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The Effects of Health Beliefs on Cancer Screening and Distrust in Health Systems on Healthcare Demand Procrastination: A Cross-Sectional Study

Kanser Taramalarına İlişkin Sağlık İnancı ve Sağlık Sistemlerine Güvensizliğin Sağlık Hizmeti Talep Erteleme Davranışı Üzerindeki Etkisi: Kesitsel Bir Araştırma

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ABSTRACT

Objective: This study aimed to examine the relationship between health beliefs about cancer screening (HBCS) and distrust in the health system (DHS) with healthcare demand procrastination behavior (HDPB).

Materials and Methods: A total of 1040 participants were included in the study. Champion's Health Belief Model Scale, Distrust in Health Systems Scale, Health Service Demand Procrastination Behavior Scale, and general information form were used to collect data. Descriptive statistics, difference analysis, correlation, and regression analysis were used in data analysis.

Results: There was a positive relationship between perceived susceptibility, perceived seriousness, perceived barriers, self-efficacy, and DHS and HDPB, while there was a negative relationship between perceived benefits and HDPB ($p<0.05$). There was a difference according to education level except for the avoidance sub-dimension ($p<0.05$). Single individuals had higher procrastination tendencies in all sub-dimensions and the general scale ($p<0.05$). Avoidance tendency was higher in individuals without private or complementary health insurance ($p<0.05$).

Conclusions: Focusing efforts on reducing perceived barriers to participating in cancer screenings and increasing trust in the health system may reduce HDPB.

Keywords: Cancer screening, distrust in health systems, health belief model, healthcare procrastination

ÖZ

Amaç: Bu araştırmada, kanser taramalarına ilişkin sağlık inancı ve sağlık sistemine güvensizliğin, sağlık hizmeti talep erteleme davranışı ile ilişkisinin incelenmesi amaçlanmıştır.

Materyal ve Metot: Araştırmaya 1040 katılımcı dahil edilmiştir. Veri toplamak için Champion'un Sağlık İnanç Modeli Ölçeği, Sağlık Sistemlerine Güvensizlik Ölçeği ve Sağlık Hizmeti Talep Erteleme Davranışı Ölçeği ile genel bilgi formu kullanılmıştır. Veri analizinde tanımlayıcı istatistikler, farklılık analizleri, korelasyon ve regresyon analizi kullanılmıştır.

Bulgular: Algılanan duyarlılık, algılanan ciddiyet, algılanan bariyerler, öz yeterlilik ve sağlık sistemine güvensizlik ile sağlık hizmeti talep erteleme davranışı arasında istatistiksel olarak anlamlı, pozitif yönlü bir ilişki mevcutken; algılanan faydalar ile sağlık hizmeti talep erteleme davranışı arasında istatistiksel olarak anlamlı, negatif yönlü bir ilişki mevcuttur ($p<0,05$). Eğitim düzeyine göre kaçınma alt boyutu dışında farklılık göstermektedir ($p<0,05$). Bekar bireyler tüm alt boyutlar ve genel ölçek açısından daha yüksek erteleme eğilimine sahiptir ($p<0,05$). Özel ya da tamamlayıcı sağlık sigortası olmayanların ise kaçınma eğilimi daha yüksektir ($p<0,05$).

Sonuç: Çabaların çoğunlukla kanser taramalarına katılma noktasında algılanan bariyerlerin azaltılması ve sağlık sistemine duyulan güvenin artırılmasına yoğunlaştırılması, talep erteleme davranışının azaltılmasını sağlayabilir.

Anahtar Kelimeler: Kanser taramaları, sağlık erteleme, sağlık inanç modeli, sağlık sistemlerine güvensizlik

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INTRODUCTION

Cancer is one of the leading causes of morbidity and mortality worldwide,[1,2] accounting for nearly 10 million deaths in 2020, or almost one in six deaths.[3] Moreover, cancer-related morbidity and mortality are estimated to increase rapidly due to the aging population and changing lifestyles.[4] In Türkiye, the proportion of cancer-related deaths in total deaths is higher than the world average, and therefore, cancer should be carefully addressed in Türkiye.[5] Cancer, which is a fatal disease, can be treated when it is diagnosed early, and thus, the survival rate can be high. Early diagnosis in symptomatic cases and screening in asymptomatic cases play an important role in detecting cancer.[6]

The "Health Belief Model", which emerged to predict individuals' health-related attitudes and behaviors, is now used to measure individuals' participation in preventive health care programs.[7] This model has also been frequently used in research on cancer diagnosis, and in these studies, attention has been drawn to the relationship between the intention to participate in cancer screenings and health beliefs.[8-10] Therefore, it is hypothesized that health beliefs about cancer screenings negatively correlate with healthcare demand procrastination behavior.

Another issue related to health service utilization is trust in the health system. Individuals who trust the health system utilize health services more frequently.[11] On the other hand, it has been suggested that individuals with low trust in health services procrastinate their demand for health services despite their needs.[12] Demand procrastination also leads to a delay in the demand for screening programs related to early diagnosis, which may cause health problems to progress.[13]

Therefore, it may also delay diagnosing a critical disease such as cancer. In such a case, cancer survival rates are predicted to decrease. This study aimed to examine the relationship between health beliefs about cancer screening (HBCS) and distrust in the health system (DHS) with healthcare demand procrastination behavior (HDPB).

MATERIALS AND METHODS

Ethics Committee Approval: This study was approved by the Tarsus University Social Sciences and Humanities Research Ethics Committee (Date: 19.10.2023, decision no: 2023/06). The study was carried out following the international declaration, guidelines, etc.

Design: This research is quantitative and cross-sectional.

Data Collection Tools: The data of the study were collected using a four-part questionnaire form. In the first part of the questionnaire form, the "Healthcare Demand Procrastination Behavior Scale" was used. The scale was developed by Söyler et al.[13] It is a 5-point Likert-type scale and consists of three sub-dimensions and 11 items. The sub-dimensions of the scale are self/individual remedy search (3 items), avoidance (4 items), and not taking action (4 items). The internal consistency coefficients of the sub-dimensions of the scale are 0.737, 0.804, and 0.739, respectively. The overall internal consistency coefficient is 0.854. In the second part of the questionnaire form, "Champion's Health Belief Model Scale", which was developed by Barnes[14] and whose Turkish validity and reliability study was conducted by Pınar et al.[15] was adapted for the study. The scale is a 5-point Likert-type scale consisting of five sub-dimensions and 21 items. The sub-dimensions of the scale adapted to the research and the total scale were subjected to reliability analysis. The perceived sensitivity dimension consists of 4 items, the perceived seriousness dimension consists of 7 items, the perceived benefits dimension consists of 2 items, the perceived barriers dimension consists of 4 items and the self-efficacy dimension consists of 4 items. Cronbach's alpha coefficients are 0.883, 0.831, 0.724, 0.754, 0.887 and the total scale is 0.831. These values indicate that the reliability of the scale is high. In the third part, the "Distrust in Health Systems Scale" developed by Rose et al.[16] and the Turkish validity and reliability study conducted by Yeşildal et al.[17] was used. The scale is a 5-point Likert-type scale consisting of a single dimension and 10 items. The internal consistency coefficient of the scale is 0.789.

***Sampling*:** The universe of the study consists of all individuals over the age of 18. The table prepared by Gürbüz and Şahin[18] was used to determine the sample size. Accordingly, 670 people at a 99% confidence level are sufficient to be included in the study. Therefore, the sample group reached in the survey is of adequate size. Convenience and snowball sampling methods were used in the research. For this purpose, the online questionnaire form created by the researcher was first sent to the individuals in his network, and these individuals were asked to send the questionnaire to their network of acquaintances. Individuals over the age of 18 at the time of the study, who voluntarily agreed to participate, answered all the questions in the questionnaire form completely and left the control question blank appropriately were included in the study. Individuals who did not complete the questionnaire form completely or did not voluntarily agree to participate were excluded from the study. A total of 1126 questionnaire forms were received during November-December 2023. Of these, 86 were excluded from the study due to inappropriate coding, blank-left

questions or inappropriate responses to the control question. The research was conducted with 1040 participants.

Statistical Analysis: Statistical Package for the Social Sciences (SPSS) 23.0 package program was used to analyze the data. The data were first subjected to a normality test by examining skewness and kurtosis values. Since the data were suitable for normal distribution, parametric hypothesis tests were used. Differences between groups with two categories were analyzed by independent samples t-test, and differences between groups with more than two categories were analyzed by one-way analysis of variance (ANOVA). The relationships between continuous variables were subjected to Pearson correlation and simple linear regression. The significant level was set at 0.05.

RESULTS

Skewness and kurtosis values of all continuous variables are between ±1. The values are given in Table 1.

72.4% of the participants are female and 66.2% have associate's or bachelor's degree. 78.2% of the participants are single, and 91.3% do not have chronic diseases. the average age of the participants is 24.79±9.55 years. The mean number of visits to the family physician in the last year is 2.99±2.84, while the mean number of hospital visits is 3.99±3.16 (Table 2).

Table 3 shows the differences in healthcare demand procrastination behaviors according to the general characteristics of the participants. According to analyses, there is no statistically significant difference in both general procrastination scores and subdimensions according to the gender of the participants and whether they have a chronic disease ($p>0.05$). While there is no significant difference in the avoidance dimension according to the educational level of the participants ($p>0.05$), there are significant differences in terms of self/individual remedy search, not taking action and total procrastination scores ($p<0.05$). According to the post-hoc analysis in all dimensions, this difference is caused by the differences between the associate's - bachelor's de-

Table 1. Skewness and kurtosis values of continuous variables.

Variable	Skewness	Kurtosis
Perceived sensitivity	0.157	0.070
Perceived seriousness	-0.241	0.057
Perceived barriers	0.240	0.237
Perceived benefits	-0.802	0.673
Self-efficacy	0.577	-0.133
Self/Individual remedy search	-0.054	-0.577
Avoidance	0.651	0.076
Not taking action	0.173	-0.201
Healthcare Demand Procrastination	0.251	0.091
Distrust in Health System	0.161	0.664

Table 2. General characteristics of participants.

Variables		Frequency	Percent
Gender	Female	753	72.4
	Male	287	27.6
Education	Literate or primary school	33	3.2
	Middle School-High School	287	27.6
	Associate Degree-Bachelor's Degree	688	66.2
	Postgraduate	32	3.1
Marital status	Married	227	21.8
	Single	813	78.2
Chronic disease status	Yes	91	8.8
	No	949	91.3
Private or complementary health insurance	Yes	433	41.6
	No	607	58.4
	Min	**Max**	**Mean±SD**
Age	18	68	24.79±9.55
Family doctor visits	0	20	2.99±2.84
Hospital visits	0	20	3.99±3.16

Table 3. Differences in healthcare demand procrastination behaviors according to the general characteristics of the participants.

		Self/Individual remedy search		Avoidance		Not taking action		Healthcare Demand Procrastination	
		Mean±SD	Coefficient	Mean±SD	Coefficient	Mean±SD	Coefficient	Mean±SD	Coefficient
Gender	Female	2.72±0.87	t:1.680	2.16±0.80	t:0.110	2.49±0.72	t:0.790	2.43±0.64	t:0.987
	Male	2.61±1.02		2.16±0.92		2.45±0.82		2.39±0.77	
Education	Literate or primary	2.31±0.85		2.13±0.78		2.27±0.88		2.23±0.69	
	Middle or High School	2.58±0.92	F:4.415**	2.12±0.81	F:0.424	2.41±0.74	F: 2.874**	2.35±0.67	F: 2.663**
	Associate or Bachelor's	2.75±0.90		2.17±0.84		2.53±0.74		2.46±0.67	
	Postgraduate	2.68±1.02		2.27±1.01		2.37±0.92		2.42±0.82	
Marital status	Married	2.40±0.93	t:-5.481*	2.04±0.82	t:-2.548**	2.29±0.78	t:-4.280*	2.23±0.70	t:-4.905*
	Single	2.77±0.89		2.20±0.84		2.53±0.73		2.48±0.66	
Chronic disease status	Yes	2.66±1.00	t:-0.272	2.15±0.86	t:-0.195	2.47±0.80	t:-0.136	2.40±0.70	t:-0.243
	No	2.69±0.90		2.16±0.84		2.48±0.75		2.42±0.67	
Private or complementary health insurance	Yes	2.70±0.92	t:0.378	2.09±0.84	t:-2.266**	2.50±0.78	t:0.603	2.41±0.02	t:-0.637
	No	2.68±0.90		2.21±0.83		2.47±0.73		2.43±0.75	

*: p<0.01; **: p<0.05.

Table 4. Correlations between variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	1											
2. Family doctor visits	0.145**	1										
3. Hospital visits	0.047	0.362**	1									
4. Perceived sensitivity	-0.014	0.000	-0.008	1								
5. Perceived seriousness	0.006	0.031	0.009	0.400**	1							
6. Perceived benefits	-0.029	0.046	0.001	0.029	0.269**	1						
7. Perceived barriers	0.022	-0.072*	-0.075*	0.270**	0.250**	-0.193**	1					
8. Self-efficacy	0.083**	-0.010	-0.034	0.189**	0.073*	0.024	0.149**	1				
9. Distrust	-0.030	0.027	-0.007	0.344**	0.268**	-0.037	0.306**	0.099**	1			
10. Self/Individual remedy search	-0.220**	-0.063*	-0.008	0.193**	0.221**	-0.005	0.218**	0.091**	0.217**	1		
11. Avoidance	-0.075*	-0.135**	-0.142**	0.289**	0.130**	-0.097**	0.316**	0.124**	0.275**	0.389**	1	
12. Not taking action	-0.142**	-0.111**	-0.082**	0.247**	0.115**	-0.070*	0.217**	0.077*	0.286**	0.430**	0.660**	1
13. HC Demand Procrastination	-0.172**	-0.129**	-0.100**	0.301**	0.186**	-0.074*	0.310**	0.120**	0.319**	0.717**	0.861**	0.860**

*: p<0.05; **: p<0.01.

gree group and the other groups except the post-graduate group. There is a difference according to marital status in terms of all three sub-dimensions and overall procrastination scores, and singles have a higher tendency to procrastinate their healthcare demand (p<0.05). There is no difference in dimensions other than avoidance and total procrastination score according to whether the participants have private or complementary health insurance (p>0.05). On the other hand, those who do not have private or complementary health insurance have higher avoidance behavior (p<0.05).

Table 4 shows the correlations between the variables. While there are statistically significant, negative, and weak relationships between healthcare procrastination behavior and age, number of visits to the family doctor and physician, and perceived benefits, there are weak and positive relationships between health procrastination behavior and perceived seriousness and self-efficacy (p<0.05). There is a

statistically significant, positive and moderate relationship between healthcare demand procrastination behavior and perceived sensitivity, perceived barriers and distrust in the health system ($p<0.05$). There are statistically significant, positive, and strong relationships between healthcare demand procrastination and its sub-dimensions ($p<0.05$).

Following the correlation analysis, a simple linear regression analysis was performed. The results of the analysis are presented in Table 5. Tolerance and VIF values and the Durbin-Watson coefficient showed no multicollinearity between the variables, and regression assumptions were met. On the other hand, the regression model was found to be significant ($F=32.935$; $p<0.05$). It was determined that hospital visits, perceived seriousness, perceived benefits, and self-efficacy did not contribute significantly to the model ($p<0.05$).

Age, family doctor visits, perceived susceptibility, perceived barriers, and distrust in the health system explained 21% of the change in the variance of the healthcare demand procrastination variable.

Table 5. Simple linear regression analysis.

Variables*	B	S.E.	β	t	p	Tolerance	VIF
Age	-0.011	0.002	-0.160	-5.743	0.000	0.967	1.034
Family doctor visits	-0.019	0.007	-0.080	-2.681	0.007	0.845	1.183
Hospital visits	-0.010	0.006	-0.046	-1.561	0.119	0.865	1.156
Perceived sensitivity	0.033	0.006	0.161	5.071	0.000	0.748	1.336
Perceived seriousness	0.005	0.004	0.041	1.273	0.203	0.718	1.393
Perceived benefits	-0.020	0.011	-0.051	-1.721	0.085	0.848	1.179
Perceived barriers	0.038	0.007	0.175	5.652	0.000	0.787	1.270
Self-efficacy	0.010	0.005	0.054	1.920	0.055	0.943	1.061
Distrust	0.109	0.018	0.189	6.211	0.000	0.816	1.225
Constant	1.438	0.147	-	9.797	0.000	-	-
$\Delta R^2=0.217$. $F=32.935$. $p<0.05$. Durbin-Watson = 1.995							

*: Dependent: Healthcare demand procrastination behavior.

DISCUSSION AND CONCLUSION

Procrastination of necessary health services or preventive services may lead to negative health outcomes. According to the health belief model, if individuals feel sensitive about a health issue, think that it will be characterized by high seriousness in case of exposure, and evaluate that the benefits of taking action are superior to barriers, an intention to perform the behavior may occur.[19,20] Indeed, in many studies in the literature, it has been revealed that individuals' having high sensitivity and seriousness about cancer, as well as high perceived benefits and low perceived barriers, are associated with their intention to take action. Considering the findings of a few of these studies, in their study, Pak and Eliş Yıldız[21] found that the health beliefs of breast self-examination practitioners were higher than those who did not, and their perceptions of barriers were lower. In another study, it was found that there were significant relationships between cervical cancer screening intention and health belief model sub-dimensions.[8] However, the present study concluded that the effect of the health belief model on procrastination behavior is low compared to the literature. Unlike other sub-dimensions, perceived sensitivity and perceived barriers make a positive contribution. This situation can be explained by the fact that individuals engage in procrastination behavior due to high barrier perception despite feeling sensitive. In fact, among the sub-dimensions of the health belief model, the sub-dimension that has the strongest relationship with procrastination behavior and has the highest effect is perceived barriers. Witte et al.[20] likewise state that high perception of other dimensions and low barriers increase the likelihood of performing the behavior. Similarly, Fisher and Fisher[19] stated that if the benefits of adopting the behavior exceed the costs, action will be taken for the recommended health behavior. According to another study, the barriers perceived by individuals prevented their intentions to participate in cardiac rehabilitation from turning into behaviors.[22] In another study, it was found that a decrease in perceived barriers was associated with an increase in intentions to consult a general practitioner for psychological problems and a significant correlation between intentions and subsequent general practitioner consultations.[23] Similarly, Donadiki et al.[24] reported that high perceived barriers were associated with not receiving HPV vaccination. Al-Metwali et al.[25] concluded that perceived barriers negatively affect the willingness to receive the Covid-19 vaccine. In parallel, the present study reveals that high barrier perception increases procrastination behavior by decreasing the likelihood of individuals taking action.

When individuals apply for health services, they trust that health service providers will act in their best interest. Therefore, in order for individuals to apply for health services and not delay this demand when they need it, they must first have trust in the

health system.[26] When individuals do not trust the health system, they may avoid service utilization and seek alternative ways.[27] Blanchard and Lurie[12] suggested that individuals who do not trust health services postpone their demand for health services. The present study concluded that low trust in the health system is associated with delaying the demand for health services. This result is in line with the literature. Similarly, Katapodi et al.[11] stated that individuals who trust the health system apply to health services more frequently. Based on this finding, it is of utmost importance to establish and maintain a sense of trust in the health system. Thus, one of the important reasons for delay would be prevented.

In conclusion, delayed demand for healthcare services has several negative consequences. It is clear that morbidity and mortality will increase due to procrastination. When it comes to cancer, early diagnosis becomes even more important. Early detection significantly increases the chances of successful treatment in cancer cases. Therefore, participation in cancer screenings should not be postponed. Cancer cases that may arise due to postponed healthcare services may bring a great financial burden to the health system and may adversely affect the general health level of society in the future. Therefore, it is necessary to continuously examine the procrastination of health service demand in society. Examining the factors that may have an impact on delaying health service applications may be an important reference point for eliminating these factors. The findings suggest that efforts should focus on reducing perceived barriers to participation in cancer screenings and increasing trust in the health system. Only in this way, individuals' intentions to participate in cancer screenings will increase and these intentions could be transformed into actions. This research is limited to individuals who have the technological capability to fill out this questionnaire. The research is also limited to the items in the questionnaire form and the answers given to these items. Another limitation of the research is that the literature review was conducted in Turkish and English.

Ethics Committee Approval: Our study was approved by the Tarsus University Social Sciences and Humanities Research Ethics Committee (Date: 19.10.2023, decision no: 2023/06). The study was carried out following the international declaration, guidelines, etc.

Conflict of Interest: No conflict of interest was declared by the authors.

Author Contributions: Concept – SS; Supervision – SS; Materials – SS; Data Collection and/or Processing – SS; Analysis and/or Interpretation – SS; Writing – SS.

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