Health Literacy and Cyberchondria Levels in Healthcare Workers and Their Relationship with Body Awareness and Physical Activity

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_____ **Abstract** _____

Aim: The level of health literacy and cyberchondria of healthcare providers can affect service beneficiaries, and the influence of health literacy and cyberchondria on physical activity and body awareness remains unclear. The aim of this study was to determine the health literacy and cyberchondria levels of healthcare workers and examine their relationship with physical activity level and body awareness.

Methods: This cross-sectional study was conducted between August and November 2021 on 168 healthcare professionals working at the university hospital. The Turkish Health Literacy scale (TSOY-32), Cyberchondria scale, Body Awareness Questionnaire (BAQ), and International Physical Activity Questionnaire-Short Form (IPAQ-SF) were used for outcome measurements.

Results: The TSOY-32 and Cyberchondria scale total scores were 37.76±7.98 and 63.83±19.45, respectively. There were low positive and significant correlations with TSOY-32, BAQ (r=0.213, p=0.006) and IPAQ-SF (r=0.162, p=0.036), while a low negative correlation was found between cyberchondria level and BAQ (r=-0.179, p=0.022) and IPAQ-SF (r=-0.193, p=0.013).

Conclusion: This study shows that, unlike predicted, health professionals did not have perfect health literacy and were found to have moderate cyberchondria. Physical activity and body awareness may affect increasing health literacy and reducing cyberchondria, which will empower individuals to make beneficial health decisions.

Keywords: Exercise, health literacy, health professional, internet usage

Introduction

Modern healthcare systems are complex and often confusing for healthcare consumers because of technological advances and changes in healthcare policies. In this modern system, individuals should take on new roles, such as seeking health information, understanding rights and responsibilities, and making health decisions for themselves and others on an individual, regional, and global scale (1). The definition of personal health literacy has been updated in the Healthy People 2030 report as "the degree to which individuals can find, understand, and use information and services to inform health-related decisions and actions for themselves and others" (2). However, there is a clear difference between the demands of health systems and the health literacy level of people who will benefit from health services (3).

The use of the Internet is large and growing due to changing healthcare models, an increase in health-related information, health cost limitations, health promotion, and disease prevention strategies. It is also attractive to users because it allows anonymous access to a wide variety of health-related information and opinions from anywhere, at any time, and at relatively low costs (4). According to Turkish Statistical Institute (TurkStat) 2021 data, 69.6% of individuals use the internet to search for health-related information (e.g. injury, disease, nutrition, improving health, etc.) (5). But, repetitive health-related information-seeking behavior on the Internet to benefit himself or his loved ones may increase health-related anxiety due to an abundance of unreliable, uncertain, and confusing health-related information (6,7). Although there is no consensus on its definition and conceptualization, cyberchondria emphasizes excessive or repeated online health research that is associated with increased health anxiety (8).

The health literacy level of healthcare providers can affect everyone who receives health care (9). However, it has been reported that despite having the opportunity to obtain information directly from physicians, healthcare professional seek health-related information through different channels, such as the Internet (10). It has been reported that people with high health literacy have higher skills and abilities to acquire health-enhancing behaviors, and therefore, a higher level of health literacy is associated with higher levels of physical activity (11,12). An increase in health literacy may also be effective in reducing cyberchondria (13). Body awareness, known as the attentional focus on and awareness of bodily states, processes, and actions, provides information about body parts and senses, creating an emotional memory for physical capacity (14). Misinterpretations of body sensations and symptoms, health anxiety, and various psychological processes, such as catastrophizing pain, can increase cyberchondria (15). Physical activity level and body awareness can be affected by health literacy and cyberchondria level, but this relationship has not yet been fully explained. The aim of this study was to determine the health literacy and cyberchondria levels of allied health professionals and health officials working in a university hospital. A secondary aim was to examine the relationship between health literacy and cyberchondria with physical activity level and body awareness.

Materials and Methods

Compliance with Ethical Standards

This cross-sectional study was conducted on allied health professionals and healthcare assistants at Pamukkale University Hospitals between August 2021 and November 2021. The study was approved by the Pamukkale University Clinical Research and Ethics Committee of the authors' affiliated institution (approval date: 13.07.2021 and approval number: 13). All study participants provided written informed consent, and the study was carried out according to the Helsinki Declaration's criteria.

Participants

The inclusion criteria were as follows: being allied health professionals and healthcare assistants at Pamukkale University Hospitals, and volunteering to participate in the study. Participants with missing data were excluded from the study.

Assessments

The demographic data of the participants (age, gender, body mass index, occupation, education level) were recorded. The Turkey Health Literacy scale-32 (TSOY-32) scale was used to determine the health literacy level of the participants. The scale is based on the conceptual framework of the European Health Literacy Survey Questionnaire. The scale consists of 32 questions and includes two main dimensions related to health (treatment and service; disease prevention/health promotion) and four factors, including the process of making decisions about health and obtaining information about practices (reaching-, understanding-, evaluating-, and using/implementing health-related information). The total score ranges from 0 to 50, with a score of 0-25 indicating insufficient health literacy; >25-33 problematic-limited health literacy; >33-42 sufficient health literacy; and >42-50 excellent health literacy. Okyay and Abacigi (16) developed the scale and investigated its reliability and validity.

The Cyberchondria scale was used to assess the participants' emotional, cognitive, and behavioral tendencies toward cyberchondria. The scale consists of 27 items with a 1-5 Likert type scoring and includes five subdimensions: Anxiety-Increasing Factors, Compulsion/Hypochondria, Anxiety-Reducing Factors, Physician-Patient Interaction, Non-functional Internet Use. Higher scores reflected higher levels of cyberchondria. A Turkish version of the validity and reliability study was conducted by Durak Batigun et al. (17).

The Body Awareness Questionnaire was used to assess body awareness. The questionnaire consists of 18 items covering four subdimensions: prediction of body responses, sleep-wake cycle, prediction at the onset of disease, and pay attention to changes and reactions in the body process. The total score ranges from 18 to 126, with a higher score indicating a better body awareness level. The Turkish validity and reliability of the questionnaire were carried out by Karaca and Bayar (18).

The International Physical Activity Questionnaire-Short Form (IPAQ-SF) was used to determine the physical activity levels of the participants. The scale consists of seven items requiring physical activity estimates during the previous week. A key purpose of the IPAQ instruments is to combine the many markers into an overall indicator of PA-related EE (Metabolic equivalent, MET min-1). The IPAQ's MET estimates were used as follows: Walking on average=3.3 METs, vigorous PA=8 METs, moderate PA=4 METs. Each category was multiplied by its unique MET estimate value to calculate the overall MET PA (we call it IPAQ METs). If someone stated that they "never" walked or walked "0" days per week, they labeled their hours and minutes as "0". A Turkish validity and reliability study was performed by Saglam et al. (19).

Statistical Analysis

The Statistical Package for Social Sciences (SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) was used to analyze the data. Continuous variables are represented by mean, standard deviation, median,

and interquartile range percentiles ranging from 25 to 75; categorical variables are represented by absolute numbers (n), and percentages (%).The conformity of continuous variables with a normal distribution was evaluated using the Kolmogorov-Smirnov test. The Spearman's correlation coefficient was used to assess the correlation between TSOY-32 and the Cyberchondria scale, the International Physical Activity Questionnaire-Short Form, and the Body Awareness Questionnaire. Statistical significance was set at p≤0.05.

Results

A total of 168 allied health professionals and healthcare assistants (130 female, 38 male) with a mean age of 33.69±8.57 years and a mean body mass index of 24.22 kg/m^2 participated in the study. The occupation and education of the participants are provided in Figure 1-2.

Health literacy, cyberchondria, body awareness, and physical activity outcomes are presented in Table 1. The TSOY-32 and Cyberchondria scale total scores were 37.76±7.98 and 63.83±19.45, respectively. The Body Awareness Questionnaire and IPAQ-SF scores of the participants were 96.84±13.47 and 2367.93±4701.60, respectively.

The relationship between TSOY-32 and the Body Awareness Questionnaire and IPAQ-SF is shown in Table 2. A significant low positive correlation was found between health literacy and body awareness (r=0.213, p=0.006) and physical activity scores (r=0.162, p=0.036). The main dimensions of TSOY-32-treatment and service and disease prevention/health promotion-are also significantly positively correlated with body awareness and physical activity (p≤0.005).

The relationship between the Cyberchondria scale with Body Awareness Questionnaire and IPAQ-SF is provided in Table 3. A significant low negative correlation was found between cyberchondria with body awareness (r=-0.179, p=0.022) and physical activity scores (r=-0.193, p=0.013). Anxiety-Increasing Factors and Compulsion/Hypochondria subdimensions of the Cyberchondria scale were also significantly negatively correlated with body awareness and physical activity (p≤0.005).

Discussion

This study aimed to assess the level of health literacy and cyberchondria among university hospital health professionals, as well as to investigate their relationship
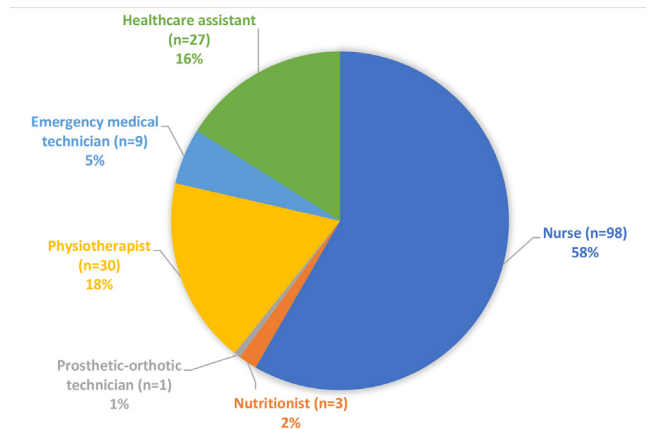
Figure 1. Occupation distribution of the participants
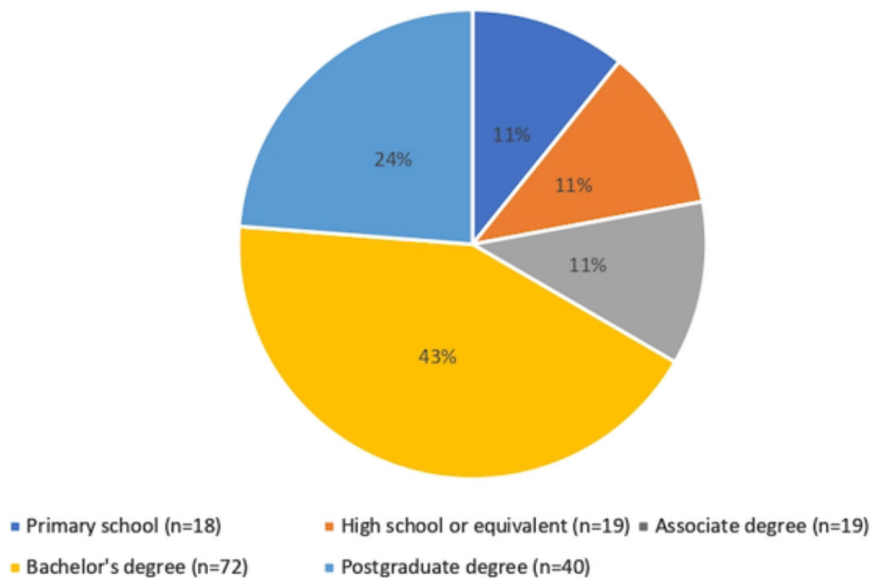
Figure 2. Education data of the participants

Table 1. Health literacy, cyberchondria, body awareness and physical activity-level scores		
	Participants (n=168)	
Turkey Health Literacy scale-32		
Total score	37.14±7.76	36.46 (31.77-43.23)
Treatment and services	37.76±7.98	36.46 (32.29-44.79)
Reaching health-related information	38.10±8.61	37.50 (33.33-45.83)
Understanding health-related information	38.23±9.10	37.50 (33.33-45.83)
Evaluating health-related information	35.69±9.17	33.33 (29.17-41.67)
Using/implementing health-related information	38.85±8.79	37.50 (33.33-45.83)
Disease prevention/Health promotion	36.50±8.46	36.01 (30.90-42.71)
Reaching health-related information	37.76±9.21	37.50 (33.33-45.83)
Understanding health-related information	38.06±9.50	37.50 (33.33-45.83)
Evaluating health-related information	38.63±9.80	37.50 (33.33-45.83)
Using/implementing health-related information	33.58±10.43	33.33 (27.78-41.67)
Reaching health-related information	37.92±8.15	37.50 (31.25-45.83)
Understanding health-related information	38.13±8.63	37.50 (33.33-45.83)
Evaluating health-related information	36.17±8.62	35.91 (31.32-43.75)
Using/implementing health-related information	36.24±8.27	35.42 (31.25-41.67)
Cyberchondria scale		
Anxiety-increasing factors	14.05±5.48	14 (10-18)
Compulsion/Hypochondria	11.98±4.97	11 (8-15)
Anxiety-reducing factors	12.69±4.31	13 (10-15.50)
Physician-patient interaction	9.17±3.40	9 (7-11.50)
Non-functional internet use	16.07±5.09	16 (13-19)
Total score	63.83±19.45	62 (51-76)
Body Awareness Questionnaire	96.84±13.47	98 (88-106)
International Physical Activity Questionnaire	2367.93±4701.60	1095 (69.20-1899)
Data are expressed as mean with standard deviation, median with interquartile range 25-75 as appropriate		

with physical activity level and body awareness. Allied health professionals and healthcare assistants had sufficient health literacy and moderate cyberchondria. Both health literacy and cyberchondria levels were poorly associated with physical activity levels and body awareness.

Health professionals play an important role in increasing individuals' health literacy, communicating effectively with patients, and providing them with reliable information, thereby increasing treatment effectiveness. Therefore, they are expected to have high levels of health literacy (20). In our study, health literacy was found to be sufficient, and our results were similar to previous studies on healthcare workers (21,22).

When the dimension and factor scores were examined, the highest dimension score was obtained from understanding health-related information, and the lowest factor score was the using/implementing health-related information factor of the dimension of disease prevention and health promotion. Although healthcare professionals are expected to have excellent health literacy levels, this result could not be reached in any dimension or factor

score. Additionally, it is very close to the problematic-limited level of health literacy in terms of health promotion and protection. Attempts to increase health literacy are mostly aimed at patients and their relatives (23-26). According to our study results, studies for health professionals can also be considered.

Increased accessibility to health-related information on the Internet and ease of access to the Internet provide advantages such as a huge amount of information, tailoring of information, facilitating interpersonal interaction and social support, and being anonymous (27-29). Internet use also has disadvantages such as roadblocks to access, information overload and disorganization, inaccessible or overly technical language, lack of user-friendliness designs, lack of permanence, hazardous conditions, lack of peer review or regulation, creating the potential for inaccurate, misleading, and dangerous information, online pathologies, and maladaptive behavior (29-31). One of the most important disadvantages in terms of health is that it increases people's health anxiety (28,30,32,33). In our study, it was determined that the cyberchondria score

Table 2. Correlations between Turkey Health Literacy scale-32 with body awareness questionnaire and international physical activity questionnaire

	Body Awareness Questionnaire	International Physical Activity Questionnaire
Turkey Health Literacy scale-32		
Total score	0.213/0.006*	0.162/0.036*
Treatment and services	0.186/0.016*	0.169/0.029*
Reaching health-related information	0.101/0.194	0.170/0.027*
Understanding health-related information	0.211/0.006*	0.085/0.271
Evaluating health-related information	0.206/0.007*	0.116/0.133
Using/implementing health-related information	0.172/0.026*	0.184/0.017*
Disease prevention/Health promotion	0.224/0.003*	0.152/0.050*
Reaching health-related information	0.138/0.075	0.147/0.057
Understanding health-related information	0.200/0.009*	0.114/0.141
Evaluating health-related information	0.243/0.001*	0.128/0.097
Using/implementing health-related information	0.203/0.008*	0.134/0.082
Reaching health-related information	0,130/0.093	0.181/0.019*
Understanding health-related information	0.222/0.004*	0.098/0.204
Evaluating health-related information	0.235/0.002*	0.146/0.058
Using/implementing health-related information	0.218/0.005*	0.194/0.012*

Data are expressed as correlation coefficient with p-value.
*Significant p-values
Spearman's correlation coefficient used for determining the relationship between health literacy, body awareness level and physical activity level

Table 3. Correlations between cyberchondria scale with body awareness questionnaire and international physical activity questionnaire

	Body Awareness Questionnaire	International Physical Activity Questionnaire
Cyberchondria scale		
Anxiety-Increasing Factors	-0.217/0.005*	-0.212/0.006*
Compulsion/Hypochondria	-0.246/0.001*	-0.162/0.038*
Anxiety-Reducing Factors	-0.146/0.062	-0.138/0.077
Physician-Patient Interaction	-0.092/0.242	-0.095/0.225
Non-functional Internet Use	-0.047/0.545	-0.142/0.068*
Total score	-0.179/0.022*	-0.193/0.013*

Data are expressed as correlation coefficient with p-value.
*Significant p-values
Spearman's correlation coefficient used for determining the relationship between cyberchondria, body awareness level and physical activity level

of allied health professionals and healthcare assistants was at a moderate level. Our study results revealed that although they can easily access the most accurate information about health due to their occupation and working environment, healthcare professionals search for health information on the Internet. To ensure access to reliable health information, there is a need to create websites based on evidence-based filtered sources.

Body awareness and health literacy may be related, and individuals with low health literacy may also have low body awareness (34,35). This may have an impact on healthy lifestyle behaviors such as physical activity (36,37). The results showed that allied health professionals and healthcare assistants with high health literacy and low cyberchondria were physically active and had high

body awareness. Awareness is closely related to health knowledge. Healthcare professionals are aware of the changes in their bodies, and because they have information about symptoms, they can predict when and where to seek professional help (34).

Study Limitations

Several limitations might be considered when interpreting the findings of this study. The study sample consisted of allied health professionals and healthcare assistants in a single hospital in a single province. The overall length of service could also be evaluated as it affects health literacy. Additionally, the duration of internet use and the determination of whether the information obtained from the internet is evidence-based

could be questioned in terms of the interpretation of the cyberchondria score.

Conclusion

Physical activity and body awareness may contribute to increasing health literacy and reducing cyberchondria, which will empower individuals to make beneficial health decisions. However, it is unclear how more diverse variables may influence health literacy and cyberchondria. Healthcare professionals need to be able to comprehend health information, decide on the accuracy of the information, conduct accurate and timely consultations, and provide counseling to patients in rapidly changing health conditions, such as pandemic conditions. This requires evidence-based filtered online resources that contain reliable and up-to-date health information. Unlike predicted, health professionals did not have perfect health literacy and were found to have moderate cyberchondria. In this context, awareness can be created about the concepts of health literacy and cyberchondria.

Ethics

Ethics Committee Approval: The study was approved by the Pamukkale University Clinical Research and Ethics Committee of the authors' affiliated institution (approval date: 13.07.2021 and approval number: 13).

Informed Consent: All study participants provided written informed consent.

Peer-reviewed: Internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: R.S., I.G., N.B., Concept: R.S., I.G., N.B., Design: R.S., I.G., N.B., Data Collection, or Processing: R.S., I.G., Analysis, or Interpretation: R.S., N.B., Literature Research: R.S., I.G., Writing: R.S., I.G., N.B.

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