

# Ophthalmology Practice-Related Factors and Patient Loyalty: Mediating Role of Patient Satisfaction

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**Background:** In the current period, competition among the healthcare sector has increased and healthcare providers try to get loyalty and satisfy the patients by establishing different strategies.

**Purpose:** : This current study aims to discover ophthalmology practice-related factors and patient loyalty and to analyze the mediating role of patient satisfaction in private ophthalmology services in various private centers in the Kingdom of Saudi Arabia.

**Methods:** : The nature of the study is quantitative, and data is collected with a questionnaire. We used a pre-tested questionnaire that was divided into different sections assessing ophthalmology practice-related factors, patient satisfaction, and patient loyalty. These were measured using a 5-point Likert scale, focusing on financial aspects, access to facilities, staff services, and ophthalmologist services. Further, the smartPLS technique was used to extract the results by using SmartPLS.

**Results:** : The analysis sample size consisted of 323 participants from Saudi Arabia. The results found that ophthalmologist service has a positive relationship with patient satisfaction ( $\beta=0.369$ ,  $p=0.000$ ) as well as patient loyalty ( $\beta=0.234$ ,  $p=0.004$ ), but there are some ophthalmology practice-related factors such as financial aspects, access and facilities, and staff service, which showed no relationship with patient loyalty but a positive relationship with patient satisfaction. Further analysis found that patient satisfaction as a mediator has a positive relationship between ophthalmology practice-related factors, namely, ophthalmologist service ( $\beta=0.228$ ,  $P=0.000$ ), financial aspects ( $\beta=0.102$ ,  $p=0.019$ ), access and facilities ( $\beta=0.109$ ,  $p=0.000$ ), and staff service ( $\beta=0.188$ ,  $p=0.000$ ) with patient loyalty.

**Conclusion:** : The present study findings reveal the importance of focused patient satisfaction improvements in enhancing patient loyalty within ophthalmological clinic settings in Saudi Arabia. Furthermore, we recommend future exploratory prospective research to find the satisfaction and loyalty factors that change over a period of time.

**Keywords:** ophthalmology practice-related factors, patient satisfaction, patient loyalty, Saudi Arabia, smartPLS

## Introduction

In the last few years, the healthcare sector has gained more importance, mainly after the pandemic in 2020. The management of different hospitals is trying to provide advanced facilities to their patients to get their satisfaction as well as loyalty. The competition among the hospitals particularly among private hospitals has increased dramatically.<sup>1</sup> From this perspective, it is trying to the patient's loyalty and satisfaction by providing them with better infrastructure, facilities, equipment, medical devices, and medical professionals.<sup>1,2</sup> Therefore, the provision of high-quality service and value is an important concept to attract patients and make durable relationships,<sup>3,4</sup> because patient loyalty in healthcare is related to the probability of patients returning to the same clinics or hospitals and the inclination to recommend these clinics or hospitals to others. If patients are satisfied with the care they receive from healthcare providers, they are more inclined to refer others to these healthcare service providers.<sup>3,5</sup> Saudi Arabia's healthcare system is divided into two parts: public and private healthcare. However, the central and most significant part is public health, as the majority of services are carried out by the Ministry of Health (MOH), which is free for citizens, while private health is rapidly growing due to extra demand and encouragement by the Saudi government. Specialized treatments can be obtained in sectors run by private

centers. They are more expensive than those offered in the government-run sectors for ophthalmology care. Several centers of private healthcare delivery claim that competition makes it necessary to establish better structures, sophisticated equipment, and quality services. Saudi Vision 2030 has incorporated objectives relating to enhancing the private sector, enhancing the quality of healthcare services, and promoting sophisticated technology, all of which will enhance the advancement of modern healthcare services and innovative solutions. Therefore, the healthcare system is improving through innovation, better infrastructure, and the use of advanced technologies.<sup>6,7</sup> Hence, exploring patients' loyalty and satisfaction will be unique and contemporary in the context of Saudi Arabia. It will be very helpful for the Ministry of Health, public and private hospitals, and policymakers. Compared to other countries, Saudi Arabia's system shares similarities with the private healthcare-driven systems of the US, while differing from the nationalized systems of the UK and Canada, which focus on universal access and longer waiting times.<sup>8-10</sup>

Chow et al<sup>11</sup> elaborated that it is only the satisfaction of the consumer always guarantee effect on the loyalty. Partama and Bernarto<sup>3</sup> explained that satisfaction has a direct influence but service quality has no major relationship with patient loyalty. Further, Siripipatthanakul and Vui<sup>5</sup> and Sitio and Ali<sup>12</sup> explain the facility has no significant effect on patient loyalty. Furthermore, Alhidari and Alkadhi<sup>13</sup> found that marketing strategies increase the loyalty of patients. Patients' safety and quality of care are essential criteria for the satisfaction of the patients with healthcare delivery.<sup>14,15</sup> A study by Sakti DH et al stated that improving the quality of care in different aspects could help in improving patients' satisfaction.<sup>14</sup> Another study by Shin and Yu<sup>16</sup> found that trust has a significant outcome of trust on loyalty but there is no positive and significant effect of satisfaction on the loyalty of consumers. Even though several authors explored the satisfaction of patients in general contexts, there is a scarcity of evidence related to the ophthalmology field. Therefore, the current study tries to clarify different concepts about patient loyalty by using ophthalmology practice-related factors such as (financial aspects, access and facilities, staff service, ophthalmologist services), patient satisfaction, and patient loyalty. Furthermore, the study aims to find out the relationship between ophthalmology practice-related factors and patient loyalty and to inspect the mediating role of patient satisfaction in developing a relationship between ophthalmology practice-related factors and patient loyalty.

## Oliver's Service Quality Theory

The quality of the service is an important aspect of the service provider to enhance its performance. Oliver's service quality theory is an important contribution to understanding the value of high-quality service.<sup>6</sup> This theory predicts the judgment of clients regarding service related to their expectations. Therefore, on the basis of service quality evaluation, the clients make their expectations. Further, at the same time due to the expectations of the clients, the service quality improves and clients try to purchase the service again and again.<sup>17,18</sup>

## Ophthalmology Practice-Related Factors and Patient Loyalty

In healthcare centers, the financial aspect is important for both patients and healthcare providers. Healthcare providers need to manage their costs effectively to remain competitive and attract loyal patients.<sup>19</sup> Further, Afthanorhan et al<sup>20</sup> elaborated that patient loyalty depends on the service charges by healthcare. The patients used to move to another hospital if that hospital is less expensive and gives discounts. The ratio of patients revisited depends on the quality of service as well as charges.<sup>21</sup> Furthermore, patients who can conveniently access healthcare services are more likely to revisit the particular healthcare provider or institution for their ongoing healthcare needs.<sup>5,22</sup> They appreciate the convenience and efficiency of the healthcare experience, which can foster a sense of trust and reliability in the provider.

Moreover, patient loyalty is said to be greatly influenced by the service quality of staff. Healthcare staff, including doctors, nurses, and support personnel, are responsible for delivering safe and effective care to patients.<sup>5</sup> Friendly, respectful, and empathetic interactions with healthcare professionals can alleviate patient anxiety and contribute to a more positive experience.<sup>5,23,24</sup>

Furthermore, the ophthalmologist's services are important to get the patient's loyalty. Specialization of ophthalmologists in knowledge and skills of all aspects related to eye care such as routine eye exams to complex surgeries is vital because the treatment of vision is a very sensitive matter.<sup>25</sup> The attitude of a service provider impacts the efficiency of

healthcare delivery.<sup>26</sup> Timely responses to patients, prompt administration of medications, and efficient coordination among staff members increase the patient's loyalty.<sup>27</sup>

## Ophthalmology Practice-Related Factors and Patient Satisfaction

Patient satisfaction is the main aim of any physician.<sup>28</sup> Satisfactory service of ophthalmologists is very important to cure the vision of patients. There are some important of ophthalmology are related to patient satisfaction such as financial aspects, access and facilities, staff service as well as ophthalmologist's service:

Access to healthcare facilities and quality are fundamental factors that influence patient satisfaction.<sup>22,29</sup> Patients greatly value ease of access, including proximity and convenient transportation options, which can reduce the stress associated with seeking medical care. Furthermore, clean, comfortable, and well-maintained facilities enhance patients' overall experience, promoting a sense of safety and trust.<sup>30</sup> Timely access to appointments and the presence of amenities like welcoming waiting areas and accessible restrooms all contribute to a positive healthcare encounter.<sup>2</sup> By prioritizing accessibility and maintaining high-quality facilities, healthcare providers can help ensure that patients not only receive the necessary care but also do so with a greater sense of satisfaction and well-being.<sup>31–33</sup>

## Patient Satisfaction and Patient Loyalty

The loyalty of the patients is defined as the potential of the patient to revisit.<sup>5</sup> According to Akroush and Mahadin,<sup>34</sup> the satisfaction of service consumers is positively related to loyalty. The finding of this study further explains that when the customer is provided with good quality service and gets satisfaction, then the consumer use to forms a psychological attachment, and this attachment flourishes long-term as well as present relationship. Further, the willingness of the consumers to purchase the service and recommend it to others shows satisfaction.<sup>35</sup> According to Othman et al,<sup>36</sup> the attitude of satisfaction and happiness tends to be a loyal consumer and indicates the physiological affection of the service provider.

## Patient Satisfaction as a Mediator

Patient satisfaction is a crucial mediator in the complicated relationship between financial aspects and patient loyalty within healthcare, particularly to the service provider.<sup>2</sup> When patients perceive transparency in pricing, affordability, and hassle-free billing processes, their satisfaction tends to rise. Satisfied patients are not only more likely to continue treatment from the same doctor or physician but also to recommend their services to others to foster loyalty.<sup>34</sup> Therefore, healthcare organizations that prioritize financial clearness and affordability indirectly enhance patient loyalty by nurturing a positive and satisfying patient experience and gaining loyalty.<sup>5,37</sup> Satisfied patients improve trust in their healthcare providers and feel a sense of loyalty toward the institution or healthcare professionals who consistently deliver excellent service.<sup>38</sup> On the other side, negative attitude from staff members leads the patient to dissatisfaction and a reduced likelihood of patient loyalty.<sup>39</sup> Therefore, healthcare organizations prioritize training and patient-centered interactions among their staff to indirectly enhance patient loyalty by creating a positive and satisfying healthcare experience as well as fostering long-term patient relationships.<sup>40</sup>

## Study Hypothesis

Based on the aforementioned discussion, the current study has developed the following hypothesis (Figure 1).

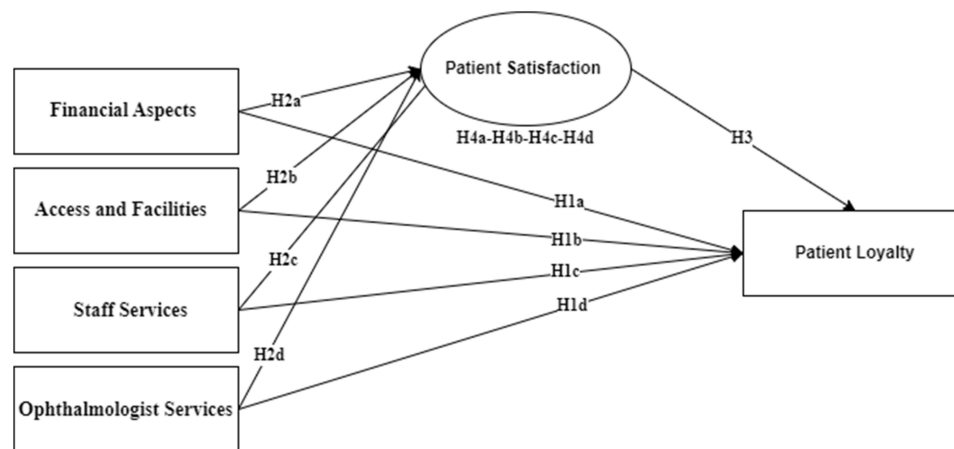
H1a: Financial aspects have a significantly positive relationship with patient loyalty.

H1b: Access and facilities have a significantly positive relationship with patient loyalty.

H1c: Staff services have a significantly positive relationship with patient loyalty.

H1d: Ophthalmologist services have a significantly positive relationship with patient loyalty.

H2a: Financial aspect has a significantly positive relationship with patient satisfaction.



**Figure 1** Conceptual framework (Source: Developed by authors).

H2b: Access and facilities have a significantly positive relationship with patient satisfaction.

H2c: Staff services have a significantly positive relationship with patient satisfaction.

H2d: Ophthalmologist services have a significantly positive relationship with patient satisfaction.

H3: Patient satisfaction has a significantly positive relationship with patient loyalty.

H4a: Patient satisfaction mediates the relationship between the financial aspect and patient loyalty.

H4b: Patient satisfaction mediates the relationship between access and facilities and patient loyalty.

H4c: Patient satisfaction mediates the relationship between staff services and patient loyalty.

H4d: Patient satisfaction mediates the relationship between ophthalmologist services and patient loyalty.

## Materials and Methods

### Study Design and Data Collection

The target population for this study is an inhabitant of Saudi Arabia who visited a private ophthalmologist from September 2023 to February 2024. The convenience sampling methodology was adopted as data was not accessible for patients visiting all private centers. The questionnaire was developed and created in Google Forms. The authors selected one private clinic from each of the north, east, west, and south regions. The clinics were chosen conveniently. We included all adult patients (aged 18 years and above) and patients who visited the concerned ophthalmology clinics. We excluded those who were mentally unstable and unwilling patients. The research team coordinated with all ophthalmologists of the concerned clinics and distributed questionnaires through WhatsApp and Telegram to those who visited during the study period. To increase the response rate the authors advertised the survey (prior to distribution of questionnaire) through different social media platforms such as WhatsApp groups as well as Telegram in Saudi Arabia. There were two sections of the questionnaire, where section one collected the patient's socio-demographic information such as age group, gender, educational level, number of visits to an ophthalmologist, and level of ophthalmology care. The second part involves questions related to ophthalmology practice-related factors (financial aspect, access and facilities, staff services, and ophthalmologist services), patient satisfaction, and patient loyalty. The participants were ensured of the objectives of the study to get good responses from the participants. This experiment was conducted in conformity with the ethical standards set by the Declaration of Helsinki, before commencing the experiment; each participant submitted an informed consent form. The present study was approved by the local committee of

bioethics, Jouf university (approval no: 04–08-45). Every step was carried out in conformity with the applicable rules and regulations. The study questionnaire was pre-tested among 30 ophthalmology patients. The Cronbach alpha value for practice-related factors, loyalty, and satisfaction were 0.75, 0.81, and 0.84, respectively. The ultimate questionnaire was disseminated in Arabic language as it is the national language of Saudi Arabia and participants had more clarity in answering to a total of 401 patients. In the return, 323 filled questionnaires were received.

## Measurement

All the items were measured on a five-point Likert scale. Ophthalmology practice-related factors (financial aspect, access, and facilities, staff services, and ophthalmologist services), patient satisfaction, and patient loyalty were used and adapted by Siripipatthanakul and Vui.<sup>5</sup>

The authors used a statistical tool called smartPLS to examine the interconnections between the study variables, which are related to ophthalmology practice-related factors, patient satisfaction, and patient loyalty. This statistical method helped the authors of the paper assess the hypothesized relations within the model, including direct and indirect effects. The smartPLS analysis technique is most useful in exploratory research, where the primary objective is to advance theories while creating new ones by testing various paths in the model.

## Results

### Background Characteristics

Table 1 explains the demographic features of the participants. The sample size is 323 which 124 are male and 199 are female. 28 participants are 20 years old or younger, and 128 participants are from 21–30 years old. 86 participants are

**Table 1** Demographic characteristics of participating patients (n = 323)

Variables	Category	Frequency	Percentage
Gender	Male	124	38.4
	Female	199	61.6
Age	20 years old or younger	28	8.7
	21-30 years old	128	39.6
	31-40 years old	86	26.6
	41-50 years old	45	13.9
	More than 50 years	36	11.1
Education level	Less than bachelors	55	17.0
	Bachelor	201	62.2
	Master's and above	67	20.7
Number of visits you made for treatment of eye diseases at the private center	1-3 times	202	62.5
	4-6 times	68	21.1
	7-10 times	22	6.8
	More than 10 times	31	9.6
Level of health care you received at the private center's ophthalmology	Primary	12	3.7
	Secondary	79	24.5
	Tertiary	232	71.8

31–40 years old, there are 45 participants are from the age of 41–50 years. Only 36 participants are more than 50 years of age. The level of education of the participants varies from less than a bachelor's to above master's. 55 participants are less than bachelors, 201 are bachelors and 67 are masters and above the masters. There are 202 visits for treatment of eye diseases at private centers 1–3 times, 68 participants 4–6 times, 22 participants 7–10 times, and 31 participants, more than 10 times. Further, regarding the level of healthcare received by the private ophthalmologist, 12 participants were at the primary level, 79 at the secondary level, and 232 at the tertiary level.

## Measurement Model

Two steps in the measurement model are very important to check the reliability of the model such as composite reliability (CR) and Cronbach's Alpha values.<sup>41,42</sup> The composite reliability values were estimated between 0.925 and 0.985, therefore, our results adhered to the cut-off values suggested by Fornell and Larcker.<sup>41</sup> Furthermore, Cronbach's Alpha values exceeded<sup>43</sup> 0.7. The results of the measurement model such as factor loading, composite reliability, and convergent validity are provided in Table 2.

**Table 2** Measurement Model (Factor Loading, Cronbach's Alpha, Composite Reliability, and Convergent Validity)

Latent Variable	Items	Factor Loadings	Alpha	AVE	CR
Access and Facilities	AF1	0.940	0.899	0.676	0.925
	AF2	0.879			
	AF3	0.708			
	AF4	0.717			
	AF5	0.943			
	AF6	0.703			
Financial Aspect	FA1	0.977	0.977	0.957	0.985
	FA2	0.967			
	FA3	0.990			
Ophthalmologist Services	OS1	0.863	0.936	0.725	0.949
	OS2	0.887			
	OS3	0.809			
	OS4	0.747			
	OS5	0.874			
	OS6	0.867			
	OS7	0.904			
Staff Services	SS1	0.878	0.927	0.774	0.945
	SS2	0.903			
	SS3	0.893			
	SS4	0.838			
	SS5	0.886			

(Continued)

**Table 2** (Continued).

Latent Variable	Items	Factor Loadings	Alpha	AVE	CR
Patient Loyalty	PL1	0.802	0.916	0.800	0.941
	PL2	0.924			
	PL3	0.925			
	PL4	0.921			
Patient Satisfaction	PS1	0.897	0.914	0.797	0.940
	PS2	0.926			
	PS3	0.920			
	PS4	0.825			

**Abbreviations:** AF, Access and Facilities; FA, Financial Aspect; OS, Ophthalmologist Services; SS, Staff Services; PL, Patient Loyalty; PS, patient satisfaction.

Further, cross-cross-loading matrices are shown in [Tables 3 and 4](#). These tables show the discriminant validity using the Fornell and Larcker criterion along with HTMT. It also clearly shows that each item exhibits higher load values with the construct compared to the other constructs.<sup>41</sup> Based on these values, items appear to be valid according to discriminant validity.

**Table 3** Discriminant Validity-Fornell and Larcker Criterion

	AF	FA	OS	PL	PS	SS
AF	0.822					
FA	0.511	0.978				
OS	0.451	0.468	0.852			
PL	0.422	0.391	0.672	0.895		
PS	0.584	0.544	0.756	0.750	0.893	
SS	0.597	0.553	0.740	0.623	0.769	0.880

**Abbreviations:** AF, Access and Facilities; FA, Financial Aspect; OS, Ophthalmologist Services; SS, Staff Services; PL, Patient Loyalty; PS, patient satisfaction.

**Table 4** Discriminant Validity (HTMT)

	AF	FA	OS	PL	PS	SS
AF						
FA	0.544					
OS	0.492	0.487				
PL	0.461	0.410	0.719			
PS	0.645	0.577	0.812	0.812		
SS	0.656	0.582	0.791	0.673	0.836	

**Abbreviations:** AF, Access and Facilities; FA, Financial Aspect; OS, Ophthalmologist Services; SS, Staff Services; PL, Patient Loyalty; PS, patient satisfaction.

## Predictive Relevance

The productivity of the complete saturated model is evaluated concerning its predictive potential in connection using squared multiple correction ( $R^2$ ) of the endogenous variable. The results of the stone-Geiseer ( $Q^2$ ) test demonstrate the predictive significance.<sup>44</sup> The values in Table 5 indicate that the  $R^2$  for PL is 0.590 and PS is 0.697. The value of  $Q^2$  for PL is 0.464 and 0.688 for PS. It also shows the value of the Standardized Root Mean Square Residual (SRMR). The SRMR value of 0.056 confirmed the model's good fit.

## Hypothesis Verification

Table 6 explains the hypotheses testing. This table elaborates that H1a, H1b, and H1c are rejected based on probability values. The p-value of these hypotheses is greater than the threshold level of 5%. Accordingly, financial aspects do not have a relationship with patient loyalty. Further, access and facilities do not have a relationship with patient loyalty. Therefore, based on the p-value, the result shows that staff services also do not have a relationship with patient loyalty. Whereas, H1d is accepted, which explains that ophthalmologist services have a positive and significant impact on patient loyalty. Further, related to ophthalmology-related factors and patient satisfaction, all the hypotheses (H2a, H2b, H2c, H2d) are accepted. Further, this study accepted hypothesis H3 which elaborated that patient satisfaction has a positive relationship with patient loyalty. Furthermore, the analysis shows that patient satisfaction mediates the relationship

**Table 5** Saturated Model Results ( $R^2$ ,  $Q^2$ , and SRMR)

Construct	R Square	R Square Adjusted	$Q^2$	SRMR
PL	0.590	0.584	0.464	0.056
PS	0.697	0.693	0.688	

**Abbreviation:** PL, Patient Loyalty; PS, patient satisfaction.

**Table 6** Hypotheses Verification Results of the Structural Model

Hypothesis	Hypothesised path	Beta coefficient	t-value	p-value	Result
H1a	FA -> PL	-0.046	0.999	0.318	Rejected
H1b	AF -> PL	-0.025	0.461	0.645	Rejected
H1c	SS -> PL	0.048	0.581	0.581	Rejected
H1d	OS -> PL	0.234	2.856	0.004	Supported
H2a	FA -> PS	0.101	2.325	0.020	Supported
H2b	AF -> PS	0.161	3.834	0.000	Supported
H2c	SS -> PS	0.326	5.613	0.000	Supported
H2d	OS -> PS	0.369	8.063	0.000	Supported
H3	PS -> PL	0.576	8.351	0.000	Supported
H4a	FA -> PS -> PL	0.102	2.354	0.019	Supported
H4b	AF -> PS -> PL	0.109	3.528	0.000	Supported
H4c	SS -> PS -> PL	0.188	4.168	0.000	Supported
H4d	OS -> PS -> PL	0.228	6.233	0.000	Supported

**Abbreviations:** AF, Access and Facilities; FA, Financial Aspect; OS, Ophthalmologist Services; SS, Staff Services; PL, Patient Loyalty; PS, patient satisfaction.



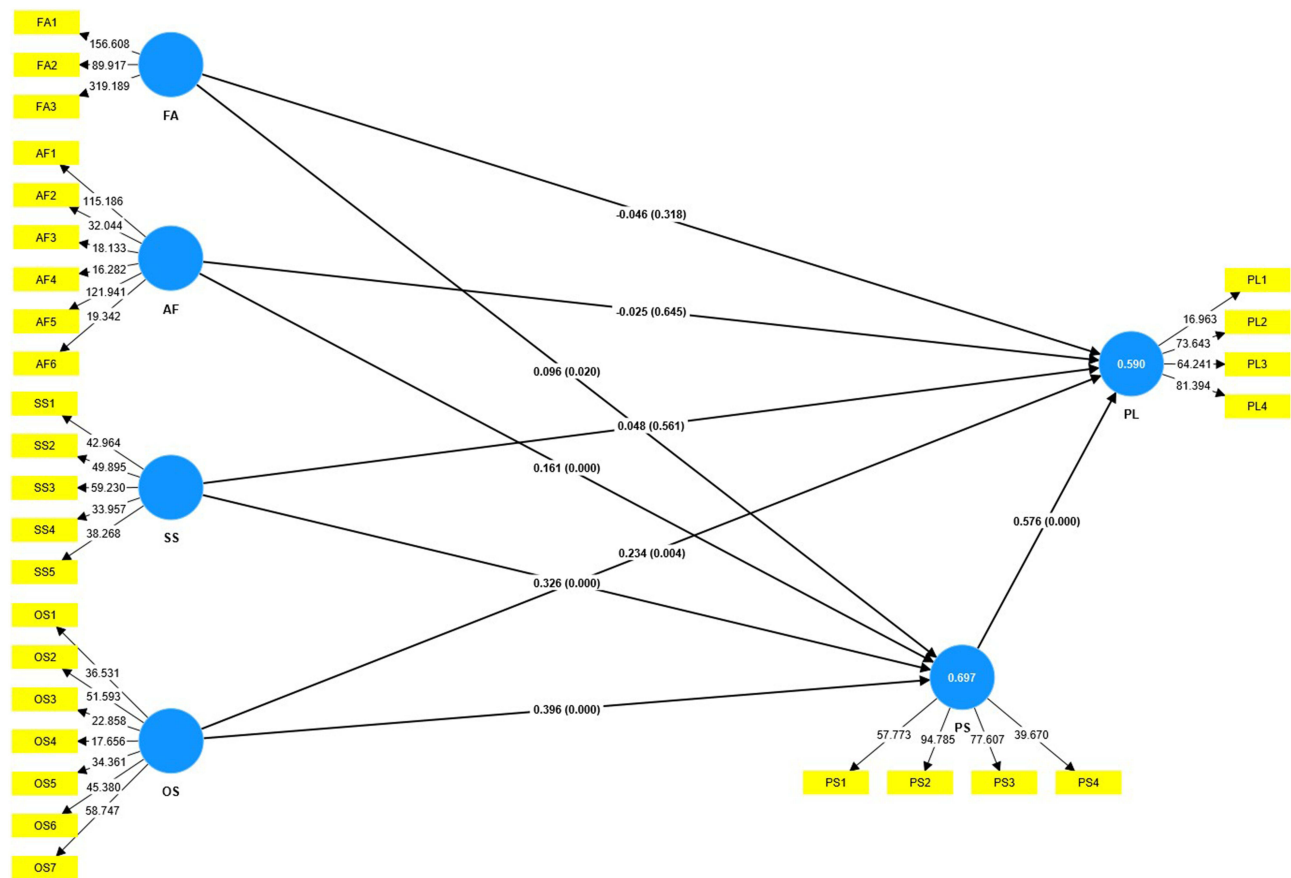


Figure 2 Structural model (Source: Extracted from SmartPLS software).

between financial aspects, access and facilities, staff services, and ophthalmologist services (H4a, H4b, H4c, H4d) with patient loyalty. Therefore, all sub-hypotheses are supported (Figure 2).

Regarding factors related to ophthalmology clinical practice, of the 323 participated ophthalmology patients, the highest agreement status was observed in the reputation of the ophthalmologists (97.2%), followed by ophthalmologists’ practicing and interpersonal skills (89.8), doctors’ explanation about treatment plans (89.8%), support from clinics’ staff (89.7%), and clinics’ location (87.6%). Furthermore, the lowest agreement was observed in ophthalmologists’ fees (44.9%) and availability of car parking (46.7%) (Table 7).

Table 7 Patients’ Responses on Ophthalmology Practice-Related Factors (n = 323)

Item	Strongly Agree n(%)	Agree n(%)	Neutral n(%)	Disagree n(%)	Strongly Disagree n(%)
Ophthalmology fee costs are not high.	74 (22.9)	115 (35.6)	77(23.8)	41 (12.7)	16 (5)
Ophthalmology fees are reasonable.	39 (12.1)	106 (32.8)	71 (22)	85 (26.3)	22 (6.8)
The ophthalmology services fees are related to and relevance to the quality provided.	82 (25.4)	133 (41.2)	75 (23.2)	28 (8.7)	5 (1.5)
The clinic’s location was easy to access.	137 (42.4)	146 (45.2)	20 (6.2)	15 (4.6)	5 (1.5)
The clinic provides car parking which is convenient.	55 (17)	96 (29.7)	78 (24.1)	72 (22.3)	22 (6.8)

(Continued)

**Table 7** (Continued).

Item	Strongly Agree n(%)	Agree n(%)	Neutral n(%)	Disagree n(%)	Strongly Disagree n(%)
The clinic offers a waiting room, toilet, and floor are clean and comfortable	74 (22.9)	132 (40.9)	60 (18.6)	45 (13.9)	12 (3.7)
The clinic's temperature was comfortable	92 (28.5)	159 (49.2)	48 (14.9)	19 (5.9)	5 (1.5)
The clinic provides waiting time that correspond to appointment time or scheduled time for a service.	64 (19.8)	151 (46.7)	67 (20.7)	30 (9.3)	11 (3.4)
The clinic follows a genuine appointment system.	102 (31.6)	156 (48.3)	26 (8)	34 (10.5)	5 (1.5)
The clinic staff are always willing to help patients.	140 (43.3)	150 (46.4)	18 (5.6)	10 (3.1)	5 (1.5)
The clinic staff work together in the patients' best interest.	132 (40.9)	149 (46.1)	28 (8.7)	7 (2.2)	7 (2.2)
The clinic staff give your personal attention.	106 (32.8)	137 (42.4)	56 (17.3)	18 (5.6)	6 (1.9)
The clinic staff provides prompt service to patient.	105 (32.5)	133 (41.2)	51 (15.8)	24 (7.8)	10 (3.1)
The clinic staffs know what patient's needs.	111 (34.4)	140 (43.3)	52 (16.1)	13 (4)	7 (2.2)
The doctor clearly explained to me my treatment plan.	204 (63.2)	86 (26.6)	16 (5.0)	12 (3.7)	5 (1.5)
The doctor seeks the patient's opinion and encourages them to involve in the decisions.	180 (55.7)	92 (28.5)	35 (10.8)	10 (3.1)	6 (1.9)
The physician considers the patients' expectations and needs and address them sufficiently.	183 (56.7)	89 (27.6)	36 (11.1)	8 (2.5)	7 (2.2)
The physician has enough competencies and is good at his/her job.	221 (68.4)	77 (23.8)	18 (5.6)	4 (1.2)	3 (0.9)
The doctor has interpersonal skills to reduce the patient's anxiety.	205 (63.5)	85 (26.3)	23 (7.1)	5 (1.5)	5 (1.5)
The ophthalmologists' reputation holds significant importance to me.	264 (81.7)	49 (15.2)	9 (2.8)	0 (0)	0 (0)
The doctor follows the protocol of the referral system.	135 (41.8)	117 (36.3)	56 (17.3)	7 (2.2)	8 (2.5)

Regarding patients' responses on the loyalty scale, 90.1% of patients agreed to say positive things about the clinic and recommend the same clinic to their relatives. However, only about half (53.5%) of the patients are willing to continue the clinic's service even if the fees are higher (Table 8).

Regarding patients' responses on the satisfaction level with the center, the majority (86.7%) of the patients felt positive about the center, and nearly two-thirds (65.6%) felt that the clinic's facilities and services were better than their expectations (Table 9).

**Table 8** Patients' Responses on the Loyalty Scale (n = 323)

Item	Strongly Agree n(%)	Agree n(%)	Neutral n(%)	Disagree n(%)	Strongly disagree n(%)
Will say positive things about the clinic treatment to my relatives.	198 (61.3)	93 (28.8)	21 (6.5)	8 (2.5)	3 (0.9)
Willing to recommend the clinic treatment to my relatives.	201 (62.2)	90 (27.9)	19 (5.9)	10 (3.1)	3 (0.9)
Will continue to use the clinic service in the future.	171 (52.9)	101 (31.3)	41 (12.7)	7 (2.2)	3 (0.9)
Willing to do further medical treatment at this clinic.	161 (49.8)	104 (32.2)	42 (13)	12 (3.7)	4 (1.2)
Will continue the clinic service even if the cost is higher.	97 (30)	76 (23.5)	75 (23.2)	49 (15.2)	26 (8)

**Table 9** Patients' Responses on the Satisfaction Scale Towards the Center (n = 323)

Item	Strongly Agree n(%)	Agree n(%)	Neutral n(%)	Disagree n(%)	Strongly Disagree n(%)
My feeling about the center is positive.	164 (50.8)	116 (35.9)	36 (11.1)	4 (1.2)	3 (0.9)
I am satisfied with the center's service in general.	146 (45.2)	135 (41.8)	34 (10.5)	5 (1.5)	3 (0.9)
I feel satisfied with visiting the center any time I need any treatment.	144 (44.6)	113 (35)	51 (15.8)	11 (3.4)	4 (1.2)
The general feeling of prices, facilities, and services in the center is better than I expected.	83 (25.7)	129 (39.9)	72 (22.3)	31 (9.6)	8 (2.5)

## Discussion

This study is very important in the context of getting maximum patient loyalty and satisfaction in the time of too many private hospitals. This recent study expounded the ophthalmology practice-related factors and patient loyalty, whereas patient satisfaction is a mediator. This study selected Oliver's service quality theory to provide the theoretical foundation for the research. This study has analyzed the data by using SEM-PLS.

This study found that there are three hypotheses such as H1a, H1b, and H1c are rejected. The first hypothesis explains that financial aspects have a positive relationship with patients' loyalty rejected and the finding indicates that there is no relationship between financial aspects and patients' loyalty. The findings do not show a relationship, so it can predict that the attitude of the service provider, the health of patients, and effective medication are positively related to patients' loyalty rather than financial aspects. Results align with Huda and Yuliati,<sup>45</sup> as this study elaborated that pricing does not have a relationship with loyalty<sup>5</sup> and as this study stated that reputation, skill, and job experience of the doctor are more important than price. This study rejected the H1b hypothesis showing that access and facilities have a positive relationship with patient loyalty but the finding elaborated that access and facilities have no relationship with loyalty. This study contradicts<sup>19,22</sup> and a line with the findings of.<sup>5,12</sup> There is no relationship between facilities with loyalty or patients can be physiological aspects of patients and facilities are the smallest important for their satisfaction and loyalty. The H1c hypothesis was rejected which elaborated that staff service has a positive and noteworthy relationship with patient loyalty and the finding shows no relationship between staff service with patient loyalty. There may be reason for rejection; the patient is not merely related to the service of staff rather patients have an attachment to high-quality treatment by an ophthalmologist. Further, the values of data indicate that H1d is accepted ophthalmologist services have a significantly positive connection with patient loyalty. The eyes are an important part of the human body and need accurate diagnoses and appropriate treatment. The effective communication and treatment of ophthalmologists increase the possibility of deciding to revisit.<sup>26,27,46</sup> In this regard, Oliver's service quality theory is a line with current results, as this theory focuses on high-quality service to consumers for their decisions of revisits.

Further, this study accepted the H2a which explains that the financial aspect has a significantly positive association with patient satisfaction. Financial aspects such as pricing, understanding the billing, information about insurance coverage, and financial assistance are related to patient satisfaction.<sup>29,47</sup> The support of the healthcare center or service provider regarding the costs is a critical step for increasing the satisfaction of patients.<sup>48</sup> This study has accepted the H2b which explains that access and facilities have a significantly positive relationship with patient satisfaction. According to Setyawan et al,<sup>22</sup> accessibility to healthcare is an important aspect of the healthcare provider to satisfy the patient with their given services. Easily access and facilities play a vital role in reducing stress and discomfort.<sup>30</sup> The current study also accepted the H2c which explains that staff services have a significantly positive relationship with patient satisfaction. The healthcare staff is having great importance in providing satisfaction to the patients and their returning decisions.<sup>19,38,49</sup> This result also has a foundation in Oliver's service quality theory. Further, this study found that H2d accepted ophthalmologist services have a significantly positive relationship with patient satisfaction. The

ophthalmologist's services to the patients such as proper follow-up, ethical standards, and consolation about eye disorders satisfy the patients as well as develop long-term relationships.<sup>32,50</sup>

Additionally, the present study explains that patient satisfaction has a significantly positive relationship with patient loyalty. According to Akroush and Mahadin,<sup>34</sup> the satisfaction of service consumers is positively connected to loyalty. The satisfaction of the consumer mentally develops the attachment to service providers and in this state consumers (patients) decide to revisit and recommend to others experience the service.<sup>36</sup> Further, this study suggests that patient satisfaction is a significant mediator between ophthalmology practice-related factors and patient loyalty. Based on data analysis, the current study found that if patients receive high-quality service and transparency in pricing, affordability of service, and easy access to healthcare providers then their satisfaction tends to rise. Patients with high satisfaction are not only trying to continue their treatment from the same doctor or physician but also to endorse their services to others to nurture loyalty.<sup>5,34,37</sup> Further, the main issue of the patients is accessibility and facilities to the healthcare provider at urgent times. Therefore, healthcare service, location, staff service, communication of health service providers, and scheduling of center are greatly important for patients who come from long distances.<sup>2,38</sup> So, the satisfaction of the patients about aforesaid aspects increases the patient's loyalty.

## Theoretical Implementation

The current study has some theoretical implementation that contributes to the study in more depth. Firstly, this study selected the services of ophthalmologist clinics from Saudi Arabia to analyze patient satisfaction and patient loyalty related to their services. Secondly, this study used ophthalmology practice-related factors such as financial aspects, access and facilities, staff service, and ophthalmologist services as independent. Thirdly, the patient's satisfaction is selected as a mediator for making a smooth relationship between ophthalmology practice-related factors and patient loyalty. Fourth, this study will be very beneficial for the physicians, policymakers, and management of the healthcare sector. Lastly, this study used Oliver's service quality theory to make the theoretical foundations.

## Practical Implementation

The practical implementation of the study cannot be overstated. This study has the following practical importance. The significance of our findings for the field of ophthalmology cannot be overstated, particularly due to the profound impact that visual health has on overall quality of life.

First, this study has practical importance not only healthcare sector in the context of ophthalmologists but also has crucial implications for all types of physicians and doctors. Second, ophthalmology in particular is an area where treatments can play a critical role in improving a patient's ability to carry out activities of daily living, and appreciating and meeting patient expectations is highly relevant. This patient-centered care orientation is especially relevant in ophthalmology since it looks into the clinical relevance of the eye treatment and intervention as well as the concern for patient satisfaction, patient's comfort and establishment of rapport with the eye care providers. Third, this study explains that with the understanding of the satisfaction level of the patients, the ophthalmologists can guarantee that, in addition to addressing the disease of the patient's eye, the patient is well taken cared off, thus making him or her a loyal patient with better outcome". Last, this study found that improved patient satisfaction in ophthalmology care leads to a cost savings attitude by reducing the need for expensive involvements or legal expenses associated with medical malpractice claims. Therefore, healthcare organizations allocate resources more efficiently and optimize workflows to enhance overall patient satisfaction while achieving operational and financial goals.

## Limitations and Recommendations for Future Research

This study has some limitations, and these limitations can be covered by future studies. Furthermore, the readers note these limitations while interpreting the study's findings and recommendations. First, this study analyzed the ophthalmology practice-related factors and used patient loyalty as the dependent variable, but future studies can use cardiologists, orthopedic surgeons, etc. to see the validity of the current model on different physicians. This study was conducted in Saudi Arabia and selected a small sample size, whereas future studies can select another country or area and can analyze a large sample. Next, the current study only used one theory "Oliver's service quality theory" but future studies can add more theories such as the expectancy-disconfirmation theory, kano model, and zone of tolerance to make the strong

theoretical foundations. Finally, we collected self-reported data through cross-sectional study design. Hence, limitations related to this method such as self-selection and recall bias cannot be ignored. Future studies could benefit from a longitudinal approach to better understand how these relationships develop over time.

## Conclusion

The current study is unique in the context of variables and has empirical, theoretical, and practical implementation. This study analyzed the ophthalmology practice-related factors and used patient loyalty as the dependent variable giving the foundation to study by using Oliver's service quality theory. The results after the analysis found that the factors related to ophthalmology practice-related factors such as financial aspects, access and facilities, and staff services do not have a relationship with patient loyalty, whereas ophthalmologist services have a positive relationship with patient loyalty. Patient satisfaction plays a significant role as a mediator in making smooth relationships among the ophthalmology practice-related factors and patient loyalty in the context of Saudi Arabia.

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The authors report no conflicts of interest in this work.

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