RESEARCH

# THE RELATIONSHIP BETWEEN HEALTH LITERACY AND HEALTH PERCEPTION IN ELDERLY LIVING IN NURSING HOME IN TURKEY

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## Abstract

**Introduction:** Changes seen by ageing can affect the level of health literacy and the perception of health. This study was carried out to examine the relationship between health literacy and health perception in the elderly.

**Materials and Method:** This study was designed as a descriptive study. The sample consisted of 238 elderly individuals living in two nursing homes in Turkey between July and October 2018. The Health Literacy Scale, the Perception of Health Scale and a questionnaire form were used to collect data.

**Results:** In this study, the mean score of Health Literacy Scale was found to be 47.08 ± 13.38, and the Perception of Health Scale mean score was 52.64 ± 6.50. A low positive correlation was found between Health Literacy Scale and Perception of Health Scale ($r = 0.341$, $p < 0.001$). A statistically significant difference was observed among educational status, occupation, economical status, chronic disease, regular check-ups, participation in nursing home activities on a permanent basis and the Health Literacy Scale mean scores ($p < 0.05$). A statistically significant difference was noted among educational status, occupation, chronic disease and the Perception of Health Scale mean scores ($p < 0.05$)

**Conclusion:** While health perception was found to be moderate in the elderly participants, health literacy was determined as low. This study showed a relationship between health literacy and health perception in the elderly. This results could be used as evidence for designing and providing training programs for health literacy and the perception of health.

***Keywords:*** Aged; Health Literacy; Nursing Homes.

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## INTRODUCTION

Health literacy is an important topic as it contributes to the health and well-being of individuals and the community (1). Health literacy studies concerning elderly people in many countries have indicated that half of individuals aged 65 and over worldwide have below-average basic health literacy (2-4). Some studies conducted in Turkey on older age groups have found health literacy to be significantly lower in younger age groups (5,6). The literature indicates that age-related changes, in particular, influence health literacy. Cognitive and physical dysfunctions and psychological problems in the elderly may relate their ability to understand health knowledge (7).

Given the effects of health literacy on health status and utilization, health outcomes may be determined by disease knowledge, health behavior, and the use of preventive care (8). Disease can be defined as the recognition of factors threatening a person's health or the perception of the meaning and importance of a disease (9). Since the concept of disease has objective and subjective dimensions, persons suffering similar diseases may show different reactions. These reactions can be in different dimensions in the elderly. At this point, the concept of the perception of health comes to the fore. Health perception or perceived health status is an individual's opinion about his or her own health (10). The positive perception of the health status of an individual may positively relate the belief of controlling the future health status and healthy lifestyle behaviors (6). Since elderly people have the highest rates of chronic diseases, the management of health perception and increased health literacy in elderly people will facilitate more effective disease management. Given the increasing elderly population and chronic diseases, it is of great importance for elderly people to evaluate their health literacy and health perceptions. Enhancing health literacy may be an effective strategy to improve elderly people's health status (7). In addition, although the effect of health literacy on health outcomes is an overemphasized issue, studies on elderly people related to this subject are few. Therefore the aim of this study was to investigate the relationship between the health literacy and health perception in elderly living in nursing home in Turkey. This study should increase healthcare professionals' awareness of this issue and will contribute to the related literature.

## MATERIALS AND METHOD

### Population and Sample of the Study

This research was planned as a descriptive study between 1/7/2018 and 1/10/2018 in the two Nursing Home Elderly Care and Rehabilitation Centers in Ankara. There were 119 elderly people in the first center. Of these elderly, 102 elderly who met the criteria of the study participated in the study. In the second center, there were 203 elderly people. Among these elderly, 136 elderly people who met the study criteria participated in the study. The population of this study consisted of 238 elderly in two nursing home elderly care and rehabilitation centers. Elderly persons ≥ 65 years old who were literate and had no visual or hearing problems, mental or cognitive disorders, active terminal conditions, or any psychiatric disorders diagnosed by a physician were included in this study.

In the each facility, there are doctors, nurses and caregivers in the care of elderly individuals. At the same time, there is a dietitian who organizes the nutrition program of the elderly and a physiotherapist who monitors their physical performance. There is also a social worker in the team.

### Data Collection Tools

### Questionnaire

The questionnaire, which has 17 questions, was developed by the researchers after searching the literature. The questionnaire included questions about individuals' sociodemographic attributes and health/disease conditions (age, sex, education

status, marital status, number of children, occupation, level of income, health perception, social security, smoking status, chronic diseases, and the continuous use of drugs), as well as their status in terms of receiving information about their diseases, performing regular check-ups, and participating in nursing home activities).

**Data Collection**

The data were collected by the researchers using the face-to-face interview technique. According to the Turkish validity and reliability study of the "Health Perception Scale", the scale was applied by self-administered. However, since the elderly in our study did not want to write due to weakness muscle-joint functions, the data were obtained by reading the scale items one by one. However it was thought that answering this scale with researchers, not self administration, might lead to a high measurement of health perception. So during the reading, attention was paid not to be guided the elderly. Data collection was carried out by three researchers with a master's degree in nursing. A general briefing was given by the researcher, who has the title of associate professor in nursing, regarding the data collection process.

**Health Literacy Scale**

The Health Literacy Scale (HLS) was first developed by Sorensen with 47 items from the Health Literacy Survey in Europe; Toçi et al. then reduced the scale to 25 items, which were utilized to assess health literacy (11,12). The validity and reliability of this survey in Turkish Language were performed by Aras and Bayik Temel. The scale consisted of 4 subscales, including access (5–25), understanding (7–35), appraisal (8–40), and application (5–25) (13).

A minimum of 25 and a maximum of 125 points can be received from the scale. The internal consistency the Cronbach alpha coefficient, determined from the Health Literacy Scale and its subscales, differed between 0.90 and 0.94 points. The Cronbach alpha value of the scale was found to be 0.92, while the alpha values of the subscales varied between 0.62 and 0.79. The reliability coefficients between the subscale scores and the total scores were between 0.74 and 0.91. The health literacy level increased as the score obtained from the scale increased (13). In the present study, the Cronbach's alpha coefficient of the scale was found to be 0.886.

**Perception of Health Scale (PHS)**

The Perception of Health Scale (PHS) was developed by Diamond et al. (14) in 2007. Its validity and reliability study in the Turkish Language was administrated by Kadioglu and Yildiz. The scale was designed with 5-point Likert questions consisting of 15 items and 4 subfactors. A minimum of 15 and a maximum of 75 points can be received from the scale. The Cronbach alpha value of the scale is between 0.82 and 0.91. While a high score obtained from the scale refers to good health perception, a low scale score shows poor health perception (15).

In this study, the PHS's KMO value was 0.714, and the Bartlett's test value was 936,447, which was statistically significant ($p<0.05$). In order for the sample size to be sufficient, the Kaiser-Meyer-Olkin (KMO) index value should be at least 0.60 (16). For this reason, it was seen that the sample size was sufficient and as a result of the exploratory factor analysis performed after KMO, the Health Perception Scale was collected in 4 dimensions and the rate of explaining the total variance was 55.305%. The internal consistency coefficient (Cronbach's Alpha) of the scale was found to be 0.663. For this study, the scale was found to be reliable because the Crohn's alpha value was between $0.6 \leq \alpha < 0.8$ (17).

**Statistical Analysis**

The data analysis was performed using the Statistical Package for Social Science (SPSS) version 15.0. The suitability of the data for normal distribution has been assessed with *Kolmogorov-Smirnov* test. A Mann-Whitney U test, a non-parametric test, was utilized to compare the scores of non-normally distributed two-group variables, and a Kruskal Wal-

lis test was administrated to compare the scores of three or more group variables. An independent samples T-test, a parametric test, was utilized to compare the scores of normally distributed two-group variables, and a one-way analysis of variance (ANOVA) test was administrated to weigh the scores of three or more group variables. A Pearson's correlation analysis was used to establish the correlations between HLS and PHS scales; and Tukey's Honestly Significant Difference (HSD) Test for normally distributed variables and Bonferroni (Dunn) Test for abnormally distributed variables were used for further analysis. A multiple regression analysis was utilized to determine the variables related the HLS mean score. The construct validity of the PHS was examined by exploratory factor analysis.

### Ethical Considerations

To collect the data, necessary approval was obtained from the Ethics Committee for Non-Medical and Medical Research of KTO Karatay University Faculty of Medicine (approval number and date: 41901325-0.50.99/ 03.05.2018/2018-008), and written permission was received from the Ministry of Family and Social Policies. Consent was received from the elderly who agreed to participate in this study to protect their rights; they were informed of the purpose of the study and were reminded that they had the right to refuse to participate or to withdraw from the study at any time.

## RESULTS

The mean age of the elderly persons included in the study was 71.59 ± 8.41. The distribution of each age range was as follows: 150 (63.0%) participants were 65-74 years of age, 68 (28.6%) were 75-84 years of age and 20 (8.4%) were aged 85 or older.

Of these 238 participants, 71.8% had been diagnosed with chronic diseases (n=171). Of the participants, 79% stated that they went for regular check-ups, and 82.4% were continuously using drugs. Of all the participants, 73.5% had worked previously, 42% were found to permanently attend nursing home activities (Table 1).

In our study, the mean score of the HLS was found to be 47.08 ± 13.38, and the PHS mean score was determined as 52.64 ± 6.50. A low positive correlation was found between HLS and PHS (r = 0.341, p **<0.001**) (Table 2).

The PHS mean score was higher in female (53.70 ± 5.91) than in male participants (51.86 ± 6.81). A statistically significant difference was observed among educational status, working status, chronic disease, and PHS mean scores ($p < 0.05$) (Table 3). According to the Post Hoc analysis, the mean score of the literate respondents (46.72±5.07) was statistically significantly lower compared to the primary school (51.76±5.67), the secondary school (52.87±6.36), the high school (53.75±5.66) and university graduate (53.98±7.38) ($p < 0.05$).

In our study, It was found a statistically significant difference between HLS mean scores according to educational status. According to the Post Hoc analysis, the mean score of the literate respondents (38.20 ± 14.99) was statistically significantly lower compared to the primary school (44.18±11.46), the secondary school (45.79±10.46), the high school (48.12±13.72) and university graduate (52.08 ± 12.88) ($p<0.05$). Also, a significant difference was noted between the HLS mean score of the participants and their working status ($p < 0.05$), and the HLS mean score of of those who had never worked (51.54 ± 15.83) was significantly higher than the scores of those who had worked previously (45.47 ± 12.03). The HLS mean score of individuals with a poor economical status was significantly lower than those with moderate or good economical status. The HLS mean score of respondents without chronic disease (48.30 ± 13.63) was statistically significantly higher than those with chronic disease ($p < 0.05$). In addition, the HLS mean score of those going for regular check-ups (50.62 ± 12.76) was statistically higher compared to those not going for regular check-ups ($p < 0.05$). Post hoc analysis was found that the

**Table 1.** Descriptive features of the participants (Ankara, Konya-Turkey 2018)

| **Age Mean±SD, Median (Min-Max)** | **71.59±8.41** | **72 (52 -92)** |
|---|---|---|
| 65-74<br>75-84<br>85+ | 150<br>68<br>20 | 63.0<br>28.6<br>8.4 |
| **Sex** | **Number** | **%** |
| Female | 101 | 42.4 |
| Male | 137 | 57.6 |
| **Education Status** | | |
| Literate | 57 | 23.9 |
| Primary school graduate | 83 | 34.9 |
| Secondary school graduate | 39 | 16.4 |
| High school graduate | 34 | 14.3 |
| University graduate | 25 | 10.5 |
| **Marital Status** | | |
| Single | 109 | 83.6 |
| Married | 39 | 16.4 |
| **Having Children** | | |
| Yes | 190 | 79.8 |
| No | 48 | 20.2 |
| **Number of Children (n=190)**<br>**Mean±SD, Median (Min-Max)** | 3.39±1.77, | 3 (1-10) |
| 1-2 | 74 | 38.9 |
| 3-4 | 66 | 34.7 |
| >5 | 50 | 26.3 |
| **Working status** | | |
| Had not worked previously<br>Had worked previously | 63<br>175 | 26.5<br>73.5 |
| **Economical Status** | | |
| Good | 81 | 34.0 |

| | | |
|---|---|---|
| Moderate | 140 | 58.8 |
| Poor | 17 | 7.1 |
| **Diagnosed Chronic Disease** | | |
| Yes | 171 | 71.8 |
| No | 67 | 28.2 |
| **Getting Knowledge About Disease (n=171)** | | |
| Yes | 171 | 100.0 |
| No | 0 | 0.00 |
| **Source of Knowledge** | | |
| Nurse | 27 | 15.8 |
| Physician | 138 | 80.7 |
| Other (friend. Another patient etc.) | 6 | 3.5 |
| **Attending to Regular Checks** | | |
| Yes | 188 | 79.0 |
| No | 50 | 21.0 |
| **Continuous Use of Drugs** | | |
| Yes | 196 | 82.4 |
| No | 42 | 17.6 |
| **Engagement in Nursing Home Activities** | | |
| Always | 100 | 42.0 |
| Sometimes | 51 | 36.6 |
| Never | 87 | 21.4 |

**Table 2.** Mean scores received from hls and phs scales of the participants (Ankara, Konya-Turkey, 2018)

| SCALE | Mean±SD | Median(Q1-Q3) | Min | Max | r | p |
|---|---|---|---|---|---|---|
| HLS | 47.08±13.38 | 46.00(37.75-55.25) | 25 | 99 | 0.341 | **<0.001** |
| PHS | 52.64 ±6.5 | 51.00(48.00-56.00) | 28 | 69 | | |

[a]Pearson correlation analysis was used

HLS mean score participants permanently participating in nursing home activities (52.61 ± 14.68) was statistically higher than the scores of individuals who never (48.23±12.4) or sometimes (43.25±12.42) participated in these activities ($p < 0.05$) (Table 3).

In the regression analysis conducted within the scope of this study, the model established by utilizing the variables that predict health perception was significant ($F = 13.368$; $p$ **<0.001**). Chronic disease and health literacy score were found to relate the total health perception score. DurbinWatson test was used to test whether there were autocorrelation and multicollinearity problems in the research data and Variance Inflation Factor (VIF) values were used. Durbin-Watson coefficients, which are expected to be between 1.5 and 2.5, were found to be 2.082 in this study. In addition, it is stated that VIF values should be less than 10 so that there is no multicollinearity problem. In this study, VIF values were found below 10 (1.060-2.259). Thus, it was concluded that there is no autocorrelation and multicollinearity problem in the data set. This result indicates that the model was well established.

In Table 4 the variables of education status, sex, economical status, working status, chronic disease and health literacy score were transferred to the multivariable linear regression model. Overall, these variables predicted 23.8% of the change in health perception score was explained by the above-mentioned variables ($r = 0.258$, $r^2 = 0.238$). The study found two variables (chronic disease and health literacy score) that relate perception of health statistically significant.

## DISCUSSION

In our study, when the HLS total mean score of the elderly persons was evaluated, health literacy levels were found to be low. Previous studies in the literature have also found that elderly people have low or insufficient health literacy levels (2-5). The literature suggests that lower education level was among the strongest predictors associated with insufficient health literacy. Our study revealed that as the educational level of elderly increased, the HLS mean scores also significantly increased, and university graduates had the highest scores. This result is consistent with many studies in the literature (18,19). This result may stem from the fact that education is a functional process that regulates different disciplines in human life and causes behavioral changes.

When the health literacy level of the participants was evaluated according to their occupations, housewives were found to have higher levels of health literacy. This finding is consistent with the study conducted by Cimen and Bayık Temel. However, Özdemir et al. (20) reported that housewives had low health literacy scores in their research. Another study conducted by Ansari et al. (21) reported that the health literacy level of older adults was not significantly related to occupation. In contrast, Liu et al. (19) reported a significant difference in health literacy scores among different factors related to occupation. The reason for the different levels of health literacy for occupational groups in different studies may originate from the socio-cultural differences of elderly people.

Economic status is another factor related the health literacy status of elderly. In our study, the elderly participants assessing their economic status as good had higher health literacy levels. This result is consistent with the results of the previous studies (19-21). It is an expected result that an individual with a good economical status would give more importance to their health and have a high level of health literacy.

Moreover, the health literacy levels of the participants without any chronic disease were higher in our study compared to those with chronic diseases. Similarly Liu et al. (22) reported that the prevalence of chronic diseases was significantly lower among a group with adequate health literacy. This result may be related to health-protective activities of the elderly without chronic diseases. In this study, the

**Table 3.** Mean PHS and HLS scores according to various descriptive characteristics of the participants (Ankara, Konya-Turkey, 2018)

| Descriptive feature | PHS Mean±SD | HLS Mean±SD |
|---|---|---|
| **Age (Mean±SD) Median (Min-Max) 71.59±8.41 72 (52 -92)** | | |
| **65-74**<br>**75-84**<br>**85+** | 52.06±6.37<br>51.78±6.73<br>52.85±6.73<br>$\chi^2$=1.937<br>p:0.380 | 45.92±13.57<br>49.28±12.86<br>48.25±13.31<br>$\chi^2$=4.168<br>0.124 |
| **Sex** | | |
| Female | 53.7±5.91 | 48.69±14.78 |
| Male | 51.86±6.81 | 45.88±12.16 |
| | Z=-2.130<br>**p=.033*** | t=1.560<br>p=.120 |
| **Education Status** | | |
| University graduate | 53.98±7.38[a] | 52.05±12.88 [a] |
| High School | 53.75±5.66[b] | 48.12±13.72 [b] |
| Secondary School | 52.87±6.36[c] | 45.79±10.46 [c] |
| Primary School | 51.76±5.67[d] | 44.18±11.46 [d] |
| Literate | 46.72±5.07[e] | 38.2±14.99 [e] |
| | F=7.267<br>**p<0.001**** | $\chi^2$=27.091<br>**p<0.001**** |
| **Marital Status** | | |
| Married | 52.61±7.46 | 51.87±17.48 |
| Single | 52.64±6.31 | 46.14±12.26 |
| | Z=-.247<br>p=.805 | t=1.957<br>p=.057 |
| **Having Children** | | |
| Yes | 52.51±6.36 | 47.5±13.46 |
| No | 53.14±7.05 | 45.4±13.07 |
| | Z=-.473<br>p=.636 | Z=-.735<br>p=.463 |
| **Workind status** | | |
| Had not worked previously<br>Had worked previously | 50.17±5.80<br>52.72± 6.59<br>Z:-2.868<br>**p:0.004*** | 51.54±15.83<br>45.47±12.03<br>t:-2.708<br>**p:0,007*** |
| **Economical Status** | | |
| Poor | 51.51±7.02 | 42.21±12.61 |
| Moderate | 53.03±6.16 | 48.59±12.93 |

| | | |
|---|---|---|
| Good | 54.76±6.09 | 57.76±11.91 |
| | $\chi^2$=2.400<br>p=.093 | **$\chi^2$=26.211**<br>**p<0.001*** |
| **Diagnosed Chronic Disease** | | |
| No | 53.39±6.31 | 48.3±13.63 |
| Yes | 50.71±6.6 | 43.94±12.26 |
| | Z=-2.676<br>**p=.007*** | t=2.282<br>**p=.023*** |
| **Attending to Regular Checks** | | |
| No | 52.32±6.56 | 46.13±13.41 |
| Yes | 53.82±6.17 | 50.62±12.76 |
| | t=-1.444<br>p=.150 | Z=-2.424<br>**.015*** |
| **Continuous Use of Drugs** | | |
| No | 52.77±6.31 | 47.67±13.37 |
| Yes | 52.02±7.36 | 44.29±13.25 |
| | Z=-.432<br>p=.666 | Z=-1.647<br>p=.100 |
| **Engagement in Nursing Home Activities** | | |
| Sometimes | 51.99±6.36 | 43.25±12.42 [a] |
| Never | 52.96±6.1 | 48.23±12.4 [b] |
| Always | 53.39±7.36 | 52.61±14.68 [c] |
| | $\chi^2$=1.862<br>p=.394 | $\chi^2$=17.384<br>**p<0.001**** |

*The Mann-Whitney U test was used

**The Kruskal-Wallis test was used

a>b>c>d>e According to education level, underlined groups that cause significant differences between groups.

a<b<c According to engagement in nursing home activities, underlined groups that cause significant differences between groups.

**Table 4.** Variables related to the health perception of the participants (Ankara, Konya-Turkey, 2018)

| Variables | B | β | T | p | CI (95%) |
|---|---|---|---|---|---|
| Education status | 0,277 | 0,055 | 0.851 | 0.396 | -0.365-0.920 |
| Sex | 2.065 | 0.158 | 1.958 | 0.051 | -0.013-4.143 |
| Economical status | 0.262 | 0.024 | 0.385 | 0.701 | -1.079-1.603 |
| Chronic disease | 2.891 | 0.201 | 3.443 | **0.001** | 1.237-4.546 |
| Working status | -0.681 | -0.046 | -0.545 | 0.586 | -3.143-1.781 |
| Health Literacy score | -0.190 | -0.393 | -6.309 | **<0.001** | -0.250-(-0.131) |

[a]Multivariate regression analysis was used.

health literacy of elderly people regularly going for check-ups was higher than the ones who did not. Similarly Yoshida et al. (23) reported that individuals with limited health literacy had a low rate of regular medical check-ups. This is an expected result because going for regular check-ups enables an individual to get more information about health and to communicate more with healthcare professionals. Our study also concluded that the health literacy of the elderly respondents continuously participating in nursing home activities was higher compared to those who sometimes or never participated in these activities. This results from exchanges of more information in such social environments.

Perceived health status is often used in the evaluation of the health status of societies (24). In addition, an individual's health perception directly relates his or her healthy lifestyle behaviors (25). In our study, elderly health perception was at a moderate level. Also, a statistically significant difference was noted in our study among the health perception status of elderly and sex, education level, occupation, and the presence of chronic disease. Similarly, Çimen and Bayık Temel (6) reported that one-third of the elderly perceived their health at a moderate level in their study. However, Altay et al. (26) reported in their study that the elderly perceived their health as good and that age, family type, and chronic diseases related their perceptions of health. The reason for the different levels of health perception and the diversity of factors related it in different studies may originate from sociocultural differences in elderly people.

Health literacy and health perception are important health criteria that influence each other. In a study conducted in Turkey, the authors found that as the perceived health level of older individuals increased, their health literacy levels increased (6). Also, Say Şahin et al. (27) reported that health literacy subdimensions are important determinants of the health perception dimensions. Some studies in the literature have also found a similar relationship between health literacy and health perceptions (28,29).

## CONCLUSION

In this study, while the health perception of elderly participants was at a moderate level, their health literacy was low. Variables of sex, education status, occupation, and the presence of diagnosed chronic disease were found to relate the health perception of elderly. In addition, the education status, occupation, economic status, the presence of diagnosed disease, regular check-ups and participation in nursing home activities were found to relate the health literacy level.

In line with these results, carrying out society-based awareness studies is recommended as a way to increase the health perception and health literacy of elderly people.

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