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HEALTH LITERACY AND ACTIVE AGING ATTITUDES AMONG ADULTS AGED 55–65 IN TÜRKİYE: A CROSS-SECTIONAL STUDY

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ABSTRACT

Aim: This study aimed to evaluate health literacy levels and active aging attitudes among pre-elderly adults aged 55–65 years living in Edirne, Türkiye, and to examine the association between these two constructs.

Methods: This cross-sectional study was conducted between February and March 2023 in family health centers in Edirne. A total of 387 adults aged 55–65 years were included. Data were collected using a sociodemographic questionnaire, the Adult Health Literacy Scale, and the Active Aging Scale. Correlation analyses and multiple linear regression models were used to examine associations.

Results: The mean age of participants was 59.9 ± 3.1 years, and 52.7% were women. Mean scores for both health literacy and active aging attitudes were moderate relative to the theoretical score ranges of the respective scales. Health literacy was positively correlated with active aging attitudes ($\rho = 0.470$, $p < 0.001$). Higher education, higher income, and better self-rated health were independently associated with higher scores in both domains. Smoking was negatively associated with active aging attitudes but not with health literacy.

Conclusion: Among pre-elderly adults aged 55–65 years, health literacy was positively associated with active aging attitudes, with a moderate-strength correlation. Education, income, and perceived health emerged as key correlates, while smoking was associated with less favorable active aging attitudes. Although causal inferences cannot be drawn due to the cross-sectional design, the findings suggest that health literacy may represent an important correlate of active aging in this age group.

Keywords: Health literacy, active aging, pre-elderly, cross-sectional study, Türkiye

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INTRODUCTION

Population aging has become one of the most significant demographic transformations of the 21st century. Globally, the proportion of people aged 60 years and above is projected to double from 12% in 2015 to 22% by 2050, creating unprecedented challenges for health systems, social services, and economies [1]. Aging is not a uniform process; genetic predispositions, environmental exposures, and lifestyle factors all interact to shape individual aging trajectories [2]. These changes increase susceptibility to chronic diseases, functional decline, and social isolation. Consequently, promoting active and healthy aging has emerged as a critical public health goal, emphasized by the World Health Organization's "Decade of Healthy Ageing 2021–2030" framework [3].

Active aging is defined as the process of optimizing health, participation, and security to improve quality of life as people age [4]. It goes beyond the absence of disease, highlighting physical, psychological, and social well-being as equally essential. Studies have shown that pre-elderly with positive active aging attitudes maintain better functional independence, engage in meaningful social roles, and report higher life satisfaction [5,6]. Determinants of active aging include socioeconomic status, education, health behaviors, and access to supportive environments [7]. However, cognitive and informational capacities - particularly health literacy - are increasingly recognized as powerful predictors of how older individuals manage aging-related challenges [1-8].

Health literacy refers to the ability to access, understand, evaluate, and apply health-related information in order to make informed decisions regarding health care, disease prevention, and health promotion [9]. Low health literacy is widespread among pre-elderly and is linked to poor medication adherence, reduced preventive service utilization, and higher rates of hospitalization and mortality [10–12]. Conversely, individuals with adequate health literacy are more likely to engage in self-care, adopt healthier lifestyles, and utilize health services effectively, thereby supporting healthier and more active aging trajectories [13]. Despite its importance, health literacy among pre-elderly and pre-elderly in many countries - including Türkiye - remains insufficient, warranting further research and targeted interventions [9-14].

The relationship between health literacy and active aging has attracted growing scholarly attention. Evidence suggests that individuals with higher health literacy are better equipped to navigate complex health systems, sustain social participation, and maintain functional independence [15,16]. However, most studies have either focused on pre-elderly above 65 years or examined these concepts in isolation, without adequately addressing how health literacy and active aging attitudes interact in the pre-elderly age group (55–65 years). This age range is particularly critical, as it represents a transitional phase where early interventions may prevent functional decline and foster successful aging [15,16]. Türkiye is undergoing rapid demographic transition, with the proportion of individuals aged 60 years and older steadily increasing [17]. Identifying factors that enhance active aging in this context is essential for informing both public health policy and primary care practices.

Based on the existing literature, we hypothesized that higher health literacy levels would be positively associated with more favorable active aging attitudes among adults aged 55–65 years. Additionally, we hypothesized that sociodemographic factors such as higher educational attainment, higher income level, and better self-rated health would be independently

associated with both higher health literacy and more positive active aging attitudes, whereas unhealthy lifestyle behaviors such as smoking would be negatively associated with active aging. Therefore, the present study aimed to evaluate health literacy levels and active aging attitudes among adults aged 55–65 years in Edirne, Türkiye, and to explore the association between these two domains. By addressing this relationship, the study contributes evidence to guide interventions promoting health literacy as a pathway to support active and healthy aging.

METHODS

Study Design and Setting

This cross-sectional study was conducted between February and March 2023 in family health centers in Edirne.

Ethics approval

The study was approved by the Ethics Committee of Trakya University Hospital (Approval date: 27 February 2023; Decision No: 03/24). The study was conducted in accordance with the principles of the Declaration of Helsinki, and all participants provided informed consent prior to participation.

Participants

Participants were recruited from family health centers located in the city center. The study population included adults aged 55–65 years who were registered at family health centers in Edirne. Inclusion criteria were: (1) being between 55 and 65 years of age, (2) residing in Edirne during the study period, (3) attending a family health center for any reason during the data collection period, and (4) willingness to participate voluntarily. Individuals with severe cognitive or psychiatric disorders that could hinder questionnaire completion were excluded. A total of 387 participants (204 women and 183 men) were included in the study.

Data Collection Tools

Sociodemographic and lifestyle characteristics (age, sex, marital status, education, employment, income status, smoking, alcohol use, and chronic diseases) were recorded using a structured questionnaire. Two validated instruments were administered: Adult Health Literacy Scale (AHLS) and Active Aging Scale (AAS). Health literacy was assessed using the AHLS. The scale was developed by Sezer and Kadıoğlu to evaluate health literacy competencies among adults in Türkiye. The Turkish validity and reliability study of the scale was conducted in 2013 by the same authors. The AHLS consists of 23 items, including 22 items assessing general health knowledge, medication use, and anatomical knowledge, and one visual (figure-based) item. The scale includes various item formats such as yes/no questions, multiple-choice items, fill-in-the-blank questions, and matching tasks. Scoring is based on item type, with correct responses scored as 1 point and incorrect or negative responses scored as 0 points. The total score ranges from 0 to 23, with higher scores indicating higher levels of health literacy. The original validation study reported adequate psychometric properties, with a Cronbach's alpha coefficient of 0.77 and a test–retest reliability coefficient of 0.87 [18].

Active aging was assessed using the AAS developed by Rantanen et al. and adapted into Turkish with validity and reliability testing by Erbil and Hazer [19,20]. The instrument includes 17 activity items grouped under four domains: goals (willingness to do), functional capacity (ability to do), opportunities (opportunity to do), and activity (frequency of doing). Items are rated on a 5-point scale from 0 (least active) to 4 (most active). Subscale scores range from 0 to 68, and the total score ranges from 0 to 272, with higher scores indicating a higher level of active aging.

Since no validated cut-off values exist, scores were interpreted descriptively based on scale ranges.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were presented as mean ± standard deviation (SD), median (interquartile range, IQR), or frequency and percentage. Normality of continuous variables was tested using the Kolmogorov–Smirnov and Shapiro–Wilk tests. Group comparisons were performed with the Mann–Whitney U test, Kruskal–Wallis test, and chi-square test, as appropriate. Correlations between health literacy and active aging scores were examined using Spearman's correlation analysis. **Multiple linear regression analysis was conducted to determine the independent predictors of HL and active aging.** Multicollinearity was assessed using variance inflation factors (VIF), and no significant multicollinearity was detected (VIF < 5). Regression assumptions were checked and met. A p-value <0.05 was considered statistically significant.

RESULTS

A total of 387 individuals participated in the study, comprising 204 women (52.7%) and 183 men (47.3%). The mean age was 59.9 ± 3.1 years. Most participants were married (84.5%), retired (62.1%), and had completed primary or secondary education (71.3%). Approximately 38.2% reported having at least one chronic disease, and 27.1% were current smokers. Sociodemographic and health-related characteristics of the participants are presented in Table1.

Table 1. Sociodemographic and Health Characteristics of Participants

Variable	n (%)
Age, mean ± SD	59.9 ± 3.1
Sex – Female	204 (52.7)
Sex – Male	183 (47.3)
Marital status – Married	327 (84.5)
Marital status – Single/widowed/divorced	60 (15.5)
Education – Primary/Secondary	276 (71.3)
Education – High school or higher	111 (28.7)
Employment – Retired	240 (62.1)
Employment – Employed	147 (37.9)
Chronic disease (yes)	148 (38.2)
Current smoker (yes)	105 (27.1)

The mean total AHLS score was located around the midpoint of the scale range across the sample. Health literacy scores differed significantly by educational attainment, income level, and self-rated health status ($p < 0.05$). Participants with higher education, higher income, and better perceived health had higher health literacy levels. No significant differences were observed by sex, marital status, or presence of chronic disease. These findings are shown in Table 2.

Table 2. Adult Health Literacy Scores by Sociodemographic Variables

Variable	AHLS Score, mean ± SD	p-value
Sex (Female vs. Male)	13.9 ± 3.2 vs. 14.3 ± 3.1	0.182
Education (Low vs. High)	13.1 ± 2.8 vs. 15.2 ± 3.4	<0.001
Income (Low vs. High)	13.0 ± 2.9 vs. 14.8 ± 3.2	<0.001
Self-rated health (Poor vs. Good)	12.8 ± 3.1 vs. 15.0 ± 3.2	<0.001
Chronic disease (Yes vs. No)	13.7 ± 3.0 vs. 14.2 ± 3.3	0.347

The overall mean AAS score was located around the midpoint of the scale range. Higher AAS scores were observed among participants with higher educational attainment, better self-rated health, and non-smokers ($p < 0.05$). Chronic disease status did not significantly affect overall AAS scores, although participants with chronic diseases scored lower in functional capacity and participation frequency subscales. Details are provided in Table 3.

Table 3. Active Aging Attitudes by Sociodemographic Variables

Variable	AAS Score, mean ± SD	p-value
Sex (Female vs. Male)	144.2 ± 52.1 vs. 146.8 ± 50.3	0.521
Education (Low vs. High)	138.9 ± 49.7 vs. 154.7 ± 53.2	0.004
Income (Low vs. High)	139.8 ± 48.9 vs. 155.3 ± 52.7	0.003
Self-rated health (Poor vs. Good)	137.1 ± 47.5 vs. 156.2 ± 54.1	<0.001
Chronic disease (Yes vs. No)	141.7 ± 51.6 vs. 147.9 ± 52.8	0.562
Smoking (Yes vs. No)	138.2 ± 50.4 vs. 150.7 ± 51.9	0.022

Spearman correlation analysis demonstrated a significant positive correlation between health literacy and active aging attitudes. Specifically, total AHLS scores were positively correlated with AAS total scores ($\rho = 0.470$, $p < 0.001$). Positive correlations were also observed between AHLS and AAS subscales: willingness ($\rho = 0.408$, $p < 0.001$), functional capacity ($\rho = 0.397$, $p < 0.001$), opportunities ($\rho = 0.328$, $p < 0.001$), and participation frequency ($\rho = 0.370$, $p < 0.001$). These correlations are summarized in Table 4.

The multivariate linear regression analysis revealed that education level, income, and self-rated health were the strongest predictors of both health literacy and active aging (Table 5). Higher education was significantly associated with increased health literacy ($\beta=0.32$, $p<0.001$) and active aging ($\beta=0.29$, $p<0.001$). Similarly, higher income positively influenced health literacy ($\beta=0.21$, $p=0.008$) and active aging ($\beta=0.19$, $p=0.014$). Good self-rated health also showed a strong positive association with both health literacy ($\beta=0.27$, $p<0.001$) and active aging ($\beta=0.31$, $p<0.001$). Smoking did not significantly affect health literacy ($p=0.249$) but was negatively associated with active aging ($\beta=-0.12$, $p=0.041$). In contrast, age, sex, and the presence of chronic disease were not significantly associated with either outcome.

Table 4. Correlation between Health Literacy and Active Aging Attitudes

Variable	Spearman's ρ	p-value
AHLS – AAS Total	0.470	<0.001
AHLS – Willingness	0.408	<0.001
AHLS – Functional Capacity	0.397	<0.001
AHLS – Opportunities	0.328	<0.001
AHLS – Participation Frequency	0.370	<0.001

Table 5. Multivariate Linear Regression Analysis of Factors Associated with Health Literacy and Active Aging Attitudes

	Health Literacy		Active Aging	
Predictor Variables	β	p-value	β	p-value
Age	-0.05	0.412	-0.06	0.385
Sex (Female = 1)	-0.08	0.192	-0.07	0.214
Education (High = 1)	0.32	<0.001	0.29	<0.001
Income (High = 1)	0.21	0.008	0.19	0.014
Self-rated health (Good = 1)	0.27	<0.001	0.31	<0.001
Chronic disease (Yes = 1)	-0.06	0.318	-0.05	0.342
Smoking (Yes = 1)	-0.07	0.249	-0.12	0.041

The final regression models explained 34% of the variance in health literacy (adjusted $R^2 = 0.34$) and 38% of the variance in active aging attitudes (adjusted $R^2 = 0.38$).

DISCUSSION

In this cross-sectional study conducted among adults aged 55–65 years in Edirne, mean health literacy and active aging scores were located around the midpoints of their respective scale ranges. Higher educational attainment, higher income, and better self-rated health were consistently associated with higher scores on both the AHLS and the AAS. Women exhibited slightly lower health literacy than men, while smoking was associated with less favorable active aging attitudes. Chronic disease status did not demonstrate a significant independent association. Importantly, health literacy showed a statistically significant positive association with overall active aging attitudes, with a moderate-strength correlation, as well as with all AAS subdimensions, including willingness, functional capacity, opportunities, and participation frequency.

The findings align with previous evidence identifying education and socioeconomic status as key determinants of both health literacy and aging-related outcomes. Individuals with higher education and income levels exhibit better health literacy, which is associated with healthier behaviors and greater social participation. Similarly, studies reported that health literacy is

positively influenced by education, self-rated health, and quality of life, despite declining with age [21–23]. The strong association observed between self-rated health and both domains in the present study further highlights the close interplay between perceived well-being and engagement in health-promoting behaviors.

The observed positive association between health literacy and active aging attitudes supports earlier research suggesting that individuals with stronger health literacy are more likely to engage in preventive behaviors, maintain functional independence, and sustain social involvement. By focusing on the pre-elderly age group (55–65 years), this study extends existing literature and emphasizes this transitional life stage as a critical window for preventive interventions aimed at promoting healthy and active aging [24–26]. Although causal inferences cannot be drawn, the consistent associations across multiple domains suggest that health literacy may represent an important correlate of active aging in this population.

Smoking was negatively associated with active aging attitudes but not with health literacy. This finding is consistent with prior studies indicating that unhealthy lifestyle behaviors are linked to reduced functional capacity, lower social participation, and less positive perceptions of aging. Smoking may limit physical endurance and participation in social activities, thereby adversely affecting active aging attitudes independent of informational capacity. From a public health perspective, these results underscore the potential value of integrated primary care and community-based programs that combine health literacy promotion with lifestyle counseling and opportunities for social participation. Policies aligned with the WHO Decade of Healthy Ageing (2021–2030) that prioritize health literacy enhancement may contribute to more resilient, engaged, and functionally independent aging populations [25,29–32].

Strengths of this study include the use of validated instruments (AHLS and AAS), a relatively large sample size, and a focus on a pre-elderly age group that is often underrepresented in aging research. Limitations include the cross-sectional design, which precludes causal inference, reliance on self-reported data, and the single-city, family health center–based sampling, which may have introduced selection bias and limited the generalizability of the findings to rural areas, other regions of Türkiye, or individuals with restricted access to primary care. Additionally, although correlations with Active Aging Scale subdimensions were examined, multivariate analyses were conducted using only total scale scores, potentially obscuring domain-specific associations. Therefore, the findings should be interpreted cautiously when generalizing to rural populations or older adults not regularly attending primary care services.

In conclusion, this study demonstrated that health literacy is positively associated with active aging attitudes among adults aged 55–65 years, with a moderate-strength correlation. Although causal relationships cannot be inferred due to the cross-sectional design, the findings suggest that health literacy may represent an important correlate of active aging. Educational attainment, income level, and perceived health emerged as key factors associated with both domains, while smoking was linked to less favorable active aging attitudes.

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Conflict of Interest: The authors declare that they have no competing interests or conflicts of interest related to this study.

Data Availability: The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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