

## THE MEDIATING ROLE OF HEALTH LITERACY IN THE EFFECT OF HEALTH SERVICE QUALITY ON PATIENT LOYALTY

**Abdulahap BAYDAŞ<sup>1</sup>**

**Fuat YALMAN<sup>2</sup>**

**Mehmet Emin YAŞAR<sup>3</sup>**

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### **Abstract**

The purpose of this study is to determine the mediating role of health literacy in the impact of health service quality on patient loyalty. The universe of the research is the patients who have outpatient treatments from Gaziantep University Şahinbey Research and Application Hospital. In this study, quantitative research method was used and the data were collected from 420 patients through face to face questionnaire technique. In the study, descriptive statistics, confirmatory factor analysis and path analysis techniques were used. SPSS and AMOS software were used for data analysis. According to the results of the research, it was found that the dimension representing the health service quality of the hospital at the best level was at Empathy, and the dimension representing the health literacy level of the patients at the best level was Judging the Accuracy of Health News". Within the framework of direct relations of variables in the research model, it was found that health service quality has a statistically significant and positive effect on patient loyalty; that health service quality has a statistically significant and positive effect on health literacy; that health literacy has a statistically significant and positive effect on patient loyalty, and that health literacy has a mediating role in the relationship between health service quality and patient loyalty, which is statistically significant and positive.

**Keywords:** Health Service Quality, Patient Loyalty, Health Literacy.

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<sup>1</sup> Assoc. Prof. Dr., Faculty of Business, Düzce University, Turkey, [abdulahapbaydas@duzce.edu.tr](mailto:abdulahapbaydas@duzce.edu.tr), <http://orcid.org/0000-0002-4471-3470>

<sup>2</sup> Assist. Dr., Faculty of Business Health Institutions Management Department, Düzce University, Turkey, [fuatyalman@duzce.edu.tr](mailto:fuatyalman@duzce.edu.tr), <http://orcid.org/0000-0002-1041-1837>

<sup>3</sup> Lecturer, Solhan Vocational School of Health Services, Faculty of Health Sciences, Occupational Health and Safety Department, Bingöl University, Turkey, [meyasar@bingol.edu.tr](mailto:meyasar@bingol.edu.tr), <http://orcid.org/0000-0001-8137-2946>

## **Introduction**

The service sector is an important component of the economies and also a driving force for the economic and social growth of society. The leading service organizations in the service sector are hospitals and health centers that provide healthcare services for individuals and community groups, regardless of whether these services are protective, therapeutic or surgical. Therefore, it has become imperative to adopt new developments in science and technology in hospitals and health centers to improve patient care, meet their needs and fulfill their demands in terms of quality (Neilet al., 2007). However, the survival and well-being of hospitals and health centers have been shown to depend on their ability to implement new medical service quality (Al-Bakri, 2005). Improving quality creates a strong relationship with customers. As a result, strong commitment to the service provider plays a key role in both increasing its market share and and gaining sustainable competitive advantage. Therefore, keeping loyal patients through quality improvement has become cheaper than attracting new ones and is very important for health institutions (Deng et al., 2010) benefit from health services effectively, and that the quality of life, health care quality and patient loyalty increase and, that they decrease health care cost. For individuals with low health literacy it was emphasized that they have high illness risks, low levels of understanding of treatment methods, high frequency of hospitalization and high healthcare costs because they have insufficient health information (Kanj and Mitic, 2009; Baur et al., 2017).

Since the healthcare industry has a vital importance and does not accept faults, more importance has been placed on compared to other service industries. To improve service quality, it is necessary to provide a service in line with the expectations of the patients and to measure the difference between the expected service and the perceived service. This difference, on the other hand, reveals the level of satisfaction of the people. Another important goal of healthcare enterprises is to ensure patient satisfaction in a sustainable way. The fact that the patients prefer the same health facilities repeatedly means that they gain loyal customers from the organization's perspective. A patient who has established a bond of trust with the hospital shares his satisfaction with others and is more likely to show repetitive purchasing behavior. Because loyal customers are the ones having emotional bonds, which is difficult to describe, with the institution. These customers are indispensable element of competition for the organization (Avcıkurt and Koroğlu, 2006).

The consensus on the difference between the main factors and results underlying the concepts of service quality, customer satisfaction and customer loyalty is gradually increasing (Zeithaml et al., 1988). Numerous studies have been conducted on the effect of service quality on loyalty from past to present. However, some of these studies included very different variables that affect service quality

(Bodet, 2008; Ladhari, 2009; Bateson and Hoffman, 2011); some of them have been applied in different sectors (Homburg and Giering, 2001; Sureshchandar et al., 2002; Chumpitaz and Papparoidamis, 2007; Mohamadi, 2017; Eboli et al., 2018); and in most of them it has been determined that the impact of service quality on satisfaction and indirect effect of satisfaction on loyalty is extremely high.

### **Conceptual Framework**

#### ***Quality of Health Care***

According to the definition of World Health Organization, health is not only the state of well-being from diseases, but also complete physical, social and spiritual well-being. At the same time, health services are all of the efforts, offered by various institutions and organizations, carried out with various healthcare personnel to diagnose and treat diseases, to recover individuals and maintain the current well-being (Ateş, 2011).

Health services directly or indirectly affect the health and longevity of individuals and communities. The main objectives of health care are; to raise the health standard of individuals, to increase the demand for health, to protect individuals from diseases by taking preventive measures, to heal sick individuals, and to provide rehabilitation after the sick or disabled person heals (Sözen and Özdevecioğlu, 2002). Moreover, health services are to provide the health services that societies need at the desired time, quality and with the least cost. The ever-evolving technology, knowledge, patient complaints and increase in costs, and good care expectations of the patients have made health services more sophisticated.

Quality in health often implies superiority and well-being. Since quality contains subjective values, it can change the education, life level, tradition, taste and social structure of people (Tütüncü and Doğan, 2003; Küçükaksu et al., 2004). Health services should be provided with a simultaneous and holistic stance. The production and delivery of an effective health service should be adopted by all health units, examined all details, and implemented in a way that does not cause errors. Since the effectiveness of health services is important for achieving the targeted results; it changes in terms of quality, continuity, efficiency and ease of use (Sağnak, 2010).

The supply of health services is extremely expensive due to the fact that it is both technologically intense and based on the human factor and has no substitution (Ateş, 2011). Like the concept of quality, the concept of service quality has become a subject that has been discussed a lot and businesses must pay attention in order to gain a share in the market. According to Parasuraman, Zeithaml and Berry (1985), service quality is the result of the difference between customer expectations and service delivery. According to Parasuraman, Zeithaml and Berry (1985), the expected service quality is higher than the perceived service quality, low service quality; If the expected service quality is equal to the perceived service,

the satisfaction of the situation and the expected service quality is lower than the perceived service quality, which indicates the high service quality and therefore the patient satisfaction.

Quality in health services is to meet the expectations and needs of individuals in the processes of diagnosis, treatment and care services in compliance with the internationally valid performance standards and in the execution processes of health services. Based on meeting consumer expectations, good and high quality health services; transparency, patient participation, meeting patient needs, timely provision of services, adequacy of the level of service, access to service, continuity, precision and reliability (Küçük, 2009; Korkmaz and Çuhadar, 2017). Due to the abstraction feature of the service, customers have difficulty in evaluating the service. However, services can be evaluated based on the attitudes of the people involved in the process (employee and patient). Therefore, researchers have developed models to evaluate service quality (Zeithaml and Bitner, 1996). SERVQUAL is a multi-dimensional research tool designed to capture consumer expectations and perceptions.

#### ***Patient Loyalty***

Patient loyalty is the whole of negative or positive emotions that occur in the process from the design phase of the patient's healthcare to the end stage. Patient satisfaction or dissatisfaction is not a part of healthcare, but the perception that the customer places on the service personally (Zaim and Tarım, 2010). Satisfaction; It is a complex concept that includes past experiences, future expectations, lifestyle, individual and social values and is related to many factors. Therefore, individuals can exhibit different levels of satisfaction with the same experience or service (Burucuoğlu, 2011). Since the needs and expectations of the customers are constantly changing, providing satisfactory services is the most important step of customer satisfaction. Oliver (1996) defines satisfaction as “the reaction that the customer must fulfill”. Patient satisfaction is that the health service provided meets the patient's expectations or that the patient exceeds the perception of the health service provided. Patient satisfaction; It includes the suitability of presentation and socio-cultural values with the burden that the patient gets rid of with the benefit and performance they expect from the service. Patient loyalty is a comparison of the patient's expectations from the hospital before purchasing the service and the benefits he/she obtained during or after the service purchase. (Parasuraman et al., 1985).

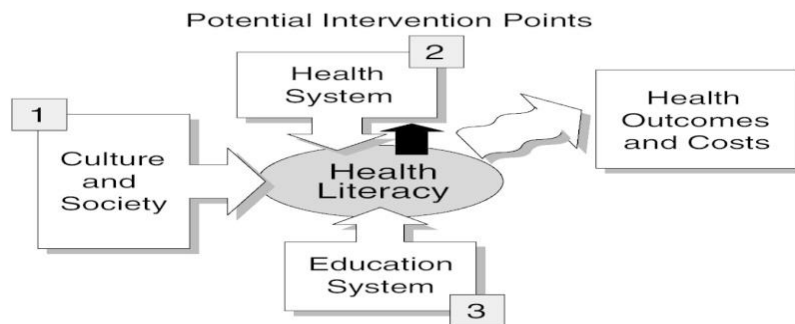
#### ***Health Literacy***

Although health literacy is generally associated with literacy; It is the capacity to obtain, interpret and understand basic health information and services such as protecting the individual's health, using his skills in health matters and improving his deteriorated health (IOM, 2004; Peerson and Saunders, 2009; HLS-EU Consortium, 2012; Sørensen et al., 2012).

According to Nutbeam (1998), health literacy has three levels, basic, interactive and critical. The first is primary/functional health literacy; includes adequate reading and writing skills. Functional health literacy is at the core of health literacy. The second is interactive health literacy; cognitive and social skills, as well as being able to take part in daily life, obtain information, and make sense out of different types of communication. Third, critical health literacy; expresses more advanced skills that will critically analyze health related information and use it in health decisions.

As the health literacy rate increases, individuals can explain their problems to doctors more easily, and besides, diagnosis and treatments become easier. On the other hand, there will be a decrease in the health service costs of healthcare institutions (Nutbeam, 2000). It has been demonstrated that the doctor informing the patient, the positive perceived doctor behavior, the doctor's thought of money and the negative perceived doctor behavior affect the patient satisfaction (Öcel, 2016). It was concluded that low health literacy level negatively affects patient satisfaction (Çatı et al., 2018). In other words, health literacy; It is shaped by the interaction of individuals' individual skills with their health settings, health system, education system and social and cultural factors in family, work and society (IOM, 2004).

**Figure 1.** Potential points for intervention in the health literacy framework



**Kaynak:** IOM. Health Literacy–A Prescription to End Confusion. Institute of Medicine (IOM), The National Academies Press, Washington: DC; 2004.

## **Methodology of The Research**

### ***Research Method and Data Collection Method***

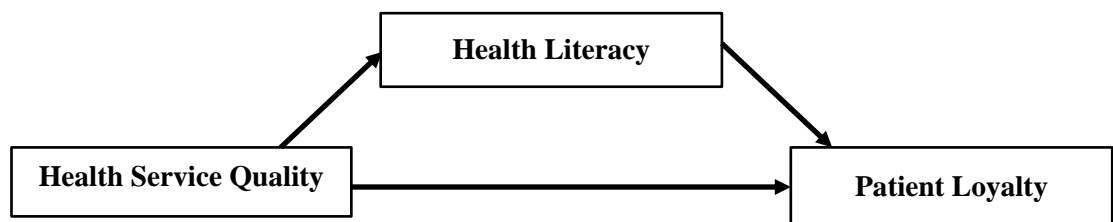
In consideration of the purpose, problem and subject of the study, it was decided to use the quantitative research method in the research since it was thought that the validity, reliability and generalizability of the research results could be provided correctly. The data obtained with the applied questionnaire were loaded and analyzed in SPSS and AMOS statistical analysis programs. Firstly, reliability analysis was performed on the research data, and then variance, mean, frequency, standard deviation and percentage analysis that represent descriptive analysis were

applied. Confirmatory factor analysis (CFA) was performed with the AMOS software to reveal how latent variables can be explained in terms of observed variables. In addition, path analyzes were determined through the AMOS program and theoretical discussions were held on alternative models.

### **Conceptual Model of the Research**

Similar model studies were examined with the literature review during the model development phase and the conceptual/theoretical model of the research was created. Determining the mediating role of health literacy in the effect of health service quality on patient loyalty is the subject of the research. The statement that health literacy has a mediating role in the effect of health service quality on patient loyalty constitutes the thesis of the research. The conceptual model of the research discusses the causality relationship between the main variables of the research (health service quality, patient loyalty, health literacy). The relationships between the conceptual model of the research are shown in Figure 2.

**Figure 2.** Conceptual Model of the Research



### **Research Hypotheses**

As a result of the literature review carried out, while the relationships regarding some variables in the research model are reached in similar sectors in different sectors; Specific hypotheses could not be reached among the specified variables in the model in the health sector. Therefore, to determine the interactions between the variables, specific hypotheses have been developed based on the features set in the literature section. The main hypotheses of the research are expressed as follows:

**H<sub>1</sub>:** Health service quality has a positive effect on patient loyalty.

**H<sub>2</sub>:** Health service quality has a positive effect on health literacy.

**H<sub>3</sub>:** Health literacy has a positive effect on patient loyalty.

**H<sub>4</sub>:** Health literacy has a mediating role in the relationship between healthcare quality and patient loyalty.

Considering the research hypotheses, in order to determine whether there is a mediating effect of the third expression in the relationship between the two variables, an assessment was made on the basis of the intermediary variable effect developed by Baron and Kenny (1986). In order to demonstrate the mediating variable effect, the steps in three steps must first be carried out. These steps are that the independent variable has a significant effect on the mediating variable

(step I), the intermediate variable has a significant effect on the dependent variable (step II) and the independent variable has a significant effect on the dependent variable, and the level of influence decreases when the intermediary variable enters the analysis. or it should disappear completely (step III). In short, when the independent variable together with the intermediary variable is analyzed, the effect of the independent variable in the third step on the dependent variable should decrease or disappear altogether (Akkılıç, 2014).

Three different relationships are envisaged in the research model to determine the mediating effect. First, the relationship between perceived healthcare quality and patient loyalty. Second, the relationship between health literacy and perceived patient loyalty. The third is the relationship between health literacy and the quality of health care and the mediation role in patient loyalty. Health literacy improves individuals' ability to access health information and service, their ability to use these services effectively, and their level of reading and understanding their health-related instructions correctly, while ensuring the correct use of resources, establishing quality standards in healthcare, and being competent on the individual's health and community health (Nielsen-Bohlman et al., 2004). In the literature, the increase in the quality of life, the quality of health care and patient loyalty, where individuals with adequate health literacy have sufficient information about health and who benefit from health services effectively; It was emphasized that the cost of health services caused a decrease. It was emphasized that individuals with low health literacy were higher risk of getting sick, had low levels of understanding of treatment methods, high frequency of hospitalization, and also increased healthcare costs (Kanj and Mitic, 2009; Baur et al., 2017).

#### ***Research Unit, Population and Sample***

The population of the study was each patient who received polyclinic service from Gaziantep University Şahinbey Research and Application Hospital. The sample group consists of 420 participants. The data were obtained from convenience sampling method that were not based on probability between 1 May and 30 June, by sampling. In the convenience sampling method, the aim is to collect data from the easiest and most accessible subjects until the researcher has obtained the sampling size as large as he needs for his study (Gürbüz and Şahin, 2017). Approximately 863,000 outpatient patients (outpatient) per year and 83,000 outpatient outpatients (outpatient) receive medical services from Gaziantep University Şahinbey Research and Application Hospital (2018 data). Therefore, 420 selected samples were accepted as sufficient for the research (Özdamar, 2003).

#### ***Data Collection Method***

A cross-sectional study was carried out by applying a sample to face-to-face questionnaire from patients receiving polyclinic service from Gaziantep University

Şahinbey Research and Application Hospital. When face-to-face surveys are applied effectively, both the response rate increases and additional information can be obtained through observation. The developed questionnaire was discussed in detail with experts in the fields of health service quality, patient loyalty and health literacy, and its final form was created. After the interviews, the survey was finalized and pretested on 40 patients in order to ensure the structural validity of the survey. The survey form consists of four sections in total. In the first part, the health service quality scale consisting of 23 propositions; In the second part, the scale of patient loyalty, consisting of 13 proposals, was included. In the third part, while there are statements about determining the health literacy levels of individuals consisting of 28 propositions; In the last part, there are statements about the socio-demographic characteristics of the participants.

While the nominal and ordinal scales are used in the section that includes the features related to the patients participating in the research, the scale scale is used for the sections that include the variables of health service quality, patient loyalty and health literacy. In addition, 5-point Likert scale (1-Strongly Disagree, 2-Disagree, 3-Neither agree nor disagree, 4-Agree, 5-Strongly Agree) was used to evaluate the expressions related to the study variables.

#### ***Scales Used in the Research***

In the research, SERVQUAL scale of Parasuraman was used to measure health service quality (Zeithaml, 1988). The SERVQUAL service quality scale has been used extensively in the service sector and can be applied to any sector with some changes. Therefore, while preparing the scale of the research, the questions of SERVQUAL were adapted to the health sector. To measure patient loyalty, a scale consisting of 13 questions developed by Zeithaml and Bitner, (1996) was used. In order to determine the health literacy levels of the patients, The European Health Literacy Survey developed by the HLS-EU Consortium within the scope of the European Health Literacy Project 2009-2012 was taken as basis.

#### ***Limitations of the Research***

Considering the relationships in the research model, there are many external factors affecting patient loyalty and many in-house factors (such as price, quality, accessibility, assurance, physical characteristics, customer responsiveness, reliability), while evaluating only one micro-environment (health service quality) factor was obtained. Within the scope of the research, only the mediating effect of health literacy was examined in the relationship between perceived health service quality and patient loyalty, and the regulatory effect of any other variable was not considered because the main purpose of the study was different.

In terms of methodology, the results of the research reflect the perspectives of patients receiving polyclinic service from Gaziantep University Şahinbey Research and Application Hospital, and do not reflect the perspectives of patients receiving health care from hospitals in other regions.



### ***Confirmatory Factor Analysis of the Research***

Firstly, it was checked whether the standardized loading of the observed variables was higher than 0.5 and then the compound reliability (CR) and the average variance (AVE) tests were performed. For each structure, it is examined whether AVE is greater than its variance shared with other structures. If the average variance determined for each structure is larger than the variance shared with the structures with other variables, the condition that distinguishes validity is checked (Yaşlıoğlu, 2017).

### **Findings of the Research**

#### ***Normality Distribution of Research Data***

In the research, Kolmogorov-Smirnov Normality Test was applied to determine whether the data was in normal distribution and it was determined that the data had not been distributed normally. In large sample data (where  $n > 400$ ), the test results do not matter if the normality requirement is not met. If the distribution is close to normal, it is not taken into consideration that the normality condition at p value is not met (Şencan, 2005). In addition, in cases where the number of samples/subjects included in the analysis is high, it is accepted that the variables provide the normality assumption according to the central limit theorem (Smidt et al., 2001).

#### ***Reliability of Research Data***

In the research, Cronbach Alpha coefficient of each structure was calculated for reliability measurement. Health service quality factors with 22 questions, health literacy factors with 28 questions and patient loyalty scale with 12 questions were subjected to reliability analysis. The reliability coefficients for the propositions are given in Table 1. According to Table 1, the reliability of the research was quite high in terms of all dimensions.

**Table 1.** Güvenilirlik Analizi Sonuçları

<b>Variable names</b>	<b>Cronbach's Alpha Coefficient</b>
Health Service Quality	0,940
Health Literacy	0,947
Patient Loyalty	0,877
<b>Survey Reliability Total</b>	<b>0,966</b>

### ***Demographic Findings***

Findings about the key features of the patients were presented in Table 2.

**Table 2.** Findings Related to the Basic Features of Patients

<b>Gender</b>	<b>Frequency</b>	<b>Rate</b>	<b>Education</b>	<b>Frequency</b>	<b>Rate</b>
Male	189	45,0	Primary school	53	12,6
Woman	231	55,0	Secondary school	78	18,6

Total	420	100,0	High school	165	39,3
<b>Revenue</b>			College	112	26,7
2020 ₺ and below	133	31,7	University-Master/Doctorate	12	2,9
2021-3999 ₺	156	37,1	Total	420	100,0
3500-4999 ₺	93	22,1	<b>Age</b>		
5000-6499 ₺	23	5,5	18-25 Years Old	129	30,7
6500-7999 ₺	7	1,7	26-35 Years Old	110	26,2
8000 ₺ and above	8	1,9	36-45 Years Old	100	23,8
Total	420	100,0	46-55 Years Old	53	12,6
<b>Frequency of Hospital Application in the Last One Year</b>			56 years old and above	28	6,7
I've never been	47	11,2	Total	420	100,0
I went 1 time	92	21,9	<b>Job</b>		
I went 2-3 times	166	39,5	Worker	58	13,8
I went 4-5 times	71	16,9	Officer	80	19,0
I went more than 6 times	44	10,5	Retired	32	7,6
Total	420	100,0	Housewife	62	14,8
<b>The first health institution to be applied in general when there is a health problem</b>			Self-employment	21	5,0
State Hospital	206	49,0	Student	90	21,4
University Hospital	117	27,9	Private Sector Employee	42	10,0
Private Hospital	97	23,1	Not working	35	8,4
Total	420	100,0	Total	420	100,0

When Table 2 is analyzed, while the majority of the patients participating in the study are female patients (55%), when we look at the age group, they are in the middle age group (between the ages of 26-45) with a rate of approximately 50%, and the level of education of the participants is mainly high school and university graduates (66%). On the other hand, the patients participating in the study are predominantly civil servants and workers (33%), 2021-3999 (37%) have a middle income level, 40% have gone to the hospital at least 2-3 times in the past year, and any they stated that they preferred the state hospital first (49%) when they had a health problem.

#### ***Findings on Explanatory (Exploratory) Factor Analysis and Research Model***

The degree of compliance of the data to the default model was tested by making CFA with the AMOS package program to personality traits and hospital preference scales. The factors in the research model (latent variables) are empathy, physical environment, assurance, enthusiasm, understanding social media news about health, caring for healthy living, evaluating their own health status, accessing emergency health information, judging the accuracy of health news, patient loyalty and this It is assumed that causal relationships between factors can be explained. In the model, health service quality, health literacy and patient loyalty factors were not evaluated as one-dimensional, and the model was created by assuming that they were explained by the sub-latent variables of the model.

Confirmatory factor analysis of the scales was tested and only the Health Service Quality Scale did not adapt. Therefore, some expressions and sub-factors have been removed from the structure due to the incompatibility of the model. As a result of the structural equation analysis, reliability sub-dimension was determined to have a high level of linear relationship with other variables, and therefore, it was removed from the analysis and the structures of all other scales were verified. Since the compliance values produced by the measurement models created for testing the validity of the scales are not within the acceptable limits, the modifications proposed by the program have been made. Five statements were taken from the health service quality scale and one expression from the patient loyalty scale. Details on the measurement models developed are presented below. In Figure 3, the results of confirmatory factor analysis and goodness of fit regarding health service quality, health literacy and patient loyalty are given.

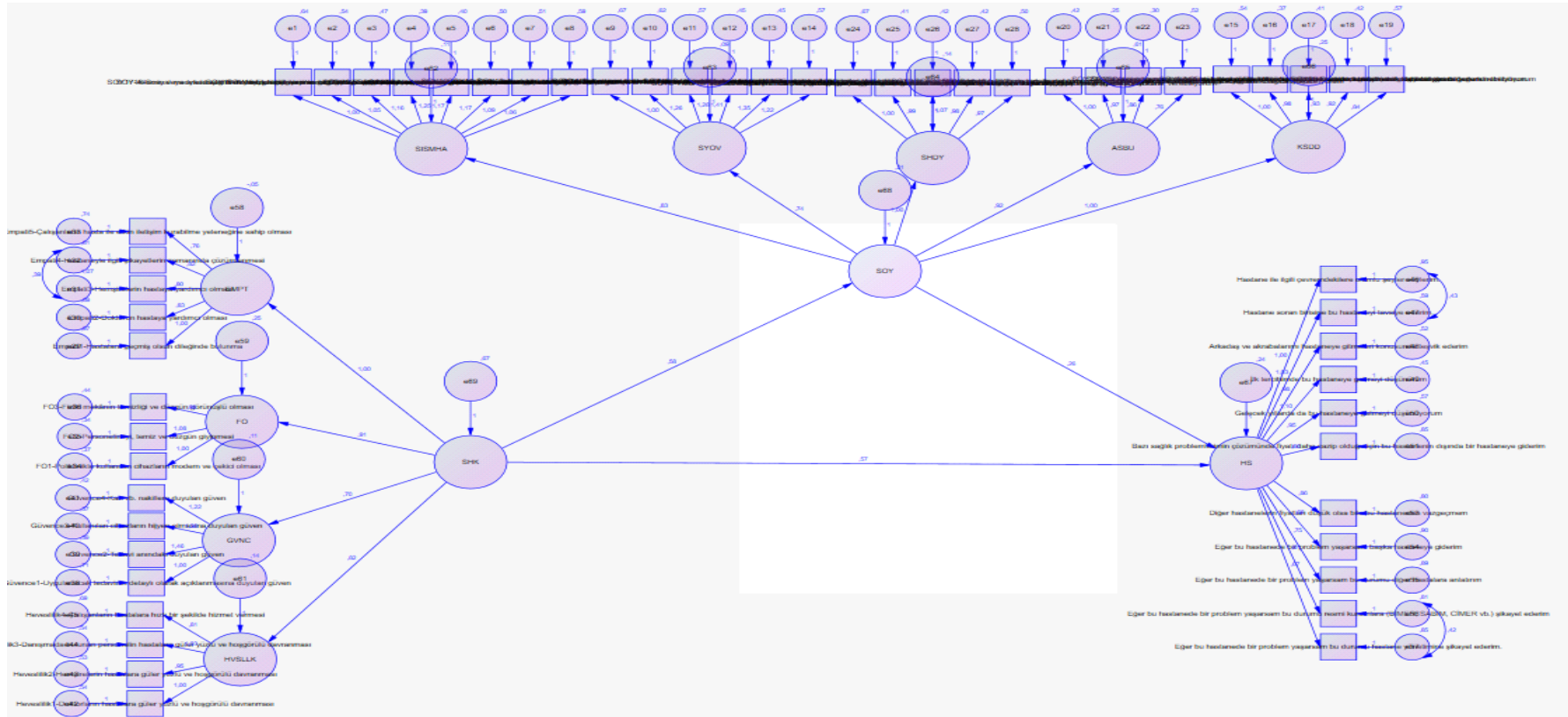


Figure 3. Health Service Quality-Patient Loyalty-Health Literacy Research Model (Measurement Model) and Goodness of Fit Results

Second Order Confirmatory Factor Analysis (CFA) was applied to the corrected measurement model and it was determined how the latent variables were explained in terms of observed variables. The validity and reliability of the model has been made and the variances of the factors are given in Table 3. Table 3 shows the standard errors, factor loads, explained variances, t values and reliability analyzes of the variables in the research model. The analysis shows that the results are at the desired level of compliance.

**Table 3.** Second Order CFA Results for Improved Measurement Model

<b>Implicit Variables</b>	<b>Observed Variables</b>	<b>Standardized Regression Coefficients</b>	<b>Standard Error</b>	<b>T Value</b>	<b>P</b>
EMPATHY	Empathy1	,626			
	Empathy2	,570	,080	10,407	***
	Empathy3	,525	,083	9,690	***
	Empathy4	,584	,077	10,613	***
	Empathy5	,573	,073	10,456	***
PHYSICAL ENVIRONMENT	PhyEnv1	,828			
	PhyEnv2	,860	,054	19,983	***
	PhyEnv3	,799	,054	18,284	***
ASSURANCE	Assurance1	,620			
	Assurance2	,842	,108	13,452	***
	Assurance3	,836	,103	13,394	***
	Assurance4	,781	,095	12,801	***
RESPONSIVENESS	Responsiv1	,724			
	Responsiv2	,711	,072	13,255	***
	Responsiv3	,731	,075	13,608	***
	Responsiv4	,602	,072	11,314	***
PATIENT LOYALTY	PL1	,622			
	PL2	,721	,057	18,173	***
	PL3	,727	,082	12,064	***
	PL4	,786	,087	12,746	***
	PL5	,699	,081	11,730	***
	PL6	,556	,081	9,785	***
	PL8	,598	,083	10,391	***
	PL9	,487	,078	8,749	***
	PL10	,527	,081	9,351	***
	PL11	,468	,073	8,439	***
	PL12	,491	,076	8,799	***

UNDERSTANDING HEALTH RELATED SOCIAL MEDIA NEWS	UHRSMN1	,624			
	UHRSMN2	,673	,090	11,655	***
	UHRSMN3	,734	,093	12,451	***
	UHRSMN4	,786	,095	13,089	***
	UHRSMN5	,763	,092	12,816	***
	UHRSMN6	,727	,095	12,365	***
	UHRSMN7	,697	,091	11,966	***
	UHRSMN8	,662	,092	11,494	***
TAKING CARE OF HEALTHY LIVING	TKHL1	,575			
	TKHL2	,677	,119	10,620	***
	TKHL3	,699	,119	10,836	***
	TKHL4	,769	,123	11,493	***
	TKHL5	,755	,118	11,374	***
	TKHL6	,682	,115	10,671	***
EVALUATING YOUR OWN HEALTH STATUS	EYOHS1	,750			
	EYOHS2	,799	,061	16,113	***
	EYOHS3	,768	,060	15,457	***
	EYOHS4	,761	,060	15,321	***
	EYOHS5	,679	,062	13,560	***
ACCESSING EMERGENCY HEALTH INFORMATION	AEHI1	,838			
	AEHI2	,888	,044	22,013	***
	AEHI3	,841	,042	20,515	***
	AEHI4	,722	,046	16,511	***
BEING ABLE TO JUDGE THE ACCURACY OF HEALTH NEWS	BAJAHN1	,682			
	BAJAHN2	,765	,072	13,879	***
	BAJAHN3	,783	,076	14,158	***
	BAJAHN4	,752	,071	13,684	***
	BAJAHN5	,723	,073	13,212	***

\*\*\*p<0.01

Second Order CFA results related to the improved measurement model are given in Table 3. The standardized regression coefficients, p values (p<0.01), t values (t>1.96) of the variables observed according to the CFA results given in Table 3 showed that the model has acceptable fit. In Table 4, generally accepted goodness fit index values and model values obtained after analysis are given in the literature.

**Table 4.** Measurement Model Goodness of Fit Index Values

<i>General Model Fit</i>	<i>Good Fit</i>	<i>Acceptable Fit</i>	<i>Obtained Fit Values</i>
$\chi^2/sd$	$\leq 3$	$\leq 5$	2.708
<i>RMSEA</i>	$\leq 0.05$	$\leq 0.08$	0.064
<i>NFI</i>	$\geq 0.95$	$\geq 0.90$	0.75
<i>CFI</i>	$\geq 0.97$	$\geq 0.95$	0.82
<i>IFI</i>	$\geq 0.95$	0.94-0.90	0.82
<i>PGFI</i>	Close to 1	The lowest limit value 0.50	0.68
<i>GFI</i>	$\geq 0.90$	0.89-0.85	0.75

The results of the research given in Table 4 mean that the proposed research model fit index values are acceptable. At the first stage, the hypothesis of the model whose measurement results are confirmed is started with the help of the structural model. In other words, after the reliability and validity test is done, the research model should be tested.

***Structural Model of the Research (Path Analysis)***

According to the results of the analysis, although the model is generally within the acceptable fit values, some of the regression weights and significance values in the model are meaningless and should be removed from the model. When regression weights and significance values are taken into account; Since removing a relationship from the model, expressions were removed from the model one by one since another relationship or the level of significance of the relationship could be affected, and after each procedure, the new analysis was made and the model was made more clear and understandable.

After the expressions whose inappropriate values were not suitable were removed from the scales, the reliability and validity analyzes of the scales were made and the regression weights and significance values of the model were found to be significant. Table 5 shows the path analysis results of the research model.

**Table 5.** Research Model SEM Results

	<b>Structural Relationships</b>	<b>Standardized Regression Coefficients (<math>\beta</math>)</b>	<b>Critical Rate (C.R.)</b>	<b>p</b>
Standardized Total Effect	PL<--- HSQ	,762	9,615	***
Standardized Direct Effect	PL<--- HSQ	,600	7,241	***
Standardized Indirect Effect	PL<--- HSQ	,162	3,343	***

SEM results for the research model, critical ratio for structural relationships (C.R.), standardized regression coefficients ( $\beta$ ) and significance level p values are given in Table 5. Table 6 shows the standardized path coefficients of the research, structural equations, and the hypothesis results with multiple coefficient of determination ( $R^2$ ).

**Table 6.** Structural Model Results

<b>Hypotheses</b>	<b>Path</b>	<b>Standardized Coefficients</b>	<b>Hypothesis Results</b>
H1	PL <--- HSQ	,600	It was supported
H2	SOY <--- HSQ	,717	It was supported
H3	PL <--- HL	,225	It was supported

H4	PL <--- HSQ	,162	It was supported
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When Table 6 is analyzed, it was determined that health service quality significantly affects patient loyalty ( $\beta=0.600$ ;  $p<0.05$ ). Therefore, the H<sub>1</sub> hypothesis of the research was supported.

It has been determined that health service quality affects health literacy ( $\beta=0.717$ ;  $p<0.05$ ) significantly and positively. Therefore, the H<sub>2</sub> hypothesis of the study was accepted.

It was determined that health literacy affected patient loyalty ( $\beta=0.225$ ;  $p<0.05$ ) significantly and positively. Therefore, the H<sub>3</sub> hypothesis of the research was supported.

It has been revealed that the health literacy has a partial mediating role in the relationship between the health service quality and patient loyalty, which is significant and positive ( $\beta=0.162$ ;  $p<0.05$ ). Therefore, the H<sub>4</sub> hypothesis of the research was supported (Table 6).

#### Discussion and Conclusion

In this study, the selection of sample data from only one region and its collection over a period of time emerged as limitations. In this study, it was revealed that the sample data were selected from only one region and collected in a time frame emerged as limitation. The mediating variable issue is very useful for analyzing the relationships that are not noticeable at first glance between the related variables. Those who will conduct research on these issues are recommended to examine the mediation (mediator variable) between the outcome variables of the study (health service quality and patient loyalty) and healthy lifestyle behavior and health knowledge level variables. In addition, it is recommended to examine the moderation (moderator variable) the relations with the outcome variables of the study among the variables of life satisfaction, social support and personality traits.

This study, which was carried out to determine the mediating role of health literacy in the effect of health service quality on patient loyalty, was conducted at Gaziantep University Şahinbey Research and Application Hospital. The results obtained in order to determine the mediating role of health literacy in the effect of health service quality on patient loyalty can be summarized as follows:

By confirmatory factor analysis, it was determined that the quality of health service, patient loyalty and health literacy have acceptable compliance values, and the reliability analysis of the variables was high.

According to the CFA results; health service quality is gathered under 4 dimensions. These; empathy, physical environment, assurance and enthusiasm. Among these dimensions, the dimension that best represents the health service quality of the hospital is “Empathy”. This in turn; “Enthusiasm”, “Assurance” and “Physical Environment” dimensions follow.



The health literacy levels of the patients were gathered under 5 dimensions. These are listed as being able to understand social media news about health, giving importance to living healthy, evaluating their own health status, accessing emergency health information, judging the accuracy of health news. Among these dimensions, the dimension that best represents the level of health literacy is “Being able to Judge the Rightness of Health News”. This is followed by the dimensions of “Understanding Health Social Media News”, “Caring for Healthy Living”, “Evaluating Your Own Health Status” and “Accessing Emergency Health Information”. Finally, patient loyalty has emerged as a single dimension.

In the results of the path analysis, it was found that the health literacy has a partial mediating role in the relationship between the quality of health service and patient loyalty, which is significant and positive:

It was determined that the health service quality significantly and positively affected patient loyalty ( $\beta=0.600$ ;  $p<0.05$ ), and the health service quality significantly affected the health literacy ( $\beta=0.717$ ;  $p<0.05$ ).

Health literacy affects patient loyalty ( $\beta=0.225$ ;  $p<0.05$ ) significantly and positively, health literacy has a partial mediating role in the relationship between health service quality and patient loyalty, and this is significant ( $\beta=0.162$ ;  $p<0.05$ ) was determined.

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