homes. The interviewers selected subjects randomly and conducted face-to-face interviews.

This study adopted a multistage sampling method. Initially, Esfarayen was divided into nine segments according to the health centers. From each segment, 33 older adults were chosen and included in the study. One older adult was randomly selected from the integrated health system (SIB system), and the needed information was gathered during an in-person visit to the participant's home. After leaving a household, the researcher would turn right to select other participants, thus adding other qualified older adults to the study.

All individuals participated in the study voluntarily and met the following inclusion criteria: age over 60, not using psychiatric drugs, not suffering from incurable diseases according to the health records, and covered by the urban health database. Also, we assured that the participants could adequately comprehend the questionnaire, provide accurate responses, and avoid any potential impacts of disease on their death anxiety and attitudes towards aging. The exclusion criteria were any cognitive disorder preventing understanding questions and choices.

## 3. Measures

### 3.1. Demographic Information.
The demographic information form collected the following information: age, gender, education, marital status, occupation, number of children, housing, financial status, and living arrangements.

### 3.2. Aging Perception Questionnaire (APQ).
There are 89 instruments designed to assess aging perception [32]. APQ is one of the most widely used tools due to its comprehensive and multidimensional nature [33]. Barker et al. developed the APQ in 2007 to assess the perception of aging in older adults [34]. The questionnaire consists of 49 questions divided into two sections. The first section deals with attitudes related to aging (32 questions), and the second section focuses on experiences associated with health changes (17 questions). The first section of the questionnaire encompasses the following seven factors: timeline acute/chronic, timeline cyclical, emotional representations, control positive, control negative, consequence positive, and consequence negative. These questions are scored on a 5-point Likert scale, ranging from complete disagreement to complete agreement. Also, the second section encompasses the eighth factor, which focuses on health changes. The range of scores is between 32 and 160, and a higher score implies a stronger perception of aging. The score for the health changes section ranges from 0 to 17, with a higher score indicating a greater number of health-related changes.

The internal consistency of the APQ and average retest reliability were reported to be between 0.61 and 0.83 and 0.76, respectively [34]. Moreover, content, face, and criterion validity were evaluated in Iran, yielding a Cronbach's alpha coefficient greater than 0.79 [35].

### 3.3. Death Anxiety Scale (DAS).
To assess death anxiety, 21 scales have been introduced. However, none of the tools possesses psychometric properties that meet the approved standards. Considering the low literacy level of older adults in our study, Templer's DAS was employed due to its simplicity and small item count. This makes it a widely used tool in death anxiety assessments [36]. This tool consists of 15 yes/no questions, with a "yes" response indicating death anxiety. The questionnaire is scored on a scale ranging from 0 to 15, with scores from 0 to 6 classified as low death anxiety and scores from 7 to 15 classified as high death anxiety. This questionnaire demonstrated an acceptable validity in its original cultural context, with a test-retest reliability coefficient of 0.83 and concurrent validity with the Anxiety Clear Scale at 0.27 and the Depression Scale at 0.4 [37]. The reliability and validity of this questionnaire have been confirmed in Iran, with a reliability coefficient of 0.62 and an internal consistency coefficient of 0.73 [38, 39].

### 3.4. Data Analysis.
Data were analyzed using the SPSS software (version 22). First, we assessed the data for their distribution using the Kolmogorov–Smirnov test. The data exhibited a normal distribution. Descriptive statistics, including frequency, mean, standard deviation, minimum, and maximum, were utilized to report demographic variables and dimensions of aging perception. We conducted a multiple linear regression analysis to examine the relationship between one dependent variable (aging perception) and several independent variables. To this end, we first examined the relationship of each variable with the dependent variable. We entered the variables with a significance level below 0.2 into the multivariate model. A $P$ value $<0.05$ was considered as statistically significant as shown in Tables 1 and 2.

## 4. Results

The age range of participants was 60–96 years (mean age: $68.31 \pm 8.66$). Also, 39.3% of participants were men and 60.7% were women. Table 3 presents the demographic data, including gender, education, marital status, number of children, and financial status.

The participants' mean score for aging perception was $102.50 \pm 15.55$, which exceeded the questionnaire's mean scores. This indicates a high level of aging perception among older adults. After normalizing the perception of aging scores, the highest and lowest mean values were observed for the acute-chronic ($65.32 \pm 16.31$) and consequence-positive ($65.29 \pm 18.71$) dimensions, respectively. The highest and lowest score dispersions were seen in the emotional representations and consequence-positive dimensions, respectively.

Templer's DAS total score was $6.35 \pm 1.99$, which falls below the mean scores. This suggested a lower level of death anxiety among older adults within an acceptable score range.

Linear regression analysis revealed a significant correlation between the emotional representation dimension of aging perception and death anxiety. An increase in the emotional representation score, which is often negative, was

TABLE 1: Statistical indices of older adults' perception of aging dimensions.

| Dimensions | Mean | SD | Min | Max | Attainable score limit |
|---|---|---|---|---|---|
| Acute/chronic | 65.32 | 16.31 | 20 | 100 | 20–100 |
| Cyclical timeline | 58.55 | 11.63 | 20 | 92 | 20–100 |
| Emotional representation | 50.52 | 20.21 | 20 | 96 | 20–100 |
| Control positive | 61.53 | 16.45 | 20 | 100 | 20–100 |
| Control negative | 56.42 | 17.20 | 20 | 100 | 20–100 |
| Consequence positive | 65.29 | 18.71 | 20 | 100 | 20–100 |
| Consequence negative | 59.79 | 17.33 | 20 | 100 | 20–100 |
| Health changes | 44.06 | 20.53 | 0 | 88.2 | 0–100 |

TABLE 2: Estimation of multiple linear regression coefficients for predictors of perception of aging in older adults.

| Variable | | Univariate | | Multivariate | | $R$ square |
|---|---|---|---|---|---|---|
| | | Regression coefficient ($\beta$) | $P$ value | Regression coefficient ($\beta$) | $P$ value | |
| Variable | Class | | | | | |
| Age | | −0.021 | 0.12 | — | — | |
| Gender | Male | Ref. | Ref. | Ref. | Ref. | |
| | Female | 0.61 | 0.009 | — | — | |
| | Retired | Ref. | Ref. | Ref. | Ref. | |
| | Housekeeper | −0.54 | 0.12 | — | — | |
| Occupation | Self-employed | −0.66 | 0.5 | — | — | |
| | Employee | −0.16 | 0.84 | — | — | |
| | Worker | −0.77 | 0.03 | −0.56 | 0.02 | 0.09 |
| | Acute/chronic | 0.094 | 0.01 | — | — | |
| | Cyclical | 0.058 | 0.14 | — | — | |
| | Emotional representation | 0.098 | 0.001 | 0.07 | 0.003 | |
| Perception of aging | Control negative | 0.089 | 0.008 | — | — | |
| | Control positive | 0.09 | 0.009 | — | — | |
| | Consequence positive | 0.99 | 0.001 | — | — | |
| | Consequence negative | −0.08 | 0.1 | — | — | |
| | Experiences of health changes | 0.01 | 0.76 | — | — | |

TABLE 3: Demographic information of older adults participating in the study.

| Variable | | $N$ | % |
|---|---|---|---|
| Gender | Female | 118 | 39.3 |
| | Male | 182 | 60.7 |
| | Illiterate | 130 | 43.3 |
| | Primary school | 94 | 31.3 |
| Education | Secondary and middle school | 34 | 11.3 |
| | High school diploma and pre-university | 30 | 10 |
| | Academic | 12 | 4 |
| | Married | 219 | 73 |
| Marital status | Single | 13 | 4.3 |
| | Divorced | 4 | 1.3 |
| | Widow | 64 | 21.3 |
| | Very poor | 16 | 5.3 |
| | Poor | 93 | 31 |
| Financial | Medium | 125 | 41.7 |
| | Good | 55 | 18.3 |
| | Very good | 11 | 3.7 |
| | Unemployed | 3 | 1 |
| | Housekeeper | 161 | 53.7 |
| Occupation | Self-employed | 40 | 13.3 |
| | Employee | 4 | 1.3 |
| | Retired | 86 | 28.7 |

TABLE 3: Continued.

| Variable | | N | % |
|---|---|---|---|
| Children | 1–5 | 164 | 54.06 |
| | <5 | 136 | 45.3 |
| Housing | Private | 254 | 84.4 |
| | Lease and mortgage | 46 | 15.3 |
| | Alone | 44 | 14.7 |
| Living arrangements | Only with spouse | 106 | 35.3 |
| | With spouse and children | 115 | 38.3 |
| | Only with children | 33 | 11 |
| | With relatives and others | 2 | 0.6 |

associated with a higher death anxiety score ($P = 0.003$). No significant relationships were observed between death anxiety and other dimensions of aging perception, such as cyclical, control negative, control positive, consequence positive, and consequence negative. Also, age and gender did not significantly correlate with aging perception in older adults.

Moreover, working older adults had lower death anxiety scores than retired adults. So, there was an inverse relationship between having a job and the death anxiety score ($P = 0.02$).

## 5. Discussion

This study explored the relationship between demographic factors, aging perception, and death anxiety among older adults in Esfarayen, Iran.

Most of the participants in this study were female, married, and elderly with low levels of education. The aging perception score surpassed the average score of this questionnaire, suggesting its suitability. Despite variations in demographic variables, the aging perception score aligns with the findings of previous studies conducted in Iran [5, 9, 13, 40]. Older people's significance and esteemed status within Iranian and Islamic culture and society may account for this phenomenon.

However, Bastani and Beigi Boroujeni [41] in Eastern Iran noted a low perception of aging among their subjects, suggesting a negative attitude towards aging. This study focused on diabetic individuals, which might account for the negative perception of aging observed [41].

Our study differs from those conducted by Zieli̇ska-Wiȧczkowska & Sas [42] in the Netherlands and Singh et al. [43] in Malaysia. The studies above indicate a greater prevalence of favorable attitudes toward aging than our research. The observed variations in cultural and regional contexts throughout the earlier studies may be attributed, in part, to the influence of the COVID-19 pandemic. This global health crisis has notably affected our culture's perception of old age, decreasing reporting rates.

Unfortunately, there is no information on aging perception among the participants of this study before the COVID-19 pandemic, which can confirm the impact of the coronavirus pandemic on the studied population.

Furthermore, research on the perception of aging during the COVID-19 pandemic is scarce globally. Seifert [44]

conducted a study in Switzerland during the COVID-19 pandemic, which revealed that the pandemic impacted the subjective perspectives of older individuals regarding their aging process. Specifically, implementing government-mandated quarantine measures led to a rise in negative perceptions and a decrease in positive perceptions of aging [44]. Further research is recommended in the examined community after the coronavirus pandemic to acquire more comprehensive insights into the pandemic's influence on the perception of aging.

Our study revealed that death anxiety among older adults was lower than average. A systematic review and meta-analysis conducted on death anxiety among older Iranian adults suggested that death anxiety was generally low in this demographic and inversely related to factors such as faith in God, gratitude, religiosity, and spiritual health [2]. Another study showed a lower death anxiety level among those with a positive relationship with God and higher hopes for divine love. Conversely, higher levels of disbelief and a negative relationship with God were associated with increased despair and a lower level of death anxiety [45]. Therefore, individuals' spiritual and religious beliefs significantly impacted Iranian older adults' anxiety levels. Religious beliefs, trust in the support of Imams and religious leaders, and hope for relief from worldly difficulties are instrumental in reducing death anxiety. Individuals with religious beliefs perceive events more positively and view them as divine destiny. They believe death is not the end of life but a transition to a more divine world. Faith in God and religious beliefs instill hope in individuals, resulting in less anxiety about the future [14].

However, the study lacks data regarding the pre-COVID-19 anxiety levels among the senior population, hence limiting the ability to estimate the influence of the pandemic on anxiety levels. A systematic review of several research on death anxiety during COVID-19 revealed that participants in these trials received half the overall death anxiety score. Patients with COVID-19, other chronic conditions, and the elderly had the highest standard scores for death anxiety. Patients' anxiety levels rise after receiving a COVID-19 diagnosis. The standard score of death anxiety in Asian studies was greater than that in Europe and America [25].

Our study also found that only the dimension of negative emotional representation significantly impacted older adults' death anxiety. Those who were worried and upset

about aging's effects experienced more death anxiety. Multiple studies have shown a connection between aging perception and death anxiety [9, 14]. Mohammadpour et al. [13] found a link between the timeline cyclical, control positive, consequence positive, consequence negative, and emotional representations of aging perception dimensions and death anxiety. They also found that the dimension of emotional representations had a stronger influence on older adults' death anxiety than the other dimensions [13]. Wilkes et al. [46] asserted that negative emotions were a significant risk factor for older adults' anxiety [46], and Majd-Ara et al. found a direct and significant impact of negative emotions on older adults' anxiety in Iran [47].

Death anxiety is more prevalent among individuals who employ maladaptive cognitive emotion regulation strategies who, consequently, experience more negative emotions. Therefore, it is possible to help the elderly reduce negative emotions connected to aging and death anxiety by teaching them to adopt adaptive emotion regulation strategies such as acceptance, positive reappraisal, and self-positive refocus [15].

However, negative emotional representations predicted only 9% of death anxiety in older adults, indicating a weak determination coefficient. Death anxiety is a multidimensional variable influenced by numerous factors. The relevant and predictive factors may vary depending on social and environmental factors, as well as different attitudes towards death [2].

Among the demographic factors, employment status significantly predicted death anxiety in older adults. The research demonstrated higher death anxiety levels among retired people. This corroborates with findings from Mani et al. [48], which also identified employment as a predictor of death anxiety in older adults, noting higher anxiety levels among retirees than those still working [48]. Segel-Karpas and Bergman [49] examined 574 Israeli Jewish elders and found that the relationship between retirement anxiety and depressive symptoms was mediated by death anxiety. This suggested that perceiving retirement as an "end" might increase awareness of mortality and, consequently, death anxiety, contributing to poorer mental health [49]. Retirement is a significant life event with a widespread impact on the psychophysical and financial domains [50]. Retirement may be seen as a reward for years of work, but it can also trigger stress, anxiety, and depression. In this context, retirement anxiety might be a reason for the high death anxiety among retirees, which necessitates further research.

*5.1. Limitations.* The major limitations of this study were as follows.

Initially, the study was confined to a specific region of Eastern Iran, namely, the city of Esfarayen, which possessed religious significance and traditional attributes; consequently, the applicability of the results is restricted. Additionally, the data that are now available only offer a cross-sectional picture of the COVID-19 era, making it impossible to determine the causal relationship between independent causes and perception of aging. Furthermore, the authors' inability to account for significant confounding variables, including personality traits, attitudes toward government restrictions on COVID-19, and measures of quantity and quality, as well as assessments of daily life restrictions imposed in response to the pandemic, was a consequence of the restricted scope of the study variables. Additional research employing longitudinal designs and encompassing a broader range of variables is required to examine this matter thoroughly.

## 6. Conclusion

We found that only the dimension of negative emotions in aging perception could predict death anxiety in older adults. Consequently, older adults with more negative feelings about aging experienced higher death anxiety levels. This finding diverges from most previous studies, highlighting the need for more in-depth research. Furthermore, as fear of death is a persistent concern for older adults, it is crucial for organizations serving this demographic to formulate strategies to manage this phenomenon. Also, implementing various counseling approaches to reduce death anxiety in older adults is highly recommended. Given the certainty of aging and the associated stressors and anxieties, particularly death anxiety, and their impact on older adults, it is essential to educate this group on managing death anxiety. Furthermore, we can bolster older adults' mental health by improving their ability to cope with death anxiety.

### Data Availability

The data used to support the findings of this study have not been made available because this was not an approval of the participant consent process.

### Ethical Approval

Ethical approval for this study was obtained from the Ethics Committee of the Esfarayen Faculty of Medical Sciences, Iran (code: IR.ESFARAYENUMS.REC.1401.001). This study was performed following the Helsinki Declaration.

### Consent

All participants in the research gave their informed consent before inclusion in the study.

### Conflicts of Interest

The authors declare that they have no conflicts of interest.

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