

## Level of Health Literacy among High School Students and Associated Factors

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### Abstract

**Objective:** Identifying the factors that influence health literacy among high school students is vital for improving health education and promoting effective health initiatives. This study aims to evaluate the health literacy levels of high school students and identify the associated factors influencing them.

**Methods:** A descriptive-correlational study was conducted involving 681 high school students from the Fethiye district in Turkey. Data collection utilized a sociodemographic data Form alongside the Health Literacy Scale for School-Age Children. Chi-square tests and multiple logistic regression analyses were applied to explore the relationships between health literacy levels and various socio-demographic and health-related factors.

**Results:** In this study, students' health literacy scores are at a medium level. The results showed significant associations between health literacy levels and factors such as age, economic status, perceived general and mental health, and daily internet and social media usage ( $p < .05$ ). Students aged 15 and above, those with higher economic status, and those who rated their health as good or better demonstrated elevated levels of health literacy.

**Conclusions:** These results underscore the significant impact of age, economic status, internet and social media use, and perceived health on the health literacy levels of high school students. To improve health literacy, it is recommended to integrate health literacy topics into school curricula and organize educational activities such as seminars, conferences, and scientific events. These interventions can foster a health-conscious younger generation and promote better health outcomes.

**Keywords:** Health Literacy, high school students, socio-demographic factors, mental health, health education.

### Öz

#### Lise Öğrencileri Arasında Sağlık Okuryazarlığı Düzeyi ve İlişkili Faktörler

**Amaç:** Lise öğrencileri arasında sağlık okuryazarlığını etkileyen faktörlerin belirlenmesi, sağlık eğitiminin iyileştirilmesi ve etkili sağlık girişimlerinin teşvik edilmesi açısından hayati önem taşımaktadır. Bu çalışma, lise öğrencilerinin sağlık okuryazarlığı düzeylerini değerlendirmeyi ve bunları etkileyen ilişkili faktörleri belirlemeyi amaçlamaktadır.

**Yöntem:** Türkiye'nin Fethiye ilçesinden 681 lise öğrencisini kapsayan tanımlayıcı-ilişkisel bir çalışma yürütülmüştür. Veri toplamada sosyodemografik veri formunun yanı sıra Okul Çağı Çocukları için Sağlık Okuryazarlığı Ölçeği kullanılmıştır. Sağlık okuryazarlığı düzeyleri ile çeşitli sosyo-demografik ve sağlıkla ilgili faktörler arasındaki ilişkileri araştırmak için ki-kare testleri ve çoklu lojistik regresyon analizleri uygulanmıştır.

**Bulgular:** Bu çalışmada, öğrencilerin sağlık okuryazarlığı puanları orta düzeydedir. Sonuçlar, sağlık okuryazarlığı düzeyleri ile yaş, ekonomik durum, algılanan genel sağlık ve ruh sağlığı, günlük internet ve sosyal medya kullanımı gibi faktörler arasında anlamlı ilişkiler olduğunu göstermiştir ( $p < .05$ ). Yaşı 15 ve üzeri olan, ekonomik durumu daha yüksek olan ve sağlığını iyi veya daha iyi olarak değerlendiren öğrencilerin sağlık okuryazarlığı düzeyleri daha yüksek çıkmıştır.

**Sonuçlar:** Bu sonuçlar yaş, ekonomik durum, internet ve sosyal medya kullanımı ve algılanan sağlığın lise öğrencilerinin sağlık okuryazarlığı düzeyleri üzerindeki önemli etkisinin altını çizmektedir. Sağlık okuryazarlığını geliştirmek için, sağlık okuryazarlığı konularının okul müfredatına entegre edilmesi ve seminerler, konferanslar ve bilimsel etkinlikler gibi eğitim faaliyetlerinin düzenlenmesi önerilmektedir. Bu müdahaleler, sağlık bilincine sahip genç bir nesli teşvik edebilir ve daha iyi sağlık sonuçlarını destekleyebilir.

**Anahtar Kelimeler:** Sağlık Okuryazarlığı, Lise Öğrencileri, Sosyo-Demografik Faktörler, Ruh Sağlığı, Sağlık Eğitimi

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## INTRODUCTION

Health literacy encompasses the cognitive and social competencies required for individuals to acquire, comprehend, and effectively utilize health information to maintain and enhance their well-being (Morrison et al., 2019; WHO, 2019). This multifaceted concept includes the ability to adopt healthy behaviors, optimize the use of healthcare services, utilize medical devices in the home setting, critically evaluate health-related information, understand fundamental health concepts and services, and access and assess relevant information (Parnell et al., 2019; Nutbeam, 2021). The level of health literacy is a critical determinant of the health knowledge and future quality of life of younger generations. High school students are in a pivotal stage of developing the knowledge and skills that form the foundation of health literacy (Prihanto et al., 2021). Therefore, the health behaviors of high school students are significantly affected by their level of health literacy (Fleary et al., 2018; Velasco et al., 2021).

High health literacy in students has been shown in national and international literature to promote accurate evaluation of health information, healthy choices and behaviours, ultimately leading to improved sustained health and overall well-being (Tümer & Sümen, 2020; Jafari et al., 2021). Conversely, individuals with low health literacy often lack essential health information, rely on misinformation or inaccurate data for decision-making, and engage in unhealthy behaviors. This deficiency has been shown to negatively impact overall well-being and result in poor health outcomes (Khajouei & Salehi, 2017; Duplaga & Grysztar, 2021). Health literacy empowers young people to embrace healthier lifestyles, develop informed attitudes, and effectively utilize healthcare services (Arslan & Karabey, 2023). However, research has shown that students face limitations in their health literacy levels and conduct (Cheng et al., 2020; Kim et al., 2023; Sarhan et al., 2023). Understanding the determinants that impact the health literacy levels of high school pupils is crucial to devise efficacious health education methods and cultivate a health-savvy younger cohort (Klinker et al., 2020; De Albuquerque et al., 2022).

This study is significant in examining the relationships between socio-demographic factors, health status, anthropometric data, and technology proficiency, all of which contribute to the health literacy levels of high school students. The primary aim of the research was to assess health literacy levels and identify the factors that influence these levels among secondary school students.

## Research Questions

Which socio-demographic factors are associated with high school students' health literacy levels?

What are the factors affecting high school students' health literacy levels such as health status and technology use?

## METHODS

### Participants

The research is a descriptive-correlational study conducted between 15 April – 15 June 2023. In the study, three different high schools (Imam Hatip, Vocational and Anatolian High Schools) in Fethiye district were selected as the sample. These high schools were chosen to represent the socio-economic, cultural and academic differences of the students to examine the diversity in health literacy levels and to increase the representativeness of the general population. These high schools have a total enrollment of 1,737 students, consisting of 599, 342 and 796 students respectively. Using G\*Power 3.1.9.7 software, it was determined that a sample size of 564 students was required to conduct a two-way logistic regression analysis with a power of 0.95, a confidence interval of 95%, and a sampling error of 5% based on an odds ratio of 1.4 (Demidenko, 2007; Buchner et al., 2020). The sample size was increased by 20 percent to account for potential data loss during the survey, which meant that 677 students were included. In the study, 235 students from a high school with 599 students, 134 students from a high school with 342 students, and 312 students from a high school with 796 students were selected as the sample using the stratified sampling method. The study was conducted with a total of 681 students.

### Measures

The study measures included a socio-demographic data form and a health literacy scale for school-aged children.

**Socio-demographic Data Form:** The study used a sociodemographic data form consisting of information on students' age, gender, economic status, general health status, mental health status, body weight, and height measurements (Abacigil et al., 2019) 23-question data form consisting of information on students' computer ownership, use, internet, and social media use (Coşkun & Bebiş, 2015) developed by the researchers in alignment with existing literature.

**Health Literacy Scale for School-Age Children:** The scale comprises 10 items designed to evaluate children's health literacy across five distinct dimensions: theoretical knowledge (items 1, 5), practical knowledge (items 4, 7), critical thinking (items 3, 9), self-awareness (items 8, 10), and citizenship (items 2, 6). Öztürk Haney (2017) conducted a study on the Turkish version of the scale, confirming its validity and reliability with a Cronbach's alpha of 0.77 (Öztürk Haney, 2017). Participants rated each item on a 4-point Likert scale, ranging from 1 (not relevant) to 4 (highly relevant). The cumulative score spans from 10 to 40, where scores between 10 and 25 indicate low health literacy, 26 and 35 signify medium health literacy, and 36

and 40 denote high health literacy. In this study, the scale of Cronbach's alpha was found to be 0.74.

## Procedure

Ethical approval for this study was granted by the Medicine and Health Sciences Ethics Committee of Muğla Sıtkı Koçman University (28.02.2023-35). Necessary permissions were obtained from the relevant authorities to conduct the research. Informed consent was collected from both students and their parents after they were briefed on the study's objectives. Data collection forms were distributed to the students during times coordinated with the school administration. Measurements of students' height and weight were conducted in the designated sports rooms of each school, with the process of filling out forms taking approximately 15 minutes per student and the height and weight measurements taking about 2 minutes each.

## Analysis

The Statistical Package for IBM SPSS 22.0 was used for data analysis. Numbers and percentages were used for the descriptive variables of the study, and the chi-squared test was used to compare descriptive variables and health literacy levels. Multiple logistic regression analysis was used to examine the relationship between descriptive variables and health literacy levels. In this analysis, low health literacy was taken as the reference, and odds ratios (OR) were calculated for the relationship between medium and high health literacy and the descriptive variables. For all statistical analyses,  $p < .05$  was accepted as the level of significance.

## RESULTS

Among the participants in this study, 35% were 16 years old, 56.9% were girls, and 57.3% had an income to cover their expenses. It was found that 3.8% of the students had hearing problems, 30.3% had vision problems, 41% had tooth decay and 52.1% brushed their teeth twice a day. It was determined that 56.6% of the students had a computer or tablet and 80.3% of them were good or better users of the computer or tablet. It was reported that 89.9% of participants had good or higher levels of internet and social media skills, 76.1% of the participants reported using the internet for over three hours daily, and 52.2% indicated that they engaged with social media daily (Table 1).

It was found that 10.7% of the students had chronic diseases. 72.4% of them reported their general health and 68.7% of them reported their mental health as good or better. The Standard Deviation Score (SDS) values of weight, height and body mass index of the students according to age are presented in Table 2. It was noted that 61.8% of the students had moderate health literacy. It was determined that 76.1% of the students obtained health-related information from the internet, 54.3% from health institutions, 43.6% from social media, 31.5% from

television and 22.2% from friends (Table 2).

The comparison of students' health literacy levels against the descriptive variables is detailed in Table 3. The analysis revealed a statistically significant relationship between students' age and their health literacy levels ( $p < .05$ ). Subsequent pairwise comparisons indicated that 17-year-olds exhibited significantly higher health literacy compared to 14-year-olds ( $p < .001$ ), and similarly, 15-year-olds had higher health literacy than 14-year-olds ( $p < .05$ ), with these differences being statistically significant.

A statistically significant variation exists in students' outcomes in economic status and health literacy ( $p < .05$ ) (Table 3). Pairwise comparisons showed that students who described their economic status as having more income than expenses had higher health literacy than those who described their economic status as having less income than expenses ( $p < .05$ ) and income equal to expenses ( $p < .05$ ), and this difference was statistically significant.

A significant relationship was identified between students' self-evaluation of their overall health and their health literacy levels ( $p < .001$ ) (Table 3). Pairwise comparisons indicated that students who rated their general health as excellent exhibited higher health literacy scores compared to those who assessed their health as good ( $p < .05$ ), fair ( $p < .01$ ), or poor ( $p < .01$ ), confirming the statistical significance of these differences. Furthermore, there was a marked statistical significance between students' self-assessed mental health and their health literacy ( $p < .001$ ) (Table 3). Pairwise comparisons revealed that students with a very good perception of their mental health had higher health literacy levels than those who rated their mental health as poor ( $p < .05$ ) or good ( $p < .05$ ), with the differences being statistically significant.

A statistically significant difference ( $p < .01$ ) was found between students' level of social media use and their level of health literacy (Table 3). However, the pairwise comparisons indicated that this difference did not reach statistical significance ( $p > .05$ ). In contrast, a statistically significant correlation was identified between health literacy levels and the duration of internet usage ( $p < .01$ ) (Table 3). In the pairwise comparison, students who reported 0-2 hours of internet use had a statistically significantly higher level of health literacy than students who reported 6-9 hours of internet use ( $p < .05$ ). In addition to students' internet use, the difference between health literacy and social media use duration was statistically significant ( $p < .05$ ) (Table 3). However, after pairwise comparison, this difference was not statistically significant ( $p > .05$ ). Although the difference between students' health literacy level and SDS level according to age was statistically significant ( $p < .01$ ) (Table 3), this difference was not statistically significant ( $p > .05$ ).

**Table 1.** Distribution of socio-demographic and descriptive information of participants

| Variables                                     | Number | %    |
|---|--------|------|
| <b>Age</b>                                    |        |      |
| 14 ages                                       | 67     | 10.2 |
| 15 ages                                       | 218    | 33.3 |
| 16 ages                                       | 229    | 35.0 |
| 17 ages                                       | 140    | 21.4 |
| <b>Gender</b>                                 |        |      |
| Female  | 372    | 56.9 |
| Male  | 282    | 43.1 |
| <b>Economic situation</b>                     |        |      |
| Income more than expenditure                  | 208    | 31.8 |
| Income is equal to expenditure                | 375    | 57.3 |
| Income less than expenditure                  | 71     | 10.9 |
| <b>Hearing problem status</b>                 |        |      |
| No  | 629    | 96.2 |
| Yes   | 25     | 3.8  |
| <b>Visual problem status</b>                  |        |      |
| No  | 456    | 69.7 |
| Yes   | 198    | 30.3 |
| <b>Number of tooth decay</b>                  |        |      |
| None  | 386    | 59.0 |
| 1 piece                                       | 91     | 13.9 |
| 2 pieces                                      | 95     | 14.5 |
| 3 pieces                                      | 47     | 7.2  |
| 4 pieces and more                             | 35     | 5.4  |
| <b>Number of tooth fillings</b>               |        |      |
| None  | 382    | 58.4 |
| 1 piece                                       | 84     | 12.8 |
| 2 pieces                                      | 77     | 11.8 |
| 3 pieces                                      | 45     | 6.9  |
| 4 pieces and more                             | 66     | 10.1 |
| <b>Frequency of brushing</b>                  |        |      |
| 3 times a day                                 | 35     | 5.4  |
| 2 times a day                                 | 341    | 52.1 |
| 1 time a day                                  | 220    | 33.6 |
| Sometimes                                     | 58     | 8.9  |
| <b>Tablet/computer availability</b>           |        |      |
| Yes   | 370    | 56.6 |
| No  | 284    | 43.4 |
| <b>Level of tablet/computer use</b>           |        |      |
| Perfect                                       | 129    | 19.7 |
| Pretty good                                   | 184    | 28.1 |
| Good  | 204    | 31.2 |
| Middle  | 137    | 20.9 |
| <b>Level of internet and social media use</b> |        |      |
| Perfect                                       | 199    | 30.4 |
| Pretty good                                   | 217    | 33.2 |
| Good  | 172    | 26.3 |
| Middle  | 66     | 10.1 |
| <b>Daily internet usage time</b>              |        |      |
| 0-2 hours                                     | 156    | 23.9 |
| 3-5 hours                                     | 335    | 51.2 |
| 6-9 hours                                     | 163    | 24.9 |
| <b>Daily social media usage time</b>          |        |      |
| 0-2 hours                                     | 312    | 47.7 |
| 3-5 hours                                     | 256    | 39.1 |
| 6-9 hours                                     | 86     | 13.1 |

**Table 2.** Distribution of participants' descriptive information on health status and practices

| Variables   | Number | %    |
|---|--------|------|
| <b>Chronic disease status</b>                                 |        |      |
| No  | 584    | 89.3 |
| Yes   | 70     | 10.7 |
| <b>First health institution contacted</b>                     |        |      |
| Family Health Centre  | 350    | 53.5 |
| Hospital  | 304    | 46.5 |
| <b>Perceived general health level</b>                         |        |      |
| Perfect   | 50     | 7.6  |
| Pretty good   | 152    | 23.2 |
| Good  | 272    | 41.6 |
| Not bad   | 151    | 23.1 |
| Bad   | 29     | 4.4  |
| <b>Perceived mental health level</b>                          |        |      |
| Pretty good   | 173    | 26.5 |
| Good  | 276    | 42.2 |
| Not bad   | 154    | 23.5 |
| Bad   | 51     | 7.8  |
| <b>Weight-for-age Standard Deviation Score level</b>          |        |      |
| Overweight  | 124    | 19.0 |
| Normal  | 343    | 52.4 |
| Underweight   | 139    | 21.3 |
| Excessive underweight   | 48     | 7.3  |
| <b>Height for age Standard Deviation Score level</b>          |        |      |
| Normal  | 554    | 84.7 |
| Short   | 86     | 13.1 |
| Excessively short (stunted)                                   | 14     | 2.1  |
| <b>Body mass index for age Standard Deviation Score level</b> |        |      |
| Overweight  | 33     | 5.0  |
| Overweight carries a risk                                     | 88     | 13.5 |
| Normal  | 343    | 52.4 |
| Low   | 121    | 18.5 |
| Extreme Low   | 69     | 10.6 |
| <b>Health literacy levels of students</b>                     |        |      |
| Low   | 125    | 19.1 |
| Medium  | 404    | 61.8 |
| High  | 125    | 19.1 |
| <b>Students' health literacy resources</b>                    |        |      |
| Newspaper/Magazine  | 32     | 4.9  |
| Television  | 206    | 31.5 |
| Internet  | 498    | 76.1 |
| Social media  | 285    | 43.6 |
| Friends   | 145    | 22.2 |
| Institutions  | 355    | 54.3 |
| Scientific Journals   | 95     | 14.5 |

**Table 3.** Comparison of Participants' Health Literacy Levels and Demographic Characteristics

| Variables                                 | Low Health Literacy | Medium Health Literacy | High Health Literacy | $\chi^2$ | p        |
|---|---------------------|------------------------|----------------------|----------|----------|
|   | % (n)               | % (n)                  | % (n)                |          |          |
| <b>Age</b>                                |                     |                        |                      |          |          |
| 14 ages                                   | 29.9 (20)           | 56.7 (38)              | 13.4 (9)             | 14.73    | 0.022*   |
| 15 ages                                   | 22.1 (48)           | 57.3 (125)             | 20.6 (45)            |          |          |
| 16 ages                                   | 17.0 (39)           | 66.8 (153)             | 16.2 (37)            |          |          |
| 17 ages                                   | 12.9 (18)           | 62.9 (88)              | 24.2 (34)            |          |          |
| <b>Gender</b>                             |                     |                        |                      |          |          |
| Female                                    | 19.8 (74)           | 60.8 (226)             | 19.4 (72)            | 0.44     | 0.800    |
| Male                                      | 18.1 (51)           | 63.1 (178)             | 18.8 (53)            |          |          |
| <b>Economic situation</b>                 |                     |                        |                      |          |          |
| Income more than expenditure              | 16.3 (34)           | 58.2 (121)             | 25.5 (53)            | 9.68     | 0.046*   |
| Income is equal to expenditure            | 19.4 (73)           | 64.3 (241)             | 16.3 (61)            |          |          |
| Income less than expenditure              | 25.4 (18)           | 59.2 (42)              | 15.4 (11)            |          |          |
| <b>Perceived general health level</b>     |                     |                        |                      |          |          |
| Perfect                                   | 12.0 (6)            | 48.0 (24)              | 40.0 (20)            | 30.90    | <.001*** |
| Pretty good                               | 16.4 (25)           | 59.2 (90)              | 24.4 (37)            |          |          |
| Good                                      | 16.9 (46)           | 66.2 (180)             | 16.9 (46)            |          |          |
| Not bad                                   | 25.2 (38)           | 62.9 (95)              | 11.9 (18)            |          |          |
| Bad                                       | 34.5 (10)           | 51.7 (15)              | 13.8 (4)             |          |          |
| <b>Perceived mental health level</b>      |                     |                        |                      |          |          |
| Pretty good                               | 30.1 (52)           | 52.6 (91)              | 17.3 (30)            | 28.19    | <.001*** |
| Good                                      | 13.4 (37)           | 68.1 (188)             | 18.5 (51)            |          |          |
| Not bad                                   | 16.9 (26)           | 65.6 (101)             | 17.5 (27)            |          |          |
| Bad                                       | 19.6 (10)           | 47.1 (24)              | 33.3 (17)            |          |          |
| <b>Chronic disease status</b>             |                     |                        |                      |          |          |
| No  | 18.7 (109)          | 61.8 (361)             | 19.5 (114)           | 1.05     | 0.591    |
| Yes                                       | 22.9 (16)           | 61.4 (43)              | 15.7 (11)            |          |          |
| <b>First health institution contacted</b> |                     |                        |                      |          |          |
| Family Health Centre                      | 18.3 (64)           | 66.6 (233)             | 15.1 (53)            | 9.28     | 0.010*   |
| Hospital                                  | 20.1 (61)           | 56.3 (171)             | 23.6 (72)            |          |          |
| <b>Hearing problem status</b>             |                     |                        |                      |          |          |
| No  | 19.2 (121)          | 61.9 (389)             | 18.9 (119)           | 0.47     | 0.791    |
| Yes                                       | 16.0 (4)            | 60.0 (15)              | 24.0 (6)             |          |          |
| <b>Visual problem status</b>              |                     |                        |                      |          |          |
| No  | 19.3 (88)           | 62.1 (283)             | 18.6 (85)            | 0.22     | 0.894    |
| Yes                                       | 18.7 (37)           | 61.1 (121)             | 20.2 (40)            |          |          |
| <b>Number of tooth decay</b>              |                     |                        |                      |          |          |
| None                                      | 18.4 (71)           | 60.4 (233)             | 21.2 (82)            | 5.84     | 0.665    |
| 1 piece                                   | 25.3 (23)           | 60.4 (55)              | 14.3 (13)            |          |          |
| 2 pieces                                  | 18.9 (18)           | 63.2 (60)              | 17.9 (17)            |          |          |
| 3 pieces                                  | 14.9 (7)            | 70.2 (33)              | 14.9 (7)             |          |          |
| 4 pieces and more                         | 17.1 (6)            | 65.7 (23)              | 17.2 (6)             |          |          |
| <b>Number of tooth fillings</b>           |                     |                        |                      |          |          |
| None                                      | 19.1 (73)           | 61.3 (234)             | 19.6 (75)            | 9.19     | 0.326    |
| 1 piece                                   | 14.3 (12)           | 66.7 (56)              | 19.0 (16)            |          |          |
| 2 pieces                                  | 22.1 (17)           | 66.2 (51)              | 11.7 (9)             |          |          |
| 3 pieces                                  | 28.9 (13)           | 53.3 (24)              | 17.8 (8)             |          |          |
| 4 pieces and more                         | 15.2 (10)           | 59.1 (39)              | 25.7 (17)            |          |          |
| <b>Frequency of brushing</b>              |                     |                        |                      |          |          |

**Table 3.** Comparison of Participants' Health Literacy Levels and Demographic Characteristics (Continued)

| Variables                                     | Low Health Literacy | Medium Health Literacy | High Health Literacy | χ <sup>2</sup> | p       |
|---|---------------------|------------------------|----------------------|----------------|---------|
|   | % (n)               | % (n)                  | % (n)                |                |         |
| 3 times a day                                 | 11.4 (4)            | 54.3 (19)              | 34.3 (12)            | 11.10          | 0.085   |
| 2 times a day                                 | 20.8 (71)           | 58.4 (199)             | 20.8 (71)            |                |         |
| 1 time a day                                  | 17.7 (39)           | 66.8 (147)             | 15.5 (34)            |                |         |
| Sometimes                                     | 19.0 (11)           | 67.2 (39)              | 13.8 (8)             |                |         |
| <b>Tablet/computer availability</b>           |                     |                        |                      |                |         |
| Yes   | 14.6 (65)           | 70.4 (232)             | 15.0 (73)            | 1.35           | 0.508   |
| No  | 22.1 (60)           | 62.5 (172)             | 15.4 (52)            |                |         |
| <b>Level of tablet/computer use</b>           |                     |                        |                      |                |         |
| Perfect                                       | 18.6 (24)           | 55.0 (71)              | 26.4 (34)            | 10.62          | 0.101   |
| Pretty good                                   | 16.8 (31)           | 65.3 (120)             | 17.9 (33)            |                |         |
| Good  | 17.2 (35)           | 64.2 (131)             | 18.6 (38)            |                |         |
| Middle  | 25.5 (35)           | 59.9 (82)              | 14.6 (20)            |                |         |
| <b>Level of internet and social media use</b> |                     |                        |                      |                |         |
| Perfect                                       | 23.1 (46)           | 50.3 (100)             | 26.6 (53)            | 18.92          | 0.004** |
| Pretty good                                   | 15.2 (33)           | 67.3 (146)             | 17.5 (38)            |                |         |
| Good  | 19.2 (33)           | 65.7 (113)             | 15.1 (26)            |                |         |
| Middle  | 19.7 (13)           | 68.2 (45)              | 12.1 (8)             |                |         |
| <b>Daily internet usage time</b>              |                     |                        |                      |                |         |
| 0-2 hours                                     | 12.1 (19)           | 66.7 (104)             | 21.2 (33)            | 16.90          | 0.002** |
| 3-5 hours                                     | 17.3 (58)           | 63.6 (213)             | 19.1 (64)            |                |         |
| 6-9 hours                                     | 29.4 (48)           | 53.4 (87)              | 17.2 (28)            |                |         |
| <b>Daily social media usage time</b>          |                     |                        |                      |                |         |
| 0-2 hours                                     | 16.3 (51)           | 64.1 (200)             | 19.6 (61)            | 11.97          | 0.018*  |
| 3-5 hours                                     | 18.0 (46)           | 62.9 (161)             | 19.1 (49)            |                |         |
| 6-9 hours                                     | 32.6 (28)           | 50.0 (43)              | 17.4 (15)            |                |         |
| <b>Weight-for-age SDS level</b>               |                     |                        |                      |                |         |
| Overweight                                    | 16.1 (20)           | 63.7 (79)              | 20.2 (25)            | 10.92          | 0.091   |
| Normal  | 21.0 (72)           | 60.3 (207)             | 18.7 (64)            |                |         |
| Underweight                                   | 17.3 (24)           | 68.3 (95)              | 14.4 (20)            |                |         |
| Excessive underweight                         | 18.8 (9)            | 47.9 (23)              | 33.3 (16)            |                |         |
| <b>Height for age SDS level</b>               |                     |                        |                      |                |         |
| Normal  | 17.3 (96)           | 63.4 (351)             | 19.3 (107)           | 14.52          | 0.006*  |
| Short   | 26.7 (23)           | 58.1 (50)              | 15.2 (13)            |                |         |
| Excessively short (stunted)                   | 42.9 (6)            | 21.4 (3)               | 35.7 (5)             |                |         |
| <b>Body mass index for age SDS level</b>      |                     |                        |                      |                |         |
| Overweight                                    | 11.6 (8)            | 65.2 (45)              | 23.2 (16)            | 5.04           | 0.752   |
| Overweight carries a risk                     | 17.4 (21)           | 65.3 (79)              | 17.3 (21)            |                |         |
| Normal  | 21.0 (72)           | 60.3 (207)             | 18.7 (64)            |                |         |
| Low   | 18.2 (16)           | 62.5 (55)              | 19.3 (17)            |                |         |
| Extreme Low                                   | 24.2 (8)            | 54.5 (18)              | 21.3 (7)             |                |         |

χ<sup>2</sup>=Chi square test, \*p<.05, \*\*p<.01, \*\*\*p<.001

The analysis of factors associated with the determinants of health literacy levels is shown in the study (Table 4). As a result of the analysis, it was found that 15-year-old students (OR: 2.17, 95% CI: 1.04 – 4.56), those who rated their health level as not bad (OR: 2.81, 95% CI: 1.55 – 5.09), those with excellent (OR: 2.40, 95% CI: 1.01 – 5.70) and fairly good (OR: 2.44, 95% CI: 1.16 – 5.14) tablet/PC usage levels, daily internet usage time of 0-2 hours (OR: 3.15, 95% CI: 1.29 – 7.69), 3-5 hours (OR: 1.97, 95% CI: 1.02 – 3.81), those with high weight-for-age (OR: 9.27, 95%

CI: 1.60 – 53.68), those with normal height-for-age (OR: 6.30, 95% CI: 1.18 – 33.64) and those with short height-for-age (OR: 6.06, 95% CI: 1.11 – 33.04), and those with overweight BMI for age SDS levels (OR: 11.56, 95% CI: 1.71 – 78.06) were found to have higher intermediate levels of health literacy (Table 4). In addition, 14-year-old students (OR: 4.32, 95% CI: 1.46 – 12.76) and those who spent 0-2 hours per day using the Internet (OR: 4.08, 95% CI: 1.36 – 12.30) were identified as having elevated levels of health literacy (Table 4).

**Table 4.** Multiple logistic regression analysis for determinants of health literacy levels

| Variables                                 | Medium Health Literacy |      |             |             |             |              | High Health Literacy |      |             |             |              |              |
|---|------------------------|------|-------------|-------------|-------------|--------------|----------------------|------|-------------|-------------|--------------|--------------|
|   | B                      | SE   | OR          | 95% OR      |             | p            | B                    | SE   | OR          | 95% OR      |              | p            |
|   |                        |      |             | Lower       | Upper       |              |                      |      |             | Lower       | Upper        |              |
| <b>Fixed</b>                              | -3.87                  | 1.59 |             |             |             | 0.015        | -3.28                | 1.88 |             |             |              | 0.081        |
| <b>Age</b>                                |                        |      |             |             |             |              |                      |      |             |             |              |              |
| 14 ages                                   | 0.83                   | 0.43 | 2.30        | 1.00        | 5.31        | 0.051        | 1.46                 | 0.55 | <b>4.32</b> | <b>1.46</b> | <b>12.76</b> | <b>0.008</b> |
| 15 ages                                   | 0.78                   | 0.38 | <b>2.17</b> | <b>1.04</b> | <b>4.56</b> | <b>0.040</b> | 0.63                 | 0.52 | 1.87        | 0.68        | 5.15         | 0.226        |
| 16 ages                                   | 0.27                   | 0.38 | 1.31        | 0.62        | 2.77        | 0.472        | 0.49                 | 0.51 | 1.64        | 0.60        | 4.44         | 0.334        |
| 17 ages (Reference)                       | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |
| <b>Gender</b>                             |                        |      |             |             |             |              |                      |      |             |             |              |              |
| Female                                    | 0.17                   | 0.27 | 1.19        | 0.70        | 2.03        | 0.528        | 0.32                 | 0.34 | 1.37        | 0.71        | 2.67         | 0.349        |
| Male (Reference)                          | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |
| <b>Economic situation</b>                 |                        |      |             |             |             |              |                      |      |             |             |              |              |
| Income more than expenditure              | 0.42                   | 0.41 | 1.52        | 0.69        | 3.39        | 0.302        | 0.76                 | 0.52 | 2.14        | 0.78        | 5.89         | 0.140        |
| Income is equal to expenditure            | 0.32                   | 0.37 | 1.38        | 0.67        | 2.85        | 0.382        | 0.31                 | 0.48 | 1.37        | 0.53        | 3.52         | 0.520        |
| Income less than expenditure (Reference)  | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |
| <b>Perceived general health level</b>     |                        |      |             |             |             |              |                      |      |             |             |              |              |
| Perfect                                   | 0.60                   | 0.74 | 1.83        | 0.43        | 7.79        | 0.415        | 1.46                 | 0.88 | 4.28        | 0.76        | 24.08        | 0.099        |
| Pretty good                               | 0.28                   | 0.61 | 1.32        | 0.40        | 4.33        | 0.650        | 0.78                 | 0.80 | 2.18        | 0.46        | 10.36        | 0.327        |
| Good                                      | 0.32                   | 0.55 | 1.38        | 0.47        | 4.07        | 0.559        | 0.41                 | 0.74 | 1.50        | 0.35        | 6.40         | 0.584        |
| Not bad                                   | -0.10                  | 0.54 | 0.91        | 0.31        | 2.63        | 0.854        | -0.41                | 0.75 | 0.67        | 0.15        | 2.91         | 0.588        |
| Bad (Reference)                           | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |
| <b>Perceived mental health level</b>      |                        |      |             |             |             |              |                      |      |             |             |              |              |
| Pretty good                               | 0.60                   | 0.36 | 1.83        | 0.90        | 3.72        | 0.097        | -0.06                | 0.46 | 0.95        | 0.39        | 2.32         | 0.902        |
| Good                                      | 0.16                   | 0.54 | 1.18        | 0.41        | 3.36        | 0.761        | 0.35                 | 0.60 | 1.42        | 0.44        | 4.62         | 0.559        |
| Not bad                                   | 1.03                   | 0.30 | <b>2.81</b> | <b>1.55</b> | <b>5.09</b> | <b>0.001</b> | 0.59                 | 0.38 | 1.80        | 0.86        | 3.77         | 0.121        |
| Bad (Reference)                           | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |
| <b>Chronic disease status</b>             |                        |      |             |             |             |              |                      |      |             |             |              |              |
| No  | 0.13                   | 0.36 | 1.14        | 0.56        | 2.32        | 0.725        | 0.53                 | 0.47 | 1.70        | 0.68        | 4.26         | 0.260        |
| Yes (Reference)                           | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |
| <b>First health institution contacted</b> |                        |      |             |             |             |              |                      |      |             |             |              |              |
| Family Health Centre                      | 0.21                   | 0.23 | 1.23        | 0.78        | 1.95        | 0.374        | -0.37                | 0.29 | 0.69        | 0.39        | 1.21         | 0.198        |
| Hospital (Reference)                      | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |
| <b>Hearing problem status</b>             |                        |      |             |             |             |              |                      |      |             |             |              |              |
| No  | -0.93                  | 0.67 | 0.40        | 0.11        | 1.47        | 0.166        | -0.81                | 0.78 | 0.45        | 0.10        | 2.07         | 0.303        |
| Yes (Reference)                           | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |
| <b>Visual problem status</b>              |                        |      |             |             |             |              |                      |      |             |             |              |              |
| No  | 0.07                   | 0.26 | 1.07        | 0.64        | 1.78        | 0.802        | -0.23                | 0.32 | 0.79        | 0.42        | 1.49         | 0.468        |
| Yes (Reference)                           | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |
| <b>Number of tooth decay</b>              |                        |      |             |             |             |              |                      |      |             |             |              |              |
| None                                      | -0.57                  | 0.55 | 0.57        | 0.19        | 1.67        | 0.302        | -0.10                | 0.69 | 0.90        | 0.24        | 3.46         | 0.881        |
| 1 piece                                   | -0.92                  | 0.60 | 0.40        | 0.12        | 1.29        | 0.125        | -0.75                | 0.76 | 0.47        | 0.11        | 2.11         | 0.326        |
| 2 pieces                                  | -0.45                  | 0.61 | 0.64        | 0.19        | 2.09        | 0.455        | -0.23                | 0.76 | 0.79        | 0.18        | 3.48         | 0.759        |
| 3 pieces                                  | -0.18                  | 0.70 | 0.84        | 0.21        | 3.30        | 0.797        | 0.19                 | 0.89 | 1.20        | 0.21        | 6.84         | 0.835        |
| 4 pieces and more (Reference)             | 0                      |      |             |             |             |              | 0                    |      |             |             |              |              |

**Table 4.** Multiple logistic regression analysis for determinants of health literacy levels (Continued)

| Variables                                     | Medium Health Literacy |      |             |             |              |              | High Health Literacy |      |             |             |              |              |
|---|------------------------|------|-------------|-------------|--------------|--------------|----------------------|------|-------------|-------------|--------------|--------------|
|   | B                      | SE   | OR          | 95% OR      |              | p            | B                    | SE   | OR          | 95% GA OR   |              | p            |
|   |                        |      |             | Lower       | Upper        |              |                      |      |             | Lower       | Upper        |              |
| <b>Number of tooth fillings</b>               |                        |      |             |             |              |              |                      |      |             |             |              |              |
| None  | -0.08                  | 0.43 | 0.93        | 0.40        | 2.15         | 0.859        | -0.33                | 0.50 | 0.72        | 0.27        | 1.90         | 0.503        |
| 1 piece                                       | 0.27                   | 0.54 | 1.30        | 0.45        | 3.75         | 0.623        | 0.11                 | 0.63 | 1.12        | 0.33        | 3.83         | 0.856        |
| 2 pieces                                      | -0.28                  | 0.51 | 0.76        | 0.28        | 2.04         | 0.581        | -1.18                | 0.65 | 0.31        | 0.09        | 1.09         | 0.068        |
| 3 pieces                                      | -0.94                  | 0.56 | 0.39        | 0.13        | 1.16         | 0.091        | -1.08                | 0.69 | 0.34        | 0.09        | 1.31         | 0.117        |
| 4 pieces and more<br>(Reference)              | 0                      |      |             |             |              |              | 0                    |      |             |             |              |              |
| <b>Frequency of brushing</b>                  |                        |      |             |             |              |              |                      |      |             |             |              |              |
| 3 times a day                                 | 0.06                   | 0.74 | 1.06        | 0.25        | 4.53         | 0.935        | 1.16                 | 0.86 | 3.20        | 0.59        | 17.28        | 0.177        |
| 2 times a day                                 | -0.50                  | 0.44 | 0.61        | 0.26        | 1.43         | 0.251        | 0.09                 | 0.57 | 1.09        | 0.36        | 3.30         | 0.879        |
| 1 time a day                                  | -0.19                  | 0.45 | 0.83        | 0.34        | 1.99         | 0.669        | -0.03                | 0.59 | 0.97        | 0.31        | 3.05         | 0.955        |
| Sometimes<br>(Reference)                      | 0                      |      |             |             |              |              | 0                    |      |             |             |              |              |
| <b>Tablet/computer availability</b>           |                        |      |             |             |              |              |                      |      |             |             |              |              |
| Yes   | 0.07                   | 0.25 | 1.08        | 0.66        | 1.75         | 0.770        | -0.23                | 0.31 | 0.80        | 0.44        | 1.46         | 0.462        |
| No (Reference)                                | 0                      |      |             |             |              |              | 0                    |      |             |             |              |              |
| <b>Level of tablet/computer use</b>           |                        |      |             |             |              |              |                      |      |             |             |              |              |
| Perfect                                       | 0.88                   | 0.44 | <b>2.40</b> | <b>1.01</b> | <b>5.70</b>  | <b>0.048</b> | 0.69                 | 0.55 | 1.99        | 0.68        | 5.81         | 0.210        |
| Pretty good                                   | 0.89                   | 0.38 | <b>2.44</b> | <b>1.16</b> | <b>5.14</b>  | <b>0.018</b> | 0.36                 | 0.48 | 1.43        | 0.56        | 3.69         | 0.455        |
| Good  | 0.47                   | 0.33 | 1.59        | 0.83        | 3.05         | 0.161        | 0.49                 | 0.43 | 1.63        | 0.71        | 3.75         | 0.252        |
| Middle (Reference)                            | 0                      |      |             |             |              |              | 0                    |      |             |             |              |              |
| <b>Level of internet and social media use</b> |                        |      |             |             |              |              |                      |      |             |             |              |              |
| Perfect                                       | -0.86                  | 0.51 | 0.42        | 0.16        | 1.15         | 0.091        | 0.52                 | 0.66 | 1.67        | 0.46        | 6.11         | 0.436        |
| Pretty good                                   | -0.17                  | 0.47 | 0.85        | 0.34        | 2.12         | 0.723        | 0.50                 | 0.62 | 1.65        | 0.49        | 5.57         | 0.420        |
| Good  | -0.33                  | 0.45 | 0.72        | 0.30        | 1.75         | 0.468        | 0.07                 | 0.61 | 1.08        | 0.33        | 3.54         | 0.903        |
| Middle (Reference)                            | 0                      |      |             |             |              |              | 0                    |      |             |             |              |              |
| <b>Daily internet usage time</b>              |                        |      |             |             |              |              |                      |      |             |             |              |              |
| 0-2 hours                                     | 1.15                   | 0.46 | <b>3.15</b> | <b>1.29</b> | <b>7.69</b>  | <b>0.012</b> | 1.41                 | 0.56 | <b>4.08</b> | <b>1.36</b> | <b>12.30</b> | <b>0.012</b> |
| 3-5 hours                                     | 0.68                   | 0.34 | <b>1.97</b> | <b>1.02</b> | <b>3.81</b>  | <b>0.043</b> | 0.74                 | 0.43 | 2.09        | 0.90        | 4.86         | 0.087        |
| 6-9 hours (Reference)                         | 0                      |      |             |             |              |              | 0                    |      |             |             |              |              |
| <b>Daily social media usage time</b>          |                        |      |             |             |              |              |                      |      |             |             |              |              |
| 0-2 hours                                     | 0.01                   | 0.47 | 1.01        | 0.40        | 2.50         | 0.991        | -0.09                | 0.60 | 0.91        | 0.28        | 2.93         | 0.877        |
| 3-5 hours                                     | 0.06                   | 0.39 | 1.06        | 0.49        | 2.30         | 0.877        | 0.01                 | 0.51 | 1.01        | 0.37        | 2.76         | 0.978        |
| 6-9 hours (Reference)                         | 0                      |      |             |             |              |              | 0                    |      |             |             |              |              |
| <b>Weight-for-age SDS level</b>               |                        |      |             |             |              |              |                      |      |             |             |              |              |
| Overweight                                    | 2.23                   | 0.90 | <b>9.27</b> | <b>1.60</b> | <b>53.68</b> | <b>0.013</b> | 0.38                 | 1.06 | 1.46        | 0.18        | 11.62        | 0.719        |
| Normal  | 1.20                   | 0.71 | 3.31        | 0.82        | 13.28        | 0.092        | -0.36                | 0.83 | 0.70        | 0.14        | 3.58         | 0.668        |
| Underweight                                   | 1.22                   | 0.64 | 3.39        | 0.97        | 11.84        | 0.056        | -0.38                | 0.73 | 0.68        | 0.16        | 2.87         | 0.601        |
| Excessive underweight<br>(Reference)          | 0                      |      |             |             |              |              | 0                    |      |             |             |              |              |
| <b>Height for age SDS level</b>               |                        |      |             |             |              |              |                      |      |             |             |              |              |
| Normal  | 1.84                   | 0.86 | <b>6.30</b> | <b>1.18</b> | <b>33.64</b> | <b>0.031</b> | 1.04                 | 0.81 | 2.84        | 0.58        | 13.87        | 0.198        |
| Short   | 1.80                   | 0.87 | <b>6.06</b> | <b>1.11</b> | <b>33.04</b> | <b>0.037</b> | 0.57                 | 0.85 | 1.76        | 0.34        | 9.23         | 0.504        |
| Excessively short<br>(stunted) (Reference)    | 0                      |      |             |             |              |              | 0                    |      |             |             |              |              |



**Table 4.** Multiple logistic regression analysis for determinants of health literacy levels (Continued)

| Variables                                | Medium Health Literacy |      |              |             |              | High Health Literacy |      |      |      |        |       |       |
|--|------------------------|------|--------------|-------------|--------------|----------------------|------|------|------|--------|-------|-------|
|  | B                      | SE   | OR           | 95% OR      |              | p                    | B    | SE   | OR   | 95% OR |       | p     |
|  |                        |      |              | Lower       | Upper        |                      |      |      |      | Lower  | Upper |       |
| <b>Body mass index for age SDS level</b> |                        |      |              |             |              |                      |      |      |      |        |       |       |
| Overweight                               | 2.45                   | 0.97 | <b>11.56</b> | <b>1.71</b> | <b>78.06</b> | <b>0.012</b>         | 1.22 | 1.17 | 3.37 | 0.34   | 33.22 | 0.298 |
| Overweight carries a risk                | 1.40                   | 0.78 | 4.05         | 0.88        | 18.77        | 0.074                | 0.43 | 0.95 | 1.53 | 0.24   | 9.91  | 0.654 |
| Normal                                   | 1.04                   | 0.68 | 2.82         | 0.75        | 10.58        | 0.125                | 0.45 | 0.81 | 1.57 | 0.32   | 7.65  | 0.575 |
| Low                                      | 0.80                   | 0.59 | 2.23         | 0.70        | 7.14         | 0.178                | 0.43 | 0.72 | 1.53 | 0.38   | 6.21  | 0.552 |
| Extreme Low<br>(Reference)               | 0                      |      |              |             |              |                      | 0    |      |      |        |       |       |

<sup>1</sup> In this analysis, low health literacy was used as a reference and the factors affecting medium and high health literacy were examined. SE= Standard Error, OR= Odd Ratio, Model fit value  $\chi^2=187.98$ ,  $p<.001$ , Cox and Snell  $R^2= .250$ , Nagelkerke  $R^2= .296$

## DISCUSSION

In this study, students' health literacy scores are at a medium level. Various studies (Paakkari et al., 2018; Sukys et al., 2019; Ozturk & Ayaz-Alkaya, 2020) show that students' health literacy scores are at a medium level. However, there are also studies that highlight that students' health literacy scores are insufficient (Ran et al., 2018; Javier et al., 2019; Nutbeam, 2021). Considering that the general health literacy level of society in adult health literacy studies conducted in Turkey is inadequate or problematic at a rate of 2/3, it can be inferred that the health literacy levels of high school students in this study are comparatively higher than those of their parents (Aygün & Cerim, 2021).

In this study, the Internet ranked first among the sources from which students obtained health-related information. Internet use meets the need for access to understandable information on health issues (Nutbeam & Lloyd, 2021). It is believed that health educators and health information providers can increase the level of health literacy among young people, particularly by making more effective use of Internet-based resources. This has been demonstrated in several studies (Sarhan et al., 2023).

In this study, it was found that the health literacy of the students increased with age. This finding, in line with other studies, highlights that age has a positive effect on health literacy and that age increases the tendency to be aware and informed about health issues (Perry et al., 2017; Cinkil, 2022). Consequently, it is anticipated that as students age, their health literacy levels will improve alongside their desire to acquire more knowledge and awareness about health-related matters. In this context, the design and implementation of health education and awareness programs for age groups is considered an important strategy to increase the health literacy of the society.

Students from higher socioeconomic backgrounds tend to

possess greater levels of health literacy. This is consistent with other studies that have shown a positive correlation between economic status and health literacy (Tümer & Sümen, 2020; Duplaga & Grysztar, 2021). As economic circumstances improve, individuals are likely to be better equipped to evaluate their health status and make effective use of health services and educational resources, thanks to easier access to information.

In this study, it was found that as students' perceived level of general and mental health increased, so did their level of health literacy. Therefore, improving one's health status could also lead to improvements in their health literacy. A study by Karabacak (2019) emphasized this link between health status and literacy, demonstrating that improving one's health status can raise their level of health literacy (Karabacak, 2019). Other studies indicate that people who rate their general health as poor may have inadequate health literacy (Demirli, 2018). Additionally, negative health perceptions can result in insufficient knowledge or misinformation about health issues (De Albuquerque et al., 2022). Enhancing the overall health condition of society is considered an effective strategy to develop and improve health literacy.

In the present study, it was observed that students who use the internet for less than three hours per day and use tablets or computers frequently display higher levels of health literacy. Several studies have revealed that excessive internet use for over five hours adversely affects individuals across various domains, including problem-solving, creative thinking, and perceptual acuity (Kim et al., 2023). However, a different perspective suggests that extended internet usage by young people enhances their health literacy levels (Richtering et al., 2017; Ergün et al., 2019). Nonetheless, contradictory findings indicate that the quality and content of internet and tablet/computer use may have different effects on health literacy, depending on factors such as age group and how individuals use them.

In this study, overweight students were found to have higher levels of health literacy than those with extremely low body weight. Similarly, the findings suggested that students with normal and short height SDS levels within their age group displayed higher levels of health literacy than those with extremely short height. Additionally, it was observed that students with an overweight body mass index SDS level for their age demonstrated higher health literacy levels than those with an extremely low body mass index for their age. The present findings explicate the correlation between health literacy levels and physical indices, namely weight and height. The findings suggest inconclusive results on the association between health literacy and anthropometric indices, including weight for age, height, and body mass index in children. Although certain studies indicate that being overweight for one's age may have a positive correlation with health literacy (Wijga et al., 2018; Chrissini & Panagiotakos, 2021; Zare-Zardiny et al., 2021), other studies report no significant statistical correlation. Therefore, these contradictory findings suggest that additional research is required to understand the multifaceted relationship between health literacy and anthropometry. Several studies have indicated an association between students' anthropometric measures and their nutritional literacy. An important finding in this study is that being excessively short for age is positively associated with children's health literacy.

## CONCLUSIONS

The findings of the study show that high school students generally have a moderate level of health literacy, and the internet is the most common source of information. Factors such as age, economic status, duration of internet use and general health perception were found to have positive effects on health literacy levels. It was also found that students in the normal height and weight range had higher health literacy. It was suggested that seminars, conferences and scientific activities should be organized in schools to increase health literacy, and health literacy topics should be included in the curriculum. It is recommended that researchers interested in the subject can contribute to the literature by conducting similar studies at different educational levels (e.g., university students) and in various regions and evaluating health literacy on a large scale. In addition, studies examining students' use of digital health information and the accuracy of the information they obtain from digital platforms can be conducted. It is thought that these studies may be useful in evaluating the effective use of digital resources in increasing health literacy levels.

## Limitations

The findings of the study represent a specific sample of students among whom the study was conducted. As such, they cannot be extrapolated to all high school students. However, this does not negate the limited generalizability

of the findings. The study's potency is demonstrated using a stratified sampling technique, which enabled the inclusion of a substantial sample size.

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### Author Contributions:

Research idea: EUA, RK, OA, GKM

Design of the study: EUA, RK

Acquisition of data for the study: EUA, RK, OA, GKM

Analysis of data for the study: EUA, RK

Interpretation of data for the study: EUA, RK, OA, GKM

Drafting the manuscript: EUA, RK

Revising it critically for important intellectual content: EUA, RK

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