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-RESEARCH ARTICLE-

MODERATED MEDIATION EFFECTS OF PERCEIVED SATISFACTION, QUALITY LEVELS, AND DEMOGRAPHIC CHARACTERISTICS ON THE RELATIONSHIP BETWEEN E-HEALTHCARE AND HEALTHCARE USAGE

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Abstract

This study aims to determine the moderated mediation effects of perceived satisfaction, quality levels, and demographic characteristics in the relationship between e-healthcare and healthcare usage. The research was conducted between February 15 and March 15, 2024, with 410 people who agreed to participate in the study living in a central district of Ankara. Data was collected using a three-part data collection form. The first part of the data form includes questions aimed at measuring participant characteristics; the second part includes questions aimed at measuring E-healthcare Use (E-HSU) and Healthcare Use (HCU). The last part includes questions measuring participants' perceived health service quality and satisfaction. SPSS 29 and AMOS 24 software were used in data analysis. Significant relationships were found between the ages of the participants and perceived satisfaction (r=0.249), perceived service quality (r=0.266), e-healthcare usage (r=-0.308), and healthcare usage (r=0.391). The indirect effects determined that perceived satisfaction (b=-0.108) and perceived quality (b=-0.082) mediated the relationship between e-healthcare usage and healthcare usage. Age was a moderator variable in the indirect effect of e-healthcare usage on healthcare utilization through perceived satisfaction (b=-0.001) and perceived quality (b=-0.001). This study's findings indicate that older individuals tend to use e-healthcare through higher perceived health service quality and satisfaction levels. This result suggests that the fact that older individuals are not as active as younger individuals in using technology is also effective. Based on the findings of this study, researchers, health policymakers, and managers can consider e-healthcare designs that older individuals can use.

Keywords: *Healthcare, E-Healthcare Usage, Quality, Satisfaction, Healthcare Usage.*

JEL Codes: *I10, I12, I18.*

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E-SAĞLIK HİZMETLERİ İLE SAĞLIK HİZMETLERİ KULLANIMLARI ARASINDAKİ İLİŞKİDE ALGILANAN MEMNUNİYET, KALİTE DÜZEYLERİ VE DEMOGRAFİK ÖZELLİKLERİN DURUMSAL ARACILIK ETKİLERİ [4]

Öz

Bu çalışmanın amacı; E-sağlık hizmetleri ile sağlık hizmetleri kullanımları arasındaki ilişkide algılanan memnuniyet, kalite düzeyleri ve demografik özelliklerin durumsal aracılık etkilerinin saptanmasıdır. Araştırma üç bölümden oluşan veri toplama formu aracılığı ile Ankara'nın merkez bir ilçesinde çalışmaya katılmayı kabul eden 410 kişiye 15 Şubat – 15 Mart tarihleri arasında uygulanmıştır. Veri formunun birinci bölümü katılımcı özelliklerini, ikinci bölümü E-Sağlık Hizmeti Kullanımını ve Sağlık Hizmeti Kullanımını ölçmeyi hedefleyen sorular içermektedir. Son bölümde ise katılımcıların algılanan sağlık hizmet kalitesi ve memnuniyet sorularını ölçmeyi hedefleyen sorular yer almaktadır. Veri analizinde SPSS 29 ve AMOS 24 yazılımları kullanılmıştır. Katılımcıların yaşları ile Algılanan Memnuniyet (r=0,249), Algılanan Hizmet Kalitesi (r=0,266), E-Sağlık Hizmetleri Kullanımı (r=-0,308) ve Sağlık Hizmetleri Kullanımı (r=0,391) arasında anlamlı ilişkiler tespit edilmiştir. Dolaylı etkilere göre Algılanan Memnuniyetin (b=-0,108) ve Algılanan Kalitenin (b=-0,082) E-Sağlık Hizmetleri Kullanımı ile Sağlık Hizmetleri Kullanımı arasındaki ilişkide aracı rolünün olduğu belirlenmiştir. Durumsal aracılık indeks değerlerine göre yaşın E-Sağlık Hizmetleri Kullanımının Algılanan Memnuniyet (b=-0,001) ve Algılanan Kalite (b=-0,001) vasıtasıyla Sağlık Hizmetleri Kullanımına olan dolaylı etkisinde düzenleyici değişken olduğu görülmüştür. Bu çalışmada daha yaşlı bireylerin algıladıkları daha yüksek sağlık hizmet kalitesi ve memnuniyet seviyeleri aracılığı ile e-sağlık hizmetleri kullanımından ziyade, sağlık hizmet kullanımına yöneldikleri sonucuna ulaşılmıştır. Bu sonuçta yaşlı bireylerin teknoloji kullanımında gençler kadar aktif olmamasının da etkili olduğu değerlendirilmektedir. Bu araştırma bulgularına dayanarak sağlık politikacıları ve yöneticileri yaşlı bireylerin yönelebileceği e-sağlık hizmet tasarımlarına odaklanabilir.

Anahtar Kelimeler: *Sağlık Hizmetleri, E-Sağlık Hizmeti Kullanımını, Kalite, Memnuniyet, Sağlık Hizmeti Kullanımı.*

JEL Kodları: *I10, I12, I18.*

"Bu çalışma Araştırma ve Yayın Etiğine uygun olarak hazırlanmıştır."

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1. INTRODUCTION

E-Healthcare Usage (E-HCU), especially the internet, is seen as a strategic health tool worldwide in order to overcome the challenges faced by the healthcare sector (Chismar and Wiley-Patton, 2003). E-HCU uses information and communication technologies to improve healthcare and strengthen health systems. E-healthcare encompasses applications of medical informatics within a comprehensive framework to support managing and providing healthcare services. (Pagliari et al., 2005, p. 10). The World Health Organization (WHO) defines E-healthcare as "a broad group of activities that use electronic tools to provide health-related information, resources, and services: the use of information and communication technologies (ICT) for health." Based on this definition, e-health applications in Türkiye, such as electronic health records, telemedicine, mobile health, e-prescription (e reçete), e-pulse (e Nabız), MHRS (central physician appointment system), and hospital management information systems can be expressed as e-health applications.

Limited public resources and the need to increase efficiency increase the demand for healthcare due to life changes such as old age. In addition, factors such as difficulties in accessing healthcare, desire to receive treatment at home, and saving time encourage the use of electronic processes in health. In addition, e-healthcare allows for faster, higher quality, more effective, and efficient healthcare to be provided locally and globally, potentially improving healthcare access (Ami-Narh and Williams, 2012). With e-health applications, patients are actively involved in decisions affecting their health status, and by allowing physicians and health users to share the same information environment, individuals are made more educated and knowledgeable (Anderson et al., 2003, p. 67). With the developments in the field of e-healthcare, the expectations and demands of individuals who can access information in a short time from health institutions have also increased, and in this direction, quality service and patient satisfaction have gained importance (Gündoğdu and Erkek, 2022). While quality is determined by external factors such as price, performance, education, etc., the concept of satisfaction is associated with individuals' level of positive or negative feelings about the service (Helena Vinagre and Neves, 2008, p. 88).

In both the public and private sectors, promptly addressing patient requests and complaints is crucial in enhancing service quality. As the perception of healthcare quality increases positively, the satisfaction level also increases positively. A positive perception of healthcare quality causes the health institution to be visited again and recommended to others. Since healthcare is interested in human life and even the smallest mistake can result in death, measuring quality in health institutions is important (Songur et al., 2017). Perceived patient satisfaction is also a key factor in the assessment process (Kavuncubaşı and Yıldırım, 2010, p. 465). Therefore, it is necessary to monitor patient satisfaction and healthcare quality in all health institutions (Önsüz et al., 2008).

Despite concerns about privacy and security in technological systems, e-healthcare is accepted as an approach to providing better health outcomes. E-HCU increases healthcare efficiency, quality, and patient satisfaction (Akter et al., 2013, p. 2). This study aims to determine the moderated mediation effects of perceived satisfaction, quality levels, and demographic characteristics in the relationship between e-healthcare usage and healthcare use. The following hypotheses were put forward to achieve the study's purpose.

Hypothesis (1): Perceived satisfaction has a statistically significant mediating effect on the relationship between participants' e-healthcare usage and healthcare use levels. This effect varies statistically significantly according to sociodemographic characteristics.

Hypothesis (2): Perceived quality has a statistically significant mediating effect on the relationship between participants' e-healthcare usage and healthcare use levels. This effect varies statistically significantly according to sociodemographic characteristics.

2. METHODOLOGY

2.1. Population and Sample

This descriptive study was conducted in a central district of Ankara. According to 2023 data, the population registered in this district was 413,994 individuals. Due to challenges in determining the sample frame based on available data, the 2023 population figure was considered as the universe. The sample size (n) was calculated using the equal probability sampling method, with a 5% margin of error (t), a 95% confidence interval (Z = 1.96), a population size (N) of 413,994, and an assumed proportion (p) of 0.50, resulting in 384 participants. Data were collected from 410 participants between February 15 and March 15 to improve the study's power.

$$n = \frac{N \times p \times q \times Z^2}{[(N-1) \times t^2] + (p \times q \times Z^2)}$$

$$n = \frac{413994 \times 0{,}5 \times 0{,}5 \times 1{,}96^2}{[(413994-1) \times 0{,}05^2] + (0{,}5 \times 0{,}5 \times 1{,}96^2)}$$

$$n = \frac{397395}{1036} = 383{,}58$$

2.2. Data Collection Tools

The study used a four-part questionnaire form as a data collection tool. The first part included six questions about the sociodemographic information of the participants. The second part used the E-Healthcare Usage (E-HCU) Scale developed by the researchers for this study. This scale is a five-point Likert-type, measuring on a scale of "1-Never, 2-Rarely, 3-Usually, 4-Frequently, 5-Always" and consists of six

questions. Reverse coding was not performed. The scale score ranges from 6 to 30. Higher scores indicate higher use of E-Health services.

In the third section, the Healthcare Usage (HCU) Scale, which the researchers also developed within the scope of this study, was used. This scale is a five-point Likert, measuring on a scale of "1-Strongly Disagree, 2-Disagree, 3- Neither agree nor disagree, 4-Agree, 5-Strongly Agree" and consists of four items. Reverse coding was not performed. This scale score ranges from 4 to 20. Higher scores indicate higher healthcare use. Validity and reliability analyses for the scales developed within the scope of the study are included in the result section.

The last section of the survey includes two questions to measure participants' satisfaction and service quality perception: "What is your level of satisfaction with the last health service you received?" and "What is the quality level of the last health service you received?" These questions are answered with a five-point Likert scale with the options "1-Very Bad, 2-Bad, 3- Neither good nor bad, 4-Good, 5-Very Good".

The research data were collected online using the Google Form platform between February 15, 2024, and March 15, 2024. Convenience and snowball sampling methods were used to reach the sample.

2.3. Analysis of Data

In this study, data analysis was carried out in two stages. In the first stage, validity and reliability analyses of E-HCU and HCU scales developed within this research were carried out. In the second stage, hypothesis analyses of the research were conducted.

During the development process of E-HCU and HCU scales, the researcher created an item pool. The Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated by taking seven experts' opinions for the items' content validity. The construct validity of the scales was evaluated with Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The reliability of the scales was determined by Cronbach's Alpha (CA) and Composite Reliability (CR) coefficients.

The data was determined to show the normal distribution in the groups when skewness and kurtosis values were evaluated before proceeding to hypothesis analysis. T-test and ANOVA tests were used in the difference analyses between groups of participant characteristics. In the ANOVA test, Welch test findings were presented in the cases where the variances were not homogeneous. Bonferroni's corrected findings were used in the multiple-group comparison tests. Relationships between variables were examined with the Pearson correlation test. Mediation (model 4), moderation (model 1), and moderated mediation (model 14) analyses were performed using Process Macro 4.1 add-on of SPSS (Hayes and Matthes, 2009). Five thousand (5000) resampling were performed with the bootstrap method, and the findings were examined at a 95% confidence interval. Data analyses were performed in SPSS 29 and AMOS 24 programs. $p<0.05$ value was considered statistically significant.

3. RESULTS

The mean age of the participants in the study was 42.48±12.61. Two hundred-one (n=201) participants (49.0%) were female and 209 (51%) were male. 72 (17.6%) were single, and 338 (82.4%) were married. The mean number of children was 2.15±1.39. 230 (56.1%) had a high school degree or below, and 180 (43.9%) had an associate degree or above. Of the participants, 112 (27.3%) were housewives, 153 (37.3%) were public employees, 82 (20.0%) were private sector employees, 21 (5.1%) were retired, and 42 (10.2%) were in other professions.

The values of the content validity index (CVI) and content validity ratio (CVR) were calculated for the E-HCU and HCU scales. As a result of the evaluation made by seven experts, it was determined that the CVI values of the items were 1.00 (>0.780), and the CVR value for all items was 1.00 (>0.800). The CVI and CVR levels indicate the scale items' content validity (Almanasreh et al., 2022; Arora et al., 2017; Davis, 1992).

EFA was performed with items of the E-HCU and HCU scales. Principal Component Analysis and Direct Oblimin methods were used in EFA without factor limitation. The KMO sample adequacy (0.839) and Bartlett's Sphericity Test (Chi-square = 2309.308; $p < 0.001$) were sufficient and appropriate for factor analysis. The scale items were grouped under two factors, E-HCU and HCU; the scree plot supported this finding. The total variance explained was 65.66%, and the lowest factor loading was 0.684. After the EFA, first-level CFA was performed for the structure consisting of the two dimensions, and the findings are presented in Table 1.

Table 1. Confirmatory Factor Analysis and Reliability Findings of E-HCU and HCU Scales

Expressions	β	95% CI(β) Lower	Top	p	CA	CR	Average (SS)
Use of E-Healthcare							
I can get my hospital appointment from MHRS, e-government or e-nabız	0.623	0.549	0.693	**<0.001**	0.911	0.914	2.43 (1,157)
I check my reports from e-pulse	0.895	0.863	0.922	**<0.001**			
I show my test results to my doctor via e-pulse	0.808	0.745	0.859	**<0.001**			
I view my medical images via e-pulse	0.889	0.857	0.918	**<0.001**			
I show my medical images to the doctor via e-pulse	0.777	0.718	0.830	**<0.001**			
I enter my health information (weight, blood pressure, pulse) into e-pulse	0.793	0.733	0.844	**<0.001**			
Healthcare Use							
I have been seeing family doctors very often in the last six months.	0.631	0.510	0.740	**<0.001**	0.768	0.771	2.52 (0.939)
I have been to the emergency room very often in the last six months.	0.678	0.563	0.779	**<0.001**			
I have been admitted to the hospital very often in the last six months.	0.757	0.658	0.848	**<0.001**			
I have spent a lot of money on health in the last six months	0.635	0.520	0.743	**<0.001**			

χ2/df: 3.641 **GFI:** 0.993 **AGFI:** 0.989 **NFI:** 0.989 **RFI:** 0.986 **RMR:** 0.074 **SRMR:** 0.042

β=Standardized Factor Loading; CI=Confidence Interval; CA=Cronbach Alpha; CR= Composite Reliability; Avg = Average; SD = Standard Deviation

The fit index values of the CFA model in which both scales were evaluated (χ 2 / df =3.641<5; GFI=0.993>0.900; AGFI=0.989>0.900; NFI=0.989>0.900; RFI=0.986>0.900; RMR=0.074<0.080; SRMR=0.042<0.080) show that the model is compatible with the data. The factor loadings of the E-HCU and HCU items were statistically significant ($p<0.05$). According to the CA and CR coefficients, the variables were reliable (Table 1).

Table 2. Difference Analysis Findings According to Participants' Characteristics

	Perceived Satisfaction[1]	Perceived Service Quality[2]	Use of E-Healthcare[3]	Healthcare Use[4]
Gender				
Woman	3.33±1.323	3.40±1.312	2.41±1.239	2.59±0.898
Male	3.08±1.372	3.08±1.302	2.45±1.075	2.47±0.977
T	1,854	2,490	-0.341	1,274
p	0.064	**0.013**	0.733	0.203
Marital status				
Single	3.25±1.527	3.28±1.456	2.84±1.238	2.40±0.954
Married	3.19±1.315	3.22±1.286	2.35±1.122	2.56±0.936
T	0.298	0.286	3,297	-1,281
p	0.766	0.776	**0.001**	0.201
Educational Status				
High school and below	3.35±1.316	3.34±1.305	2.04±1.063	2.67±0.950
Associate's degree and above	3.01±1.378	3.09±1.319	2.94±1.074	2.34±0.896
T	2,551	1,909	-8,507	3,577
p	**0.011**	0.057	**<0.001**	**<0.001**
Job				
Housewife [1]	3.33±1.297	3.38±1.268	2.26±1.212	2.69±0.977
Public personnel [2]	2.90±1.385	3.06±1.314	2.73±1.130	2.35±0.936
Private Sector Employee [3]	3.26±1.322	3.11±1.333	2.43±0.965	2.50±0.846
Retired [4]	4.10±0.889	3.95±1.117	1.75±1.064	3.11±0.996
Other [5]	3.40±1.380	3.36±1.376	2.16±1.239	2.51±0.842
F/W	7,249 W	2,938	5,781	4,389
p	**<0.001**	**0.020**	**<0.001**	**0.002**
Difference*	2<4	2<4	1<2; 4<2; 5<2	2<1; 2<4

Note: T=T Test; F=ANOVA Test; W= Welch Test; Difference*= Multiple Comparison Test with Bonferroni Correction

The findings of the difference analysis regarding the characteristics of the participants are presented in Table 2. According to these findings,

- ✓ A significant difference was found in Perceived Healthcare Quality in terms of the participants' gender, and the mean score of women was higher than the mean score of men.
- ✓ The mean HCU score of single participants was higher than that of married participants.
- ✓ When the analysis findings were examined for Perceived Healthcare Satisfaction, E- HCU and HCU in terms of the educational status of the participants.
  - The Perceived Satisfaction and HCU mean score of participants with high school education or below is higher than that of participants with an associate degree or above,
  - The E- HCU mean score of participants with an associate degree or higher was higher than that of participants with a high school degree or lower.

- ✓ When the analysis findings were examined for Perceived Satisfaction, Perceived Healthcare Quality, E-HCU, and HCU levels in terms of the professions of the participants,
  - The Perceived Satisfaction and Perceived Healthcare Quality mean scores of retirees are higher than that of public employees.
  - E- HCU mean score of public employees is higher than that of housewives, retirees, and other professional participants,
  - The HCU mean score of housewives and retirees is higher than that of public personnel.

Table 3. Correlation Analysis Findings

Variables		1	2	3	4	5
1. Age	r	1				
	p					
2. Number of Children	r	0.444	1			
	p	**<0.001**				
3. Perceived Satisfaction	r	0.249	0.036	1		
	p	**<0.001**	0.472			
4. Perceived Service Quality	r	0.266	0.062	0.808	1	
	p	**<0.001**	0.210	**<0.001**		
5. Use of E-Healthcare	r	-0.308	-0.348	-0.195	-0.158	1
	p	**<0.001**	**<0.001**	**<0.001**	**0.001**	
6. Use of Healthcare	r	0.391	0.157	0.709	0.668	-0.274
	p	**<0.001**	0.001	**<0.001**	**<0.001**	**<0.001**

r: Pearson Correlation Coefficient

The associations among the study's continuous variables are shown in Table 3. According to these findings,

- ✓ There are positive significant relationships between the participants' ages and the number of children, Perceived Satisfaction and Perceived Healthcare Quality, and HCU level,
- ✓ There are negative significant relationships between the participants' ages and E-HCU levels,
- ✓ There are positive significant relationships between the number of children of the participants and HCU level,
- ✓ There are negative significant relationships between the number of children of the participants and E- HCU level,
- ✓ There are positive significant relationships between Perceived Satisfaction and Perceived Healthcare Quality, and HCU levels,
- ✓ There are negative significant relationships between Perceived Satisfaction and E-HCU levels,
- ✓ There are positive significant relationships between Perceived Healthcare Quality and HCU levels,
- ✓ There are negative significant relationships between Perceived Healthcare Quality and E-HCU levels,
- ✓ There were negative significant relationships between E-HCU and HCU levels.

It was evaluated that age might affect the relationships between the number of children in the participants and both E-HCU and HCU. The relationship changes were examined using a partial correlation test with controlling age. According to the findings,

- ✓ The negative significant relationship between the number of children and E-HCU (r=-0.348; p<0.001) continued, but the relationship level decreased (r=-0.249; p=<0.001),
- ✓ The positive significant relationship between the number of children and HCU level (r=0.157; p=0.001) was observed to lose significance (r=-0.020; p=0.682). These findings showed that age affected the relationships between the number of children and E-HCU and HCU levels.

Table 4. Regression Analysis Results (Mediator Variable = Perceived Satisfaction)

Variables	Perceived Satisfaction			Healthcare Use		
	b	LLC	ULCI	b	LLC	ULCI
Mediation Model						
E-Healthcare Usage (X)	-0.228*	-0.339	-0.116	-0.114*	-0.170	-0.058
Perceived Satisfaction (M)				0.473*	0.425	0.521
R2		0.038			0.521	
Indirect Effect	E-Healthcare Usage →Perceived Satisfaction →Healthcare Usage b=-0.108; 95% CI [-0.166 – -0.051]					
Simple Moderator Effect Model (Age)						
Perceived Satisfaction (X)				0.463*	0.415	0.510
Age (W)				0.015*	0.010	0.021
Interactive Variable (X*W)				0.004*	<0.001	0.008
R2					0.557	
Moderated Mediation Effect Model (Age)						
E-Healthcare Usage (X)				-0.069*	-0.125	-0.014
Perceived Satisfaction (M)				0.455*	0.408	0.503
Age (W)				0.013*	0.008	0.019
Interactive Variable (M*W)				0.005*	0.001	0.008
R2					0.564	
Indirect Effect	b		LLC		ULCI	
Low Age	-0.090*		-0.139		-0.042	
Middle age	-0.104*		-0.158		-0.049	
High Age	-0.118*		-0.181		-0.056	
Moderated Mediation Index	-0.001*		-0.002		<-0.001	

Note: *p<0.05; LLCI=Lower Confidence Interval; ULCI=Upper Confidence Interval; b=Unstandardized Beta Coefficient; X=Independent Variable; M=Mediator Variable; W=Moderator Variable

The regression analysis model in which Perceived Satisfaction is the mediator variable is shown in Table 4. According to the findings,

Mediation Model:

When the mediation relationship (E-Healthcare Usage → Perceived Satisfaction → Healthcare Usage) was evaluated, it was determined that E-HCU had a significant negative effect on Perceived Satisfaction (b = -0.228; 95% CI [-0.339, -0.116]), explaining 0.38% of the variance in Perceived Satisfaction. In the second regression analysis, it was found that E-HCU had a significant negative effect on HCU (b = -0.114; 95% CI [-0.170, -0.058]), while Perceived Satisfaction had a significant positive effect on HCU (b = 0.473; 95% CI [0.425, 0.521]). Together, E-HCU and Perceived Satisfaction explained 52.1% of the variance in HCU. According to the findings on indirect effects, E-HCU had a significant negative effect on HCU through Perceived Satisfaction (b = -0.108; 95% CI [-0.166, -0.051]), indicating that Perceived Satisfaction mediates the relationship between E-HCU and HCU.

Simple Moderator Effect Model (Age):

When the simple moderation effect of age was evaluated, it was found that Perceived Satisfaction had a significant positive effect on HCU (b = 0.463; 95% CI [0.415, 0.510]), and age also had a significant positive effect on HCU (b = 0.015; 95% CI [0.010, 0.021]). Additionally, the interaction term had a significant positive effect on HCU (b = 0.004; 95% CI [<0.001, 0.008]). The significant effect of the interaction term on HCU indicates that age has a positive moderating effect.

Moderated Mediation Effect Model (Age):

When the moderated mediation effect of age was evaluated, it was found that E-HCU had a significant negative effect on HCU (b = -0.069; 95% CI [-0.125, -0.014]), Perceived Satisfaction had a significant positive effect on HCU (b = 0.455; 95% CI [0.408, 0.503]), and age had a significant positive effect on HCU (b = 0.013; 95% CI [0.008, 0.019]). Additionally, the interaction term had a significant positive effect on HCU (b = 0.005; 95% CI [0.001, 0.008]). The moderated mediation index was found to be significant (b = -0.001; 95% CI [-0.002, <-0.001]), showing that age is a moderator in the indirect effect of E-HCU on HCU through Perceived Satisfaction. When age is low, the indirect effect is significant (b = -0.090; 95% CI [-0.139, -0.042]), as it is for medium age (b = -0.104; 95% CI [-0.158, -0.049]) and high age (b = -0.118; 95% CI [-0.181, -0.056]).

As the participants' age increases, the indirect effect of E-HCU on HCU through Perceived Satisfaction also increases, while the direct negative effect of E-HCU on HCU decreases. Thus, for participants with higher age, the tendency of E-HCU to reduce HCU level decreases, and their healthcare usage increases due to the mediating effect of Perceived Satisfaction.

Table 5. Regression Analysis Results (Mediator Variable = Perceived Quality)

Variables	Perceived Quality			Healthcare Use		
	b	LLC	ULCI	b	LLC	ULCI
Mediation Model						
E-Healthcare Usage (X)	-0.179*	-0.288	-0.070	-0.140*	-0.198	-0.082
Perceived Quality(M)				0.457*	0.406	0.508
R2		0.025			0.475	
Indirect Effect	E-Healthcare Usage →Perceived Quality →Healthcare Usage b=-0.082; 95% CI [-0.135 – -0.028]					
Simple Moderator Effect Model (Age)						
Perceived Quality (X)				0.442*	0.390	0.494
Age (W)				0.016*	0.010	0.021
Interactive Variable (X*W)				0.004*	0.003	0.009
R2					0.500	
Moderated Mediation Effect Model (Age)						
E-Healthcare Usage (X)				-0.095*	-0.153	-0.037
Perceived Quality (M)				0.435*	0.383	0.486
Age (W)				0.013*	0.007	0.019
Interactive Variable (M*W)				0.004*	<0.001	0.008
R2					0.512	
Indirect Effect	b		LLC		ULCI	
Low Age	-0.068*		-0.115		-0.022	
Middle age	-0.078*		-0.129		-0.025	
High Age	-0.088*		-0.145		-0.028	
Moderated Mediation Index	<-0.001*		-0.001		<-0.001	
Simple Moderator Effect Model (Number of Children)						
Perceived Quality (X)				0.473*	0.422	0.524
Number of Children (W)				0.071*	0.023	0.120
Interactive Variable (X*W)				0.046*	0.009	0.084
R2					0.467	
Moderated Mediation Effect Model (Number of Children)						
E-Healthcare Usage (X)				-0.117*	-0.179	-0.056
Perceived Quality (M)				0.459*	0.408	0.510
Number of Children (W)				0.039	-0.011	0.089
Interactive Variable (M*W)				0.042*	0.005	0.079
R2					0.485	
Indirect Effect	b		LLC		ULCI	
Low Number of Children	-0.072*		-0.122		-0.024	
Medium Number of Children	-0.082*		-0.138		-0.028	
High Number of Children	-0.093*		-0.156		-0.032	
Moderated Mediation Index	-0.007*		-0.016		-0.001	

The regression analysis model in which Perceived Quality is the mediator variable are shown in Table 5. According to the findings,

Mediation Analysis:

When the mediation relationship (E-Healthcare Usage → Perceived quality → Healthcare Usage) was evaluated, E-HCU had a significant negative effect on Perceived Quality (b = -0.179; 95% CI [-0.288, -0.070]), explaining 0,25% of the variance in Perceived Quality. In the second regression analysis, E-HCU had a significant negative effect on HCU (b = -0.140; 95% CI [-0.198, -0.082]), while Perceived Quality had a significant positive effect on HCU (b = 0.457; 95% CI [0.406, 0.508]). Together, E-HCU and Perceived Quality explained 47.5% of the variance in HCU. According to the findings on indirect effects, E-HCU had a significant negative effect on HCU through Perceived Quality (b = -0.082; 95% CI [-0.135, -0.028]), indicating that Perceived Quality mediates the relationship between E-HCU and HCU.

Simple Moderation Analysis (Age):

When the simple moderation effect of age was evaluated, Perceived Quality had a significant positive effect on HCU (b = 0.442; 95% CI [0.390, 0.494]), age had a significant positive effect on HCU (b = 0.016; 95% CI [0.010, 0.021]), and the interaction term had a significant positive effect on HCU (b = 0.004; 95% CI [0.003, 0.009]). The significant effect of the interaction term on HCU suggests that age has a positive moderating effect.

Moderated Mediation Analysis (Age):

When the moderated mediation effect of age was evaluated, it was found that E-HCU had a significant negative effect on HCU (b = -0.095; 95% CI [-0.153, -0.037]), Perceived Quality had a significant positive effect on HCU (b = 0.435; 95% CI [0.383, 0.486]), age had a significant positive effect on HCU (b = 0.013; 95% CI [0.007, 0.019]), and the interaction term had a significant positive effect on HCU (b = 0.004; 95% CI [<0.001, 0.008]). The moderated mediation index was found to be significant (b < -0.001; 95% CI [-0.001, < -0.001]), indicating that age is a moderator in the indirect effect of E-HCU on HCU through Perceived Quality. The indirect effect is significant at low (b = -0.068; 95% CI [-0.115, -0.022]), medium (b = -0.078; 95% CI [-0.129, -0.025]), and high levels of age (b = -0.088; 95% CI [-0.145, -0.028]).

As participants' age increases, the indirect effect of E-HCU on HCU through Perceived Quality also increases, while the direct negative effect of E-HCU on HCU decreases. Thus, for participants with higher age, the tendency of E-HCU to reduce HCU diminishes, and their healthcare usage increases due to the mediating effect of Perceived Quality.

Simple Moderation and Moderated Mediation Analysis (Number of Children):

Similar age findings were obtained when the simple moderation and moderated mediation effects of the number of children were evaluated. As indicated by the correlation analysis findings, as indicated in the findings of the correlation analysis, age has been determined to influence the relationship between the number of children

and HCU. Therefore, findings regarding the simple moderation and moderated mediation effects of the number of children are provided but were not further evaluated.

4. DISCUSSION

This study's findings revealed that individuals' sociodemographic characteristics are effective in perceived quality, perceived satisfaction, HCU, and E-HCU. In particular, the moderating role of age in the relationships between E-HCU and HCU was determined.

The study revealed high perceived satisfaction levels among elderly and retired individuals. Age was identified as a moderating factor in the relationship between perceived satisfaction and HCU. The literature found that the perceived satisfaction level of elderly patients was higher than that of young people, consistent with the study findings (Nguyen Thi et al., 2002, p. 499; Venn and Fone, 2005, p. 121). Venn and Fone (2005, p. 121) and Brown et al. (2007, p. 95) similarly discovered in their studies that patients with lower education levels reported higher perceived satisfaction with healthcare services. This finding aligns with the observation that individuals with lower educational attainment are often older adults. This finding is consistent with the fact that patients with lower levels of education are elders. In addition, the higher perceived satisfaction of retirees is another finding that shows the relationship between age and satisfaction. In the same study, male patients were found to have higher levels of perceived satisfaction than female patients (Brown et al., 2007, p. 95). In the study of McCreary and Sadava (2001, p. 661), no difference was found in perceived satisfaction levels in terms of gender.

The perceived healthcare quality level of female patients within the study's scope was higher than that of male patients. Abu-Salim et al. (2019, p. 609) found no difference between genders in the perceived service quality level in concrete services, while the perceived service quality level in abstract concepts such as empathy was high in female patients. Rumi et al. (2021, p. 3) similarly found higher perceived healthcare quality levels of female patients in their study. Teunissen et al. (2016, p. 631) found that men perceived healthcare quality at a higher level than women. In the studies of Al-Damen (2017, p. 146), no difference was found in the healthcare quality perceived by patients according to gender. In the literature, differences in perceived healthcare quality and satisfaction levels between genders are attributed to variations in research methodologies and cultural differences.

Butler et al. (1996, p. 16) found that older individuals perceived higher quality of healthcare facilities. Manulik et al. (2018, p. 720) found that older patients had a higher perception of healthcare quality. Suhonen et al. (2018, p. 307) found no relationship between age and the quality of service received by cancer patients. Alrubaiee and Alkaa'ida (2011, p. 126) found that perceived healthcare quality was affected by sociodemographic characteristics. It is thought that both perceived satisfaction and perceived healthcare service quality are higher in older patients

because older patients have lower expectations due to their past experiences. This idea aligns with findings in the literature, indicating that the gap between expectations and perception levels is narrower among older individuals (Manulik et al., 2018, p. 720).

When the findings of the use of E-healthcare in this study were examined, it was determined that young people, single people, and patients with higher education levels used E-HCU more frequently. It is considered that the fact that young people are more prone to technology than the elderly is effective in this result. When the literature was examined, it was determined that youth, people living alone and patients with higher education levels used E-HCU more frequently, which is consistent with the findings of this study (LaMonica et al., 2017, p. 5; Reiners et al., 2019, p. 1).

Among the patients in the study, it was determined that the frequency of HCU was higher in patients with lower education and income levels and retired patients. When these findings are evaluated in general, age is the main factor affecting healthcare use. This finding is also seen in the positive correlation between the frequency of HCU and age. In line with the findings of this study, the increase in chronic diseases and HCU with age is an accepted finding in the literature (Atella et al., 2019, p. 911; Uğrak et al., 2016, p. 161). This study found a strong relationship between patients' perceived healthcare quality and satisfaction. Patients who evaluate the quality of healthcare they receive highly also have high satisfaction levels. This finding is consistent with extensive literature findings (Asnawi et al., 2019, p. 918; Meesala and Paul, 2018, p. 266).

In this study, the negative mediating role of perceived satisfaction in the relationship between E-HCU and HCU was identified. It can be inferred from these findings that when perceived satisfaction is high, patients are more likely to utilize traditional healthcare rather than E-healthcare. De Rosis and Barsanti (2016, p. 1280) found that patients unsatisfied with traditional healthcare tended to use E-healthcare services. Although the mediating role of perceived satisfaction was revealed in this study, age is another important variable consistent with the findings of Bellio and Buccoliero (2021, p. 182). Their study identified that age mediates the relationship between patient satisfaction and the perceived quality of physician-patient interactions. In the current study, age was found to play a positive moderated mediation role in the mediating effect of perceived satisfaction. This finding suggests that older patients, who generally exhibit higher levels of healthcare satisfaction compared to younger patients, are more likely to prefer traditional healthcare services over e-healthcare (Jenkinson et al., 2002; Nguyen Thi et al., 2002). In addition, the fact that elderly patients use e-healthcare less frequently than young patients is also effective in this finding (De Rosis and Barsanti, 2016, p. 1280; LaMonica et al., 2017, p. 5; Reiners et al., 2019, p. 1). When the literature was examined in detail, no sufficient findings were found in the literature regarding this mediation effect.

In this study, a negative mediating role of perceived quality was identified in the inverse relationship between e-healthcare and healthcare utilization. It can be suggested that patients with a higher perceived quality of healthcare are more likely

to utilize healthcare than rely on e-healthcare. The study revealed a strong positive relationship between perceived quality and perceived satisfaction. Similarly, perceived quality mediates patients' utilization of healthcare services rather than e-healthcare, similar to perceived satisfaction. Musheer Abdulwahid et al. (2018, p. 11) found a relationship between perceived healthcare quality and satisfaction levels among university students, noting that perceived healthcare quality impacts their intention to use healthcare services. Additionally, it was determined that increasing age strengthens the relationship between perceived quality and healthcare utilization. This finding is consistent with the findings regarding the moderating effect of perceived satisfaction.

The study found that age enhances the mediating effect of perceived satisfaction and healthcare quality in the relationship between patients' use of e-healthcare and perceived healthcare quality. This result is attributed to older individuals' higher perception of healthcare quality and satisfaction, alongside their lower use of e-healthcare compared to younger individuals. Additionally, given that health problems tend to increase with age, leading to greater healthcare utilization, the study's findings are considered consistent with the literature. In the study by Katz et al. (2023, p. 776), it was found that patients' age moderates the relationships between trust in doctors and hospital visits, as well as between trust in doctors and patient satisfaction, with these relationships strengthening with age. In their meta-analysis, Zhao et al. (2018, p. 349) identified a moderating effect of age on patients' adaptation to e-healthcare applications, noting that older patients use e-healthcare applications less frequently than younger ones. Thus, the findings of this study are in alignment with this literature.

In this study, the moderating role of the number of children was identified in the positive relationship between perceived quality and healthcare quality. This finding suggests that the increased healthcare needs of families with more children may be a contributing factor. In the study by Lingrui et al. (2019, p. 5), a positive relationship between the quality of healthcare facilities and healthcare utilization among pediatric patients was found. Conversely, the study by Gage et al. (2018, p. 8), revealed that poor quality negatively affects the utilization of primary healthcare services. However, the same study did not find a relationship between pediatric care and quality. Additionally, this study demonstrated that the number of children strengthens the mediating effect of perceived quality in the negative relationship between e-healthcare and healthcare utilization. Given that older individuals tend to perceive higher levels of quality (Butler et al., 1996, p. 16; Manulik et al., 2018, p. 720) and use e-healthcare services less frequently (De Rosis and Barsanti, 2016, p. 1280; LaMonica et al., 2017, p. 5; Reiners et al., 2019, p. 1), it further strengthens the argument that age plays a significant role in these findings.

The findings of this study were obtained using a convenience sampling method, with limitations including the absence of stratification and randomization techniques. Another limitation is that perceived quality and satisfaction were each measured using a single Likert-type question with five response options. The single-question evaluation approach was preferred to reduce both non-response and response biases.

5. CONCLUSION

This study found that older individuals are more likely to transition from e-healthcare to traditional healthcare utilization, primarily due to their perceptions of higher healthcare quality and satisfaction. The findings suggest that this trend may be influenced by older adults' generally lower engagement with technology compared to their younger counterparts.

Considering these results, it is recommended that health policymakers and administrators prioritize the design of e-healthcare systems that enhance accessibility for older adults. Furthermore, it is advised that future research investigate the underlying reasons for the differences in healthcare satisfaction and quality perception between younger and older populations.

E-SAĞLIK HİZMETLERİ İLE SAĞLIK HİZMETLERİ KULLANIMLARI ARASINDAKİ İLİŞKİDE ALGILANAN MEMNUNİYET, KALİTE DÜZEYLERİ VE DEMOGRAFİK ÖZELLİKLERİN DURUMSAL ARACILIK ETKİLERİ

1. GİRİŞ

Sağlık sektörünün karşı karşıya kaldığı zorlukların üstesinden gelmek için E-Sağlık Hizmetleri Kullanımı (elektronik sağlık hizmeti kullanımı- E-SHK) özellikle de internet dünya çapında stratejik bir sağlık aracı olarak görülmektedir (1). E-SHK, sağlık hizmetlerini iyileştirmek ve sağlık sistemlerini güçlendirmek için bilgi ve iletişim teknolojilerinin özellikle de internetin kullanılmasıdır. E-SHK, sağlık hizmetlerinin yönetimini ve sunumunu kolaylaştırmaya yönelik geniş bir çerçevedeki tıbbi bilişim uygulamalarını ifade etmektedir (2). Dünya Sağlık Örgütü (DSÖ) tarafından E-SHK, "sağlıkla ilgili bilgi, kaynak ve hizmetleri sunmak için elektronik araçları kullanan geniş bir faaliyet grubunu içerir: sağlık için bilgi ve iletişim teknolojilerinin (BİT) kullanılmasıdır" şeklinde tanımlanmaktadır. Türkiye'de e-sağlık uygulamaları elektronik sağlık kayıtları, tele tıp, mobil sağlık (m-sağlık), e reçete, e nabız, MHRS (merkezi hekim randevu sitemi) ve hastane yönetim bilgi sistemleri olarak ifade edilebilir (3).

Teknolojik sistemlerde gizlilik ve güvenlik gibi konularda endişe duyulmasına rağmen, daha iyi sağlık sonuçlarına ulaşmayı sağlayacak bir yaklaşım olarak kabul edilmektedir. E-SHK ile hem sağlık hizmetlerinin verimliliğini, kalitesini hem de hasta memnuniyetinin artırılması sağlanmaktadır (13). Bu çalışmanın amacı; E-SHK hizmetleri ile sağlık hizmetleri kullanımları arasındaki ilişkide algılanan memnuniyet, kalite düzeyleri ve demografik özelliklerin durumsal aracılık etkilerinin saptanmasıdır.

2. YÖNTEM

Çalışmanın evrenini Ankara'nın merkez bir ilçesinde yaşayan 413.994 kişi oluşturmaktadır. Sapma değeri %5 ve güven aralığı %95 alınarak örneklem büyüklüğü 384 olarak hesaplanmıştır. 15Şubat – 15Mart tarihlerinde 410 kişiyle araştırma gerçekleştirilmiştir.

E-SHK'na dair ifadeler 1-Hiç, 2-Nadiren, 3-Genellikle, 4-Sıklıkla, 5-Her zaman şeklinde, SHK'na dair ifadeler 1-Kesinlikle Katılmıyorum, 2-Katılmıyorum, 3-Fikrim Yok, 4-Katılıyorum, 5-Kesinlikle Katılıyorum şeklinde cevaplanmaktadır. Üçüncü bölümde ise "Son aldığınız sağlık hizmetlerinden memnuniyet seviyeniz nedir?" ve "Son aldığınız sağlık hizmet kalite seviyesi nedir?" soruları yer almaktadır. Bu sorular 1-Çok Kötü, 2-Kötü, 3-Kararsızım, 4- İyi, 5-Çok İyi şeklinde cevaplanmaktadır.

Verilerin analizleri SPSS 29 ve AMOS 24 programlarında gerçekleştirilmiştir. E-SHK ve SHK'nın yapı geçerliliği Açıklayıcı Faktör Analizi (AFA) ve Doğrulayıcı Faktör

Analizi (DFA) ile değerlendirilmiştir. Ölçeklerin güvenilirliği Cronbach Alfa (CA) ve Composite Reliability (CR) katsayıları ile incelenmiştir. Verilerin çarpıklık ve basıklık değerlerine göre normal dağılım gösterdiği belirlenmiştir (14). Katılımcı özelliklerine ilişkin farklılık analizlerinde T testi ve ANOVA testi kullanılmıştır. ANOVA testinde varyansların homojen olmadığı durumda Welch testi bulgularına yer verilmiştir. Gruplar arasında gerçekleştirilen çoklu karşılaştırma testlerinde Bonferroni Düzeltmeli bulgular kullanılmıştır. Değişkenler arasındaki ilişkiler Pearson korelasyon testi ile incelenmiştir. Aracılık (model 4), düzenleyici (model 1) ve durumsal aracılık (model 14) analizleri Process Macro 4.1uygulaması kullanılarak gerçekleştirilmiştir (15, 16). Analizlerde bootstrap yöntemi ile 5000 yeniden örnekleme yapılmış, bulgular %95 güven aralığında incelenmiştir. P<0,05 değeri istatistiksel olarak anlamlı kabul edilmiştir.

3. BULGULAR

Araştırmaya dâhil edilen katılımcıların yaş ortalaması 42,48±12,610 olup 201 (%49,0) kişi kadın ve 209 (%51) erkektir. 72 (%17,6) kişi bekârken 338 (%82,4) kişi evlidir. Ortalama çocuk sayısı 2,15±1,392 olup 230 (%56,1) kişi lise ve altında 180 (%43,9) kişi ön lisans ve üstünde eğitime sahiptir. Katılımcılardan 112 (%27,3) kişi ev hanımı, 153 (%37,3) kişi kamu personeli, 82 (%20,0) kişi özel sektör çalışanı, 21 (%5,1) kişi emekli ve 42 (%10,2) kişi ise diğer meslek sahibidir.

E-SHK ve SHK ifadelerini boyutlandırmak amacıyla yapılan Açıklayıcı Faktör Analizi (AFA) ve Doğrulayıcı Faktör Analizi (DFA) sonuçları, modelin verilerle uyumlu olduğunu göstermektedir. AFA'da KMO (0,839) ve Bartlett Testi (p<0,001) uygun örneklem yeterliliği sağlarken, faktör yükleri %65,655 açıklanan varyans ile iki faktörde toplanmıştır. DFA'da ise uyum indeks değerleri (χ^2/df=3,641; GFI=0,993; NFI=0,989) modelin geçerliliğini pekiştirmiştir. E-SHK ve SHK'nın faktör yüklerinin istatistiksel olarak anlamlı olduğu belirlenmiştir.

Katılımcıların cinsiyet, medeni durum ve eğitim durumu gibi özelliklerine göre farklılık analizleri yapılmış; kadınların AHK ortalaması, bekârların E-SHK ortalaması ve eğitim durumu ile memnuniyet arasındaki farklılıklar belirlenmiştir. Ayrıca, katılımcıların yaşları ile çocuk sayıları arasında pozitif ilişkiler saptanmıştır.
Regresyon analizi ile E-SHK'nın Algılanan Memnuniyet ve Kalite üzerindeki etkileri incelenmiş, her iki durumda da E-SHK'nın olumsuz etkisi bulunmuştur. Yaşın, bu ilişkilerde düzenleyici bir rol oynadığı ve daha yüksek yaş grubundaki katılımcılarda algılanan memnuniyetin olumlu yönde arttığı tespit edilmiştir. Sonuçlar, yaş ve çocuk sayısının dışındaki özelliklerin etkilerinin anlamlı olmadığını ortaya koymuştur. Bu bulgular, E-SHK ve SHK'nın sağlık hizmetleri kullanımındaki dinamiklerini anlamada önemli veriler sunmaktadır.

4. TARTIŞMA

Bu çalışmada, algılanan kalite, memnuniyet, SHK ve E-SHK'da bireylerin sosyodemografik özelliklerinin etkili olduğu ortaya konmuştur. Özellikle yaşın E-

SHK ve SHK'daki ilişkilerde düzenleyici rolü tespit edilmiştir. Araştırma yaşlılarda ve emeklilerde algılanan memnuniyet seviyesinin yüksek olduğunu göstermektedir. Algılanan memnuniyet ile SHK arasındaki ilişkide yaşın düzenleyici rolü bulunmuştur. Literatürde de çalışma bulguları ile tutarlı şekilde yaşlı hastaların algılanan memnuniyet düzeyinin gençlere göre daha yüksek olduğu tespit edilmiştir (Jenkinson ve ark., 2002, p. 95; Nguyen Thi ve ark., 2002, p. 499; Venn ve Fone, 2005, p. 121). Venn ve Fone (2005, p. 121) ve Brown ve ark. (2007, p. 95).

Araştırma kapsamındaki kadın hastaların algılanan sağlık hizmet kalite seviyesi, erkeklere göre daha yüksek seviyede tespit edilmiştir. Abu-Salim ve ark. (2019, p. 609) yaptığı çalışmada somut hizmetlerdeki algılanan hizmet kalite seviyesinde cinsiyet arasında farklılık göstermezken, empati gibi soyut kavramlarda algılanan hizmet kalite seviyesi kadın hastalarda yüksek seviyede tespit edilmiştir. Rumi ve ark. (2021, p. 3) benzer şekilde çalışmasında kadın hastaların algılanan sağlık hizmet düzeyleri daha yüksek seviyede belirlenmiştir. Al-Damen (2017, p. 146) ve Manulik ve ark. (2018, p. 720) çalışmalarında ise hastaların algıladıkları hizmet kalitesinde cinsiyete göre farklılık tespit edilmemiştir. Literatürde algılanan sağlık hizmet kalite ve memnuniyet seviyelerinde cinsiyet yönünden analiz sonuçlarının farklılaşmasının nedeninin çalışmalarda kullanılan farklı metodolojilerin yansıra, kültürel farklılıklardan kaynaklandığı değerlendirilmektedir.

Bu çalışmadaki E-sağlık hizmetleri kullanım bulguları incelendiğinde, gençlerin, bekârların ve yüksek eğitimli bireylerin SHK'yı daha sık kullandıkları tespit edilmiştir; bu durum, gençlerin teknolojiye daha yatkın olmalarıyla ilişkilendirilmektedir. Literatür incelendiğinde E-SHK'yı bu çalışma bulguları ile tutarlı olarak genç, yalnız yaşayan ve eğitim seviyesi yüksek hastaların daha sık kullandıkları tespit edilmiştir (De Rosis ve Barsanti, 2016, p. 1280; Hofstede ve ark., 2014, p. 971; LaMonica ve ark., 2017, p. 5; Reiners ve ark., 2019, p. 1).

SONUÇ

Bu çalışmada daha yaşlı bireylerin algıladıkları daha yüksek sağlık hizmet kalitesi ve memnuniyet seviyeleri aracılığı ile E-SHK'dan sağlık hizmet kullanımına yöneldikleri sonucuna ulaşılmıştır. Bu sonuçta yaşlı bireylerin teknoloji kullanımında gençler kadar aktif olmamasının da etkili olduğu düşünülmektedir. Bu araştırma bulgularına dayanarak sağlık politikacıları ve yöneticilerinin yaşlı bireylerin yönelebileceği E-SHK tasarımlarına odaklanmasının faydalı olabileceği değerlendirilmektedir.

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Fikir veya Kavram / *Idea or Notion*	Araştırma hipotezini veya fikrini oluşturmak / *Form the research hypothesis or idea*	Abide AKSUNGUR Selahattin AKYÜZ Uğur UĞRAK
Tasarım / *Design*	Yöntemi, ölçeği ve deseni tasarlamak / *Designing method, scale and pattern*	Abide AKSUNGUR Selahattin AKYÜZ Uğur UĞRAK
Veri Toplama ve İşleme / *Data Collecting and Processing*	Verileri toplamak, düzenlenmek ve raporlamak / *Collecting, organizing and reporting data*	Abide AKSUNGUR Selahattin AKYÜZ
Tartışma ve Yorum / *Discussion and Interpretation*	Bulguların değerlendirilmesinde ve sonuçlandırılmasında sorumluluk almak / *Taking responsibility in evaluating and finalizing the findings*	Uğur UĞRAK Abide AKSUNGUR
Literatür Taraması / *Literature Review*	Çalışma için gerekli literatürü taramak / *Review the literature required for the study*	Abide AKSUNGUR Uğur UĞRAK