

Examination of the relationship between health literacy, concern and anxiety in adults with diabetes mellitus or hypertension and comparison with individuals without chronic disease

Diyabetes mellitus veya hipertansiyonu olan yetişkin bireylerde sağlık okuryazarlığı, endişe ve anksiyete arasındaki ilişkinin incelenmesi ve kronik hastalığı olmayan bireylerle karşılaştırılması

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Abstract

Aim: The low level of health literacy in our country can cause worry and anxiety. The effect of this situation in individuals with chronic diseases was compared with healthy individuals. In our study, the level of health literacy (HL) of individuals with a chronic disease (Diabetes Mellitus (DM) or Hypertension (HT)) who applied to the Family Medicine outpatient clinic was determined. The effect of HL on anxiety levels in individuals with and without chronic diseases was investigated.

Methods: This cross-sectional study included those with chronic diseases (DM or HT) and healthy individuals. The data were obtained with Adult Health Literacy Scale (AHLs), Anxiety, Anxiety Scale (WAS) and descriptive questionnaire. SPSS 22 statistics program was used for statistical analysis. Descriptive statistics, chi-square analysis, ANOVA and Pearson correlation analysis were used in statistical evaluation.

Results: The mean scores of Adult Health Literacy Scale (AHLs) were 6.21 for individuals with HT, 6.58 for individuals with DM and 14.92 for healthy subjects. The mean scores of Worry and Anxiety Scale (WAS) were 46.42 in individuals with HT, 44.54 in individuals with DM and 34.19 in healthy individuals. The scores of scales were significantly different among individuals with and without chronic diseases (DM or HT) ($P<0.01$). A significant negative correlation was found between the scores of WAS and AHLs among individuals with DM and HT ($P<0.01$, $P<0.01$, $r=-0.35$, $r=-0.45$, respectively).

Conclusion: This study showed that individuals with DM and HT had lower health literacy levels and higher worry and anxiety scores than healthy individuals. It was found that low health literacy level was associated with chronic diseases and inversely related to worry and anxiety.

Keywords: Health literacy, Chronic diseases, Worry and anxiety

Öz

Amaç: Ülkemizde sağlık okuryazarlık düzeyinin düşük olması, endişe ve anksiyeteye neden olabilmektedir. Bu durumun kronik hastalıklara sahip bireylerdeki etkisi sağlıklı bireyler ile karşılaştırıldı. Çalışmamızda Aile Hekimliği polikliniğine başvuran, kronik hastalığa sahip (Diyabetes Mellitus (DM) veya Hipertansiyon (HT)) bireyler ile sağlıklı bireylerin sağlık okuryazarlığı (SOY) düzeyi belirlendi. SOY düzeyinin bireylerdeki endişe ve anksiyete üzerindeki etkisi araştırıldı.

Yöntemler: Bu çalışmaya kronik hastalıklara sahip (DM veya HT) ve sağlıklı bireyler dahil edildi. Veriler Yetişkin Sağlık Okuryazarlık Ölçeği (YSOÖ), Endişe ve Anksiyete Ölçeği (EAÖ) ve tanımlayıcı anket ile elde edilmiştir. Araştırma kesitsel tiptedir. Verilerin değerlendirilmesinde SPSS 22 istatistik programı kullanılmıştır. İstatistiki değerlendirmede tanımlayıcı istatistikler, ki kare analizi, ANOVA ve Pearson korelasyon analizi kullanılmıştır.

Bulgular: Araştırmada YSOÖ puan ortalamaları; HT' u olan bireylerde 6,21, DM' u olan bireylerde 6,58, sağlıklı bireylerde 14,92'dir. EAÖ puan ortalamaları; HT' u olan bireylerde 46,42, DM' u olan bireylerde 44,54, sağlıklı bireylerde 34,19' dur. Sağlıklı bireyler, kronik hastalığı olan bireylerle (DM veya HT) kıyaslandığında her iki ölçekte de anlamlı farklılık içermektedir ($P<0,01$). DM ve HT' u olan bireylerin EAÖ puanı ile YSOÖ puanı arasında anlamlı negatif korelasyon bulundu (sırasıyla $P<0,01$, $P<0,01$, $r=-0,35$, $r=-0,45$).

Sonuç: Bu çalışma DM ve HT' u olan bireylerin sağlıklı bireylere kıyasla SOY düzeylerinin düşük, endişe ve anksiyete puanının yüksek olduğunu göstermiştir. Düşük SOY düzeyinin kronik hastalıklara eşlik etmesinin yanı sıra endişe ve anksiyete ile de ters ilişkili olduğu bulunmuştur.

Anahtar kelimeler: Sağlık okuryazarlığı, Kronik hastalıklar, Endişe ve anksiyete

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Introduction

Health literacy (HL) is defined as the ability of an individual to comprehend and evaluate the medical information given and develop appropriate behavior. It is classified in three groups. Functional HL refers to an individual's ability to apply basic literacy knowledge to health related materials, communicative HL refers to developing social and cognitive functions, directing them in an environment, and being able to apply them to daily life, while critical HL refers to an individual's ability to make the right decision by analyzing the information with a critical approach on health-related issues, and to ensure his/her individual and social development [1,2]. It was found that HL level was poor in all developed, developing, and underdeveloped countries. It has been reported that poor HL causes difficulty in maintaining glycemic control in diabetic individuals and regulating blood pressure in hypertensive individuals, leading to a higher risk of complications, and resulting in increased levels of anxiety [3-5].

This study was conducted to examine HL levels in individuals with DM or HT, investigate their relationship with anxiety, and compare them with individuals without chronic disease.

Materials and methods

This cross-sectional, descriptive, and analytical study was conducted on 300 individuals who applied to the family medicine department's outpatient clinic in a university hospital. Among all, 100 had DM, 100 had HT and 100 were healthy.

Only otherwise-healthy individuals over the age of 18 years who had a chronic disease (DM or HT) and could communicate were included in the study. Individuals with more than one chronic disease, unable to communicate and those aged under 18 years were not included.

The data of the research were collected using the Adult Health Literacy Scale (AHLs), Anxiety Scale (AS) and a questionnaire form consisting of 12 questions prepared by the researchers by scanning the literature. The questionnaire included questions about socio-demographic data of the individuals (age, gender, marital status, socioeconomic level, educational status, occupation), the presence of chronic diseases, presence of DM or HT, duration of the disease, status of regular checks, regular drug use, and reasons for discontinuation of medications.

AHLs is a scale of 23 questions, consisting of 22 questions related to health information and drug use, and one question to locate and name the organs. Among them, 13 are yes / no questions, 4 are filling the gap, 4 are multiple choice and 2 are matching questions. Possible scores vary between 0-23. HL increases with the score obtained. It has been demonstrated that AHLs is a valid and reliable scale in evaluating health literacy and can be used safely in adult individuals [6].

AS is a Likert-type scale with nine (0-8) points. Score range is between 0 and 80. The scale provides the opportunity to distinguish between those who do and do not comply with the diagnostic criteria of anxiety disorders. It clearly measures anxiety-related helplessness. It has been demonstrated as a valid-reliable scale in measuring anxiety [7].

Prior to the study, approval and necessary permissions were obtained from Yuzuncu Yil University Ethics Committee (Record Number: 141, Date: 20.06.2018), and data were collected between August 2018 and December 2018.

Statistical analysis

The data obtained from the research were assessed with the SPSS 22 statistical program. Descriptive statistical analysis, chi-square analysis, ANOVA and Pearson correlation analysis were used to evaluate the data. $P < 0.05$ was considered statistically significant.

Results

Evaluation of educational status revealed that 67 DM patients (67%) and 68 HT patients (68%) were illiterate or primary school graduates, along with four (4%) healthy individuals. While 87 (87%) DM patients and 84 (84%) HT patients were unemployed, 89 (89%) healthy individuals were pursuing a career. The mean ages of individuals with HT, DM and healthy participants were 61.63 (10.05) years (min 33, max 87 years), 56.74 (8.77) years (min 26, max 80 years), 29.34 (7.51) years.

Forty-one (41%) DM patients and 36 (36%) HT patients had regular check-ups (at least every six months). Forty-one (41%) DM patients and 37 (37%) HT patients did not use their medication regularly. When the reasons for discontinuation of medication were examined, the most common answer was 'I forget' (n=21 (51.2%) and n=18 (50.0%) for DM and HT patients, respectively). The least frequent responses were 'I do not trust my doctor' and 'I do not benefit from treatment' (n=1 (2.4%) for DM and n=2 (5.6%) for HT) among both patient groups. The questionnaire results of the individuals included in the study are shown in Table 1.

Table 1: Questionnaire responses of individuals included in the study (n=300)

		Group			P-value*
		DM n (%)	HT n (%)	Healthy n (%)	
Age (mean)		56.74	61.63	29.34	<0.01
Gender	Woman	63(63)	53(53)	55	0.31
	Man	37(37)	47(47)	45	
Marital status	Married	91(91)	82(82)	46	<0.01
	Single	9(9)	18(18)	54	
Education	Illiterate	47(47)	39(39)	0	<0.01
	Primary education	20(20)	29(29)	4	
	Secondary education	19(19)	15(15)	3	
	High School	13(13)	15(15)	11	
Occupation	University	1(1)	2(2)	82	<0.01
	Unemployed	87(87)	84(84)	11	
	Public Officer	3(3)	10(10)	26	
	Worker	10(10)	2(2)	4	
	Health professional	0(0)	0(0)	20	
	Other	0(0)	4(4)	39	
For how many years?	0-1 year	8(8)	7(7)	-	0.56
	>1 year - 5 years	27(27)	26(26)	-	
	>5 years - 10 years	36(36)	29(29)	-	
	More than 10 years	29(29)	38(38)	-	
Regular checks	every 3 months	23(23)	9(9)	-	0.23
	every 6 months	18(18)	27(27)	-	
	when the prescription expires	56(56)	57(57)	-	
	I don't go	3(3)	7(7)	-	
Regular use of medication	I use regularly	59(59)	63(63)	-	0.13
	I sometimes skip	39(39)	30(30)	-	
	I often skip	2(2)	7(7)	-	

* ANOVA, DM: Diabetes mellitus, HT: Hypertension

Among all participants, the mean AHLs scores were significantly higher in men, singles, those with a high education level (high school and university graduates), professionals and individuals without chronic disease ($P < 0.05$ for all).

Among patients with a chronic disease (DM and HT), the mean AHLs scores were significantly low in those who have

had the disease for more than 10 years, who do not have regular check-ups (at least every six months) and who do not use medication regularly ($P < 0.05$ for all).

The mean AHLS scores of healthy individuals included in the study was the highest, while that of HT patients was the lowest, with a significant difference between them ($P < 0.01$). The mean AHLS scores of DM and HT patients included in the study were similar ($P = 0.32$) (Table 2).

Among all participants, the mean AS scores were significantly high in women, those with low socioeconomic statuses, low education levels (primary school and illiterate), nonprofessionals and individuals with a chronic disease (DM or HT) ($P < 0.05$ for all).

Among patients with a chronic disease (DM and HT), the mean AS scores were high in those who have had the disease for more than 10 years, and who do not have regular check-ups (at least every six months) ($P < 0.05$ for all).

The mean AS score of HT patients included in the study was the highest, while that of healthy individuals was the lowest. There was a significant difference between healthy individuals and those with DM or HT ($P < 0.01$). There were no significant differences between the mean AS scores of DM and HT patients included in the study ($P = 0.36$) (Table 3).

Bilateral correlation analysis between the mean AS and AHLS scores of individuals with DM and HT revealed a significant negative correlation, and a non-significant negative correlation was found among healthy individuals (Table 4).

Bilateral correlation analysis was performed for mean AS and AHLS scores of all individuals included in the study to find that mean AHLS scores decreased as AS scores increased and vice versa. A significant negative intergroup correlation was found between the groups ($P < 0.01$, $r = -0.43$).

Table 2: Comparison of mean AHLS scores in individuals with DM, HT and healthy individuals included in the study (n=300)

	n	Mean Grade	Std. Deviation	Min.	Max.	P-value*
HT	100	6.21	4.01	0	20	
DM	100	6.58	4.09	0	16	<0.01
Healthy	100	14.92	2.91	7	20	
Total	300	9.24	5.47	0	20	

*ANOVA, DM: Diabetes mellitus, HT: Hypertension, AHLS: Adult health literacy scale

Table 3: Comparison of mean AS scores in individuals with DM, HT and healthy individuals included in the study (n=300)

	n	Mean Grade	Std. Deviation	Min.	Max.	P-value*
HT	100	46.42	13.93	4	70	
DM	100	44.54	13.92	14	74	<0.01
Healthy	100	34.19	18.30	0	77	
Total	300	41.72	16.74	0	77	

* ANOVA, DM: Diabetes mellitus, HT: Hypertension, AS: Anxiety scale

Table 4: Correlation analysis of mean AS scores and mean AHLS scores in individuals with DM, HT and healthy individuals included in the study (n=300)

	r*	P-value*
DM	-0.35	<0.01
HT	-0.45	<0.01
Healthy individuals	-0.02	0.78

* Pearson correlation analysis, DM: Diabetes mellitus, HT: Hypertension

Discussion

HL is an important public health problem affecting the entire society, especially individuals with chronic diseases (such as DM and HT). Studies conducted reveal that HL levels are not at a sufficient level neither in our country nor in the world, and the HL levels of individuals with chronic diseases are even below the national average [8,9].

In studies conducted in the USA and Europe, the level of HL in individuals with a chronic disease was highly

insufficient (64% and 26%, respectively), and in the studies conducted in our country, the level of HL of individuals with a chronic disease was low (64.6%) [10-12]. In our study, similar to the literature, individuals with a chronic disease had low AHLS scores.

In the studies carried out abroad and our country, the level of HL was higher among men, those with high education levels (high school, university, post-graduate) and those with a profession [13-15]. In harmony with the literature, in our study, the AHLS scores of men, individuals with high educational status and those with a profession were significantly higher. Moreover, in our study, single individuals had higher HL levels compared to married people ($P < 0.01$).

In our study, when individuals with chronic diseases were evaluated among themselves, similar to the literature, the HL levels of those with a disease duration of more than 10 years, those who did not have regular checkups (at least every 6 months) and those who did not use their medication regularly were low ($P < 0.05$ for all) [15,16].

Studies conducted in Konya, Istanbul and Izmir have shown that anxiety is high among individuals with chronic diseases and significantly different from that among healthy individuals [17-19]. In our study, individuals with a chronic disease (DM and HT) had also higher AS scores and showed a significant difference compared to healthy individuals.

We found that those with low HL levels were accompanied by prominent levels of anxiety, and there was a significant negative correlation between these two parameters. Assessment of the three groups (DM, HT, healthy individuals) of our study separately revealed that anxiety decreased as the HL level of individuals with DM and HT increased, and vice versa. In healthy individuals, there was no inverse relationship between these two parameters. In the literature review, there was no study on the correlation between AS and AHLS. Our research may be the first in this regard.

Limitations

The lower mean age of healthy individuals compared to the other groups is among the limitations of our study. It can be said that the number of samples could not be kept larger by adhering to a single outpatient clinic, and chronic diseases other than DM and HT were not included. However, we believe this study is important because it is the first study to compare healthy individuals with those with a chronic disease.

Conclusion

This study revealed that individuals with a chronic disease have low HL levels compared to healthy individuals, however, they are accompanied by anxiety, which decreases with increasing HL level. It may be recommended to increase community-based projects, provide training, and prepare awareness-raising presentations to increase HL levels of all members of the society, especially individuals with chronic diseases. In addition, it will be beneficial to distribute HL booklets including simple illustrations to outpatient clinics in hospitals, which are especially visited by chronic patients. Increasing public spots consisting of short, clear, and simple information will help easily reach every segment of the public, under the leadership of our Ministry of Health. Creating scales suitable for the cultural structure of our country for the exact

determination of HL is of significance. Even if there has been an increase in our country in recent years, it is necessary to conduct current studies on HL, since sufficient levels have not been reached yet.

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