



THE IMPACT OF PHYSICAL SURROUNDINGS ON PERCEPTION OF SERVICE QUALITY AND SATISFACTION OF PATIENTS IN PUBLIC HOSPITALS PAKISTAN-(KARACHI)

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Abstract

Patient happiness is one of the goals of the healthcare sector. When evaluating services, consumer opinions and encounters with the provided services are very important. One of the behavioural objectives that is affected by the physical environment is customer satisfaction. (service environment). The quality of care and patient satisfaction are, however, infrequently assessed in Pakistan, particularly in public institutions. The study investigated how patients' views of service quality and satisfaction were influenced by the physical surroundings of Karachi's public hospitals. Primary data from the subjects' trips to the OPD and general wards of the Civil Hospital Karachi, Abbasi Shaheed Hospital Karachi, and Jinnah Post Graduate Medical Center of Karachi were collected using convenient sampling. Participants completed 347 questionnaires in total, which were gathered. The data was analyzed using the software SPSS. The findings showed that while exterior design had no significant effect on patient satisfaction, ambient conditions and interior design had a significant impact. Additionally, the study found that patient satisfaction is mediated by observed quality. Interior design and patient contentment are fully mediated, whereas ambient conditions and patient satisfaction are only partially mediated. Therefore, it is suggested that appropriate considerations for physical facility improvements are needed for public hospitals in Pakistan.

Key words: Physical environment, Ambient conditions, interior design, exterior design, perceived service quality, Patients satisfaction



1) Introduction:

1.1) Study Overview and Background:

Among the entire services healthcare is a service which we need throughout our lives. It is one of the basic needs which is very critical for the development of healthy nations. Better health of labor force improves their efficiency of work and productivity which leads towards the economic prosperity and growth. Public hospitals in this regard can play a vital role in attaining skillful human capital resources by providing better health care services for the development of country and without the proper public sector support only the wealthy population of the country can afford reasonable health care services. The majority of people in Pakistan, a developing nation, use public sector hospitals for their medical needs, but sadly, the quality of treatment offered there is very subpar. Pakistan ranks fifth in the list of countries by population, with a population of 228,890,529, according to Worldometer's analysis of the most current United Nations statistics for 2022. This is equal to 2.83% of the world's population. The amount spent on the health sector as a percentage of all public sector spending has a significant impact on the nation's overall wellbeing. Pakistan spent 1.2% of its GDP on healthcare in 2021–2022. Public, parastatal, private, civic society, philanthropic contributors, and donor organizations are all a part of Pakistan's mixed health system. In Pakistan, the distribution of healthcare to patients is standardized into four categories: preventive, basic, curative, and rehabilitative services. (Kumar, S.; Bano, S. 2017). accordance with the constitution of Pakistan, the State was in charge of offering healthcare services. However, after the constitution's 18th amendment, the provinces were given responsibility for establishing and enhancing healthcare facilities (Javed Ahmed, 2018).

The patient satisfaction is essential to retain in the presently challenging market. The theory of cue utilization defines that different cues are related to product and services for assessing quality these cues are used as indicator of quality (Reimer and Kuehn, 2005). In services physical environment is considered very important because for tangible product various cues are available but services are intangible in nature and because of this intangibility very few cues are available for services (Zaithaml, Parasuraman and Berry, 2014). Traditionally there are four P's in marketing mix. Now marketing mix of services expanded and three new P's are also included as physical evidence, participation and processes. Physical evidence includes physical environment and all tangible cues. Participation includes organization's personnel and customer. Processes include procedures, flow of work activities and work mechanism (Boom and Bitner 1981). In service firms there is a direct interaction between consumer and service provider (employee) within a firm physical environment. Therefore physical environment should support and facilitate both employee and customer. Like in hospitals patient room should be designed to increase comfort for patient and as well as increase employee performance (Bitner 2012). Hospitals should focus on how to spend their limited resources to improve



patients satisfaction by improving physical surrounding of hospitals (Hashim ,Issa et al 2018). The environment of the service interaction functions as a "package" that influences the customer's choice to make a purchase.(Kotler et al 2011). A number of variables, including social interactions with service providers, the physical characteristics of service encounters, and additional services the patient gets, can affect the patient's experience in a health care setting. (Holder and Berndt,2011).

1.2) Problem Statement:

In developing countries, there are two main categories of service providers: public and private clinics. It is important to select the right hospital and medical professional because they have a significant impact on a patient's path of treatment (Shabbir et al., 2016). Facts show that public hospitals are financed by the government and subject to governmental laws and regulations, whereas private hospitals offer their patients more individualised care and treatment. It is regrettable that more and more disgruntled patients are receiving care in Pakistan's public institutions.(Irfan, Ijaz 2011; Shabbir Malik, 2016).

Private hospitals have more resources to maintain their patient group and provide them with the best care possible than their rivals. According to several comparative studies, there are differences between the healthcare services provided by public and private hospitals. The findings show that patients prefer to go to private hospitals over public ones because of a variety of reasons, including improved technology, the lack of waiting lists and treatment delays, a clean environment, and more individualised care from doctors and nurses. (Shabbir et al., 2016; Imran and Irfan, 2011). Additionally, according to (Caruana, 2002), service excellence is a crucial component in ensuring patient loyalty and general happiness with hospitals. From the discussion above, it is clear that suppliers have a fiduciary responsibility to create and maintain customer happiness by offering superior products and services. This is essential in the current competitive business sector, quality medical care and high-quality services by gaining a greater understanding of how customers define service quality. This would only be feasible if service providers learned about and understood the opinions and perceptions of their clients. Therefore, the current study prefers to concentrate on patients' perceptions of service quality and how those perceptions affect their satisfaction.

1.3) Objective of the study:

The research focuses in the clear statement on the achievement of the following objectives:

- 1) The tangible facilities provided to patients or physical environment of public hospitals.
- 2) To determine how the physical surroundings affects how well a hospital is perceived to Provide services.
- 3) To determine how the physical surroundings of public hospitals affects patients' satisfaction.



- 4) To identify which factor of physical environment is more crucial for patient's satisfaction.
- 5) To suggest the hospital management regarding allocation and utilization of resources and use of tangible factors in designing their marketing strategies.
- 6) To provide the marketer the stage for future investigation and exploring new dimensions of physical environment public hospitals for improving quality in service delivery in healthcare sector.

1.4) Outline of the Research:

The study's objective is to better inform healthcare marketers about how the physical environment impacts patients' satisfaction and their perceptions of service quality. It will help the government and administration of hospitals regarding proper allocation and utilization of resources. It will help the managers to how the ambiance, internal design and external design of hospital deliver the message about the organization, its product and its quality before the actual encounter can take place. Physical environment has been acknowledged as having a significant influence on patient happiness, expectations, and perceptions of the service quality of hospitals. Therefore hospitals are required to emphasis on these physical facilities. There were also some limitations which were the hindrance of this study such as lack of time and resources were the main constraints which were face during the research was conducted.

1.5) Significance of the Research:

The following are some of the implications of this study:

- This research is important for hospitals because it shows how improving the physical environment can increase patient satisfaction.
- This research is important because it reveals how the physical environment affects how satisfied a patient is with the services they receive.
- This research is important for improving hospital environmental, health, and safety standards as well as for government organizations responsible for allocating resources to public hospitals in Pakistan.
- By enhancing their physical surroundings, the healthcare organizations in the public sector will benefit from this study's findings.
- The hospitals will benefit more from this research in terms of increased patient satisfaction. This study will help the hospitals in making marketing strategy and enhancing patient wellbeing, experience and positive response.

Besides; this study will help the hospital to make their decisions better regarding their utilization of resources, enhancing brand image and facilitate both patients and employees'. By getting knowledge of how the physical environment can be used as a package, hospitals can improve their service delivery quality.



1.6) Definitions of Variables:

1.6)1. Physical Environment:

The term Physical is used by different scholars in different fields and areas. By the literature review this term is defined as Baker (1987) refers it as “physical environment”, Kotler (1973) defined as “atmosphere”. Cronin (2003) used the word “service environment”. Bitner (1992) referred it as “service cape”. The physical facilities serve as a gauge for the patient's perception of the service level in connection to the hospital's physical services. This metric considers the maintenance and hygienic conditions of the facility, the provision of physical facilities like resident rooms, technological prowess, diagnostic testing facilities, blood banks, wards, beds, emergency services, waiting areas, and operating rooms. The impact of physical services on excellent execution has already been the subject of numerous studies. (Ko.H.H et al, 2009).creating a comfortable atmosphere that greatly helps the patients recover completely. The physical environment of the hospital needs to be improved, and the right healthcare personnel must work hard to do so. A better physical environment will help patients recover faster and live healthier lives. . [Anna .S, 2018].

Element of Physical environment/service cape:

Bitner (1992) has identifies following three dimensions of service cape/physical environment

Ambient conditions:

it includes all the factors which influences how customer think, feel and give response to any particular service. Such as noise, music, temperature, color,lighting, odors etc.

Spatial layout and functionality:

it is defined as the arrangement, shape and size ofequipment, machinery and furnishing, functionality means how these things facilities thecustomer and employees in their work.

Sign, symbols and artifacts:

it includes all the items used for communication purpose such as sign (implicit and explicit both), labels (names), rules (for do's or don'ts,photographs, decoration style are useful tool for creating first impression.



Many earlier studies have provided explanations for the elements of the physical surroundings in healthcare organizations.

The physical data was categorized into three classes by Gbettor et al. in 2013.

- Hygienic hospital facilities and surrounding conditions, including noise level and hospital surroundings.
- Design elements like the outpatient department (OPD) and unit lobbies are roomy and have seating areas, but the outpatient department unit is constantly packed during OPD sessions. Patient cards and folders, the building's structure, and the colors of the physical amenities are all very appealing.
- Social factors, such as the nursing staff's ability to provide quick, accurate care and their ability to make a good first impression on patients.

Bitner (1992) defined attributes of service cape of hospital as **Attributes (interior):** Includes interior design, layout, equipment, signage, air quality, temperature, décor etc.

Attributes (exterior): Includes signage, parking, landscape, exterior design etc.

<u>Service</u>	<u>Servicecape</u>	<u>Other tangible</u>
Hospital	<p><u>External design</u></p> <p>Parking</p> <p>Signage</p> <p>Landscape</p> <p>Surrounding</p> <p><u>Interior facility</u></p> <p>Interior design and equipment</p>	<p>Uniform</p> <p>business cards</p> <p>employee dress</p> <p>Website</p> <p>billing statement</p> <p>virtual service</p> <p>cape</p>

The physical layout of hospitals, amenities, signs, symbols, and artifacts, ambient conditions, the general state of the staff's uniforms and equipment, energy efficiency, and indoor air quality are just a few of the factors discussed by Motwani and Shrimali (2014).



➤ **Service Quality**

Hospital success is based on the excellence of their services. Service quality is an adequate component of each marketing principle's representation of distinctive and competitive strategy, in each manufacturer and supplier of services (Kotler P. et al. 2009), for improving quality of services and for achieving differential advantage organizations can use new technology (Parasuraman, Zaithaml and Berry, 1991). Consumer's perceptions vary, their way of judgment, values and viewpoints are different so the quality of service should be based on keeping customer in mind (Change, 2008).

➤ **Perceived service quality:**

Perceived service excellence refers to a customer's assessment of a brand or business. The capacity to live up to standards. It may or may not be based on a product's real performance; rather, it is based on the reputation of the company, the brand, or the product in general. Opinion leaders, a consumer's experience with other goods made by the same company, or a consumer's reference group could all have an impact. The biggest problem facing service organizations is service quality. (Sohal, 1994). As a result, enhancing service quality becomes a crucial goal for a company, particularly in the service economy.

□ **Patient satisfaction:**

In order to improve healthcare systems, determining the requirements of the patients is a crucial component. One way to learn about patients' views of the quality of care and to foster long-lasting patient participation is through their opinions on medical care. [Kamimura, A, 2015]. Patients who express greater satisfaction with their care are more apt to gain from it [Aljuaid, M, 2016]. These variables, which also include communication between doctors and patients, tangible physical services (such as pharmacy services), and laboratory services, have been used by several academics to assess the patient's satisfaction with a focus on ensuring the long-term viability of medical services. (Cheng, Y, 2015).

If a patient is pleased with their own medical care, they are more apt to report being in better health. Patient contentment can be a valuable method for evaluating the superiority and result of a specific healthcare setting when properly compared to the outcomes and the conformity of the therapy. (Devreux, et al, 2012). A healing setting should take into account the patients' physical and mental well-being (Fottler et al., 2000).

2) Literature Review:



Physical surroundings has an important effect on patients' perceived contentment. Therefore, hospital administrators should improve the infrastructure, such as access to pure drinking water and healthy conditions in restrooms and waiting areas.(Abid Hussain et al.2019). Additionally, some studies have demonstrated a direct correlation between a patient's degree of satisfaction and their state of health. (Otani, K.et al 2010). Five positive underlying factors were hospital personnel competency and methods, healthcare efficacy, the environment and support they nurture, general attitude, and service procedures. (Yi-ren, D et al,2005). The importance of service providers offering improved support is emphasised by the most recent sustainability development goals (SDGs) outlined by the world's leading organization. (WHO,2015).

Bitner (2012) investigates how the physical environment affects both customers and workers. He also develops a typology of service capes and examines how the environment and users are related. It is thoroughly investigated how service quality affects client satisfaction from all angles, including social, psychological, cognitive, environmental, and individual dimensions. He described physiological reactions as pain, comfort, movement, and physical fitness while categorizing cognitive responses as belief, classification, and symbolic meaning. Physical environment includes layout, furnishings, machinery, and other factors such as ambient circumstances such as temperature, noise level, and air quality. Personal objects, symbols, and signs are all forms of decoration. These physical environments have the greatest effect on the recipient's assessment of the overall calibre of the medical care.

Despite being very successful at what it does, the outpatient department (OPD). When citizens need basic medical care, public hospitals play a crucial part in providing the necessary amenities or services.. A society without access to basic healthcare would be one filled with anguish and suffering. (Duan et al;2014).The user's total assessment of what is given and received makes up the expected standard of care given in hospitals.(Duggirala et al., 2008).Any nation's healthcare system is a key pillar for its development because it affects all other areas, including the business, political, social, moral, and political. It also has several fiscal ramifications. (Bahadori,et al,2018). When the patients move to the new facilities with enhance physical evidence they were less aggressive and the length of stay was shorter(Lawson and Well-Thorpe 2002) .From the above literature in this study three factors of physical environment had considered to measure from the perspective of perceived service quality of hospital and patient satisfaction. independent variables are(1)Ambient conditions (noise level ,odor, color compositions, light ,cleanliness),(2) interior design(bathroom facility, spacious waiting area, setting arrangement, comfortable sitting facilities, medical equipment, files and records),(3) exterior design(sign post, parking area, garden), mediating variable is perceived service quality and dependent variable is patient satisfaction. Three aspects are described by Pai and Chary (2013) as aesthetic appeal and layout, amenity, cleanliness, and hygiene. The most crucial bodily components were discovered to be cleanliness and hygiene.



2.1) Hypothesis Development:

H1: There is significant impact of physical environment on patient's satisfaction.

In order to create the desired experience, healthcare facilities use both the exterior (signage, parking, buildings, waiting areas, etc.) and internal (design, layout, equipment, décor, etc.) elements of service. (Amin et al, 2016). For patients to be satisfied, it is crucial to maintain physical facilities, have cutting-edge medical technology, attractive infrastructure, staff that is dressed professionally, and provide hygienic care. (Ali.S.S et al., 2018). The tangible nature of Healthscape is an important instrument for increasing customer satisfaction. (Sahoo, et al., 2016). Tangible cues such as visually appealing equipment, employees dress, ambience of organization, physical facilities, physical setting, infrastructure, layout, drugs, quality of meal, odor, color composition etc. have close relation relationship with the healthscape (Bitner 1992).

A healthcare system that puts the needs of the patient first has made medical services more tangible. It is primarily because technical aspects of healthcare, such as diagnosis or treatment, are more difficult to handle than its tangible aspects. (Hutton, et al., 1995). As a result, the tangible factors are crucial in determining how well a service is provided altogether. (Bowers, et al., 1992).

When hospital facilities and physical surroundings are kept up to date, patients are more likely to wait or relax in the facility (Holder and Berndt, 2011). Different emotional and perceptual outcomes can be produced by ambient factors like temperature, commotion, and odor, among others. (Wakefield and Blodgett, 1996).

H2: The perceived service quality mediates the impact of physical environment on patient's satisfaction.

The user's total assessment of what is given and received makes up the hospital services' assessed level of quality (Duggirala et al., 2008). One of the simplest methods to improve the service quality in healthcare facilities is to understand and use the patient information of those facilities. (Zeithaml et al., 1990). Other researchers have suggested a four-factor structure that they claim demonstrates parts of technological, functional, environmental, and administrative quality. These factors include relevant medical professionals, the simplicity of the treatment process, and tangibles. (Choi et al., 2005).

Construction, personnel quality, administrative practices, safety measures, and encounters of patients, nursing care, paramedical, support staff quality, communication quality, and social responsibility are some of these aspects. (Abid Hussain et al, 2019). Healthcare service providers work to increase patient satisfaction to maintain a positive image. A healthcare



service's delivery process includes a number of interactions, and satisfaction with those encounters is referred to as general patient fulfillment.

2.2) Empirical Study:

Authors recognize that requirement of tangible aspects particularly ample parking space, employees dress to assess the level of satisfaction of recipient (Selim,2017). Patients' contentment is significantly impacted by factors such as hospital's ambiance, physical amenities, location, hygienic conditions, and appealing decoration. (Debjani.,et al.,2016).A patient can assess a doctor's technical ability through tangible factors. (Bowers,et al.,1992).The environment in hospitals performs a crucial part in the patient's development of satisfaction(Fatima ,et al.,2018).The most important element in determining how satisfied a patient is with their care are the obvious aspects, such as an aesthetically pleasing environment, contemporary technology, and cleanliness.(Azar et al.,2017)

Patients' standards are heavily influenced by modern medical technology, cleanliness, and an attractive facility. (Jandavath.,et al.,2016).The metric that shows how well institutions provide their services is tangibility. (Vandamme.,et al.,1993).Patients benefit from tangible elements Patient contentment, which encompasses satisfaction with a variety of hospital functions and hospital aspects , is a cumulative concept. (Elleuch, 2007). Patients gain from concrete components Patient contentment is a cumulative notion that includes satisfaction with a range of hospital services and aspects (Zineldin,2006). Since consumer fulfillment is seen as the goal of treatment, it plays a significant role in boosting patient compliance, which in turn improves clinical outcomes. The concept of a patient being satisfied with their medical care is complex and represents their viewpoints, beliefs, and expectations. (Baker & Streatfield, 1995). When assessing happiness, one must consider the technical, social, emotional, and ethical aspects of care. (Kane et al., 1997)

The chance that a customer will suggest a service provider to others as a result of feeling better about the quality of the service received is one of the connections between customer satisfaction and reputation. Patient evaluation of the hospital experience and decision to return or not are both reflected in patient happiness. Almost all researchers concur that while satisfaction has both cognitive and affective components, service quality is a cognitive concept. (Choi et al., 2005; Elleuch, 2007).The layout, fixtures, signs, symbols, artifacts, signage decoration, canteen, laundry facilities, drugstore, and other tangible aspects of the building exterior, parking area, directions sign, waiting area, medical equipment, staff attire, and the neighboring environment are among the physical aspects. (Ingy, et al., 2015) The studies acknowledge that, among other things, hospital ambiance, staff uniforms, in-room amenities, and meal services have a big impact on patient satisfaction and total service quality. In comparison to other



industries, the healthcare sector has a comparatively unique evaluation process. Hospitals must plan and organize their equipment and facility layouts because they are large-scale service facilities for daily number of customers (Holder and Berndt, 2011). The navigation system's sign and symbol condition is crucial, particularly in areas with lots of waiting and walking (Rousek, and Hallbeck, 2011). Patients' ability to trust the facility will increase when they experience a pleasant feeling in the surroundings. (Leister, 2014). Depending on the patients' experiences, the physical surroundings may influence patients' favourable behavioural responses. (Lin, Leu and Breen, 2008). Healthcare service providers can use the physical aspect of the health scape as a tool to set themselves apart from the competitors. (Holder and Berndt, 2011).

3) Methodology of the Study:

The earlier works describe the elements of a healthcare organization's physical environment. Philip (2016) (1) Primary evidence (building space, clientele, signs, parking space, medical gear, waiting room, consultation room, payphone, hygienic conditions, and sanitation), and (2) Secondary evidence (admission card, medical report, billing statement and brochures).

Gbetor and co. (2013) (1) ambient factors (nice surroundings, noise level, cleanliness), (2) Design factors (large OPD and lobbies, sitting areas, patient cards and folders, building structure, color composition of physical facilities). (3) Third, social reality (nursing staff assess patients need, attractive and elegant, professional).

Shrimali and Motwani (2014) (1) Physical architecture, (2) amenities, signs, symbols, and artifacts, are just a few. (3) Environmental factors (4) Staff appearance and tools (5) Energy effectiveness and indoor air quality. "Kien et al." (2018) (1) The environment (2) Design prerequisites (3) Sign and emblem requirements.

According to Bitner (1992), a hospital's service cape's characteristics are Interior attributes include things like interior planning, furniture, technology, signage, climate control, and décor. Exterior attributes include things like signage, parking, landscaping, and exterior architecture.

On the comparison of previous studies this research is going to identify the following aspects of physical environment (1) ambient conditions (2) interior design (3) exterior design. The data was collected from primary source of information and relies on the following methodology.

3.1) Data Collection Methods:

Patients who attended the city's public hospitals Abbasi Shaheed hospital, Jinnah Post graduate Medical Centre and Civil hospital in Karachi are included in the source of the data. The necessary data will be collected using one form. Five (5) choices are provided on a closed-



ended questionnaire. Agree, Uncertain, Disagree, Strongly Disagree, Strongly Agree. Each choice has a number coded into it that will be used in one sample examination. Starting with strongly agree, the number is given as 1, and agree is given as 2. Similar to this, the numbers 3 stand for Uncertain, 4 for disagree, and for strongly disagree is 5.

3.2) Sampling Approach:

The data was collected by Non Probability Sampling Technique. A sample of 192 patients of civil hospital including 92 from OPD and 100 patients of general ward, 60 patients of Jinnah hospital including 30 patients of general ward and 30 from OPD, 95 patients of Abbasi Shaheed including 37 patients of general ward and 58 from OPD. The range of survey was Jinnah, Civil and Abbasi Shaheed hospital of Karachi, Pakistan.

3.3) Sample Size:

A 347-person sample has been chosen for the selected survey. These include patients of different departments of OPD and general ward from Civil, Jinnah and Abbasi Shaheed hospitals of Karachi.

3.4) Instrument of data collection:

One comprehensive questionnaire has been created as a tool for gathering the necessary data. There were two sections to the inquiry. The first part of the study focused on demographic information, and the second part looked into how the physical surroundings affected patients' perceptions of service quality and happiness.

It includes 28 questions in the questionnaire made for patients for asking questions about three dimensions of physical environment as interior design, ambient conditions and exterior design, perceived service quality and customer satisfaction. The questionnaire was prepared from Gbetor, et al. 2013 regarding design factor and ambient conditions of hospital and patient satisfaction. The interior design contains 6 questions, exterior design consists of 6 questions, ambient conditions consist of 6 questions, perceived service quality contains 5 questions and patients satisfaction consists of 5 questions.

3.5) Statistical Test applied:

The statistical analysis of the category data (on an ordinal scale) that was gathered via questionnaire. Using a reliability test, the data series' dependability was examined, and after that, a statistical test was used.



After the data series' reliability requirements were satisfied, the OLS Regression Model was used. In order to use the regression model, the categorical information (on an ordinal scale) has been converted into scale measurement. The effect of the intermediate variable can then be determined using the technique of multiple regression analysis.

Research Model Developed

This investigation looks at how physical environment influences patient's perception of service excellence and the effect it has on their level of satisfaction. Physical environment is independent variables, perception of service quality is mediating variable and satisfaction of patient is dependent variable.

Judd and Kenny (1981) approach for examine mediating effect is used therefore the regression model for analysis is as:

$$Y = \beta_0 + \beta X + e$$

$$Y = \beta_0 + \beta_1 X + \beta_2 m + e$$

First, simple regression is used in this research to examine the impact of physical environments interior design, ambient condition and exterior design (dependent variable) on patient's satisfaction. Secondly, the effect of the physical surroundings (an independent variable) and perceived service quality (a mediating variable) on patients' satisfaction (dependent variable) is examined using the technique of multiple regression. So, in our regression model, the following variables may be used as predictors:

Perceived service quality (PSQ), patient's satisfaction (PS), Physical environment (PE), Interior design (ID), Exterior design (ED), Ambient conditions (AC)

As a result, the necessary model shall be as follows:

$$PS = \beta_0 + \beta PE + e$$

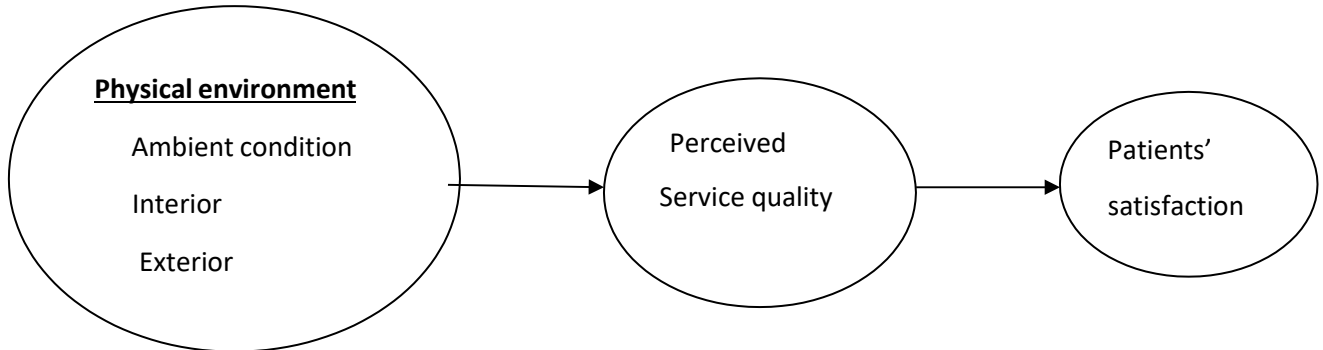
$$PS = \beta_0 + \beta_1 PE + \beta_2 PSQ + e$$

3.6) Conceptual Framework:

Hypothesis consists of independent variables as physical environment, mediating variable as perceived service quality and dependent variable as patients' satisfaction.



Fig :3.1



4) Results and Interpretations:

4.1) ANOVA and Explanation of Reliability Test

The test for reliability is used to assess the reliability of categorical information that will be applied as a scale in the regression model and used as a measure in the analysis.. The reliability is used separately on all variables.

Table 4.1.1

displays the Cronbach's Alpha number, which is greater than 0.5 and is 0.691. Suitable justification for the data series' for ambient circumstances. The data set for ambient condition is therefore trustworthy for additional statistical analysis.

Table 4.1.1 Ambient condition

Statistics of Reliability

Cronbach's Alpha	Quantity of Items
.691	6



Table # 4.1.2

displays the higher-than-0.5 Cronbach's Alpha number (0.724) a sufficient defence of the data series' dependability for interior design .The data set for interior design is therefore trustworthy for additional statistical analysis.

**Table 4.1.2 Interior design
Statistics OF Reliability**

Cronbach's Alpha	Quantity of Items
.724	6

Table # 4.1.3

demonstrates the Cronbach's Alpha number, which is greater than 0.5 and is 0.760. proper explanation of the data series' dependability for exterior design The data established for exterior design is therefore reliable for further statistical analyses.

**Table 4.1.3 Exterior design:
Statistics of Reliability**

Cronbach's Alpha	Quantity of Items
.760	6

Table #4.1.4

indicates the Cronbach's Alpha number, which is greater than 0.5 and is 0.760. the reliability in information series is properly justified for perceived service excellence.. Thereforethe data series of perceived service quality is reliable for further statistical analysis.

Table 4.1.4 Perceived quality:



Statistics of Reliability

Cronbach's Alpha	Quantity of Items
.759	3

Table# 4.1.5

exhibits the Cronbach's Alpha number (0.873), which is higher than 0.5 proper justification of the data series' reliability for patients' satisfaction The patient satisfaction data series is reliable for further statistical research as a result.

Table 4.1.5 Patient satisfaction:

Statistics of Reliability

Cronbach's Alpha	quantity of Items
.873	5

SPSS(17) was used to analyze the responses of survey. The influence of physical surrounding (independent variable) on satisfaction is examined. For the statistical study, the following regression model has been used:

$$PS = \beta_0 + \beta PE + e$$

To determine how well a model fits the data and how reliable it is, use the ANOVA test and the adjusted R square number.

Table 4.1.6:

indicate that 0.249 is the reasonable value of Adjusted R square and that The illustration, as Adjusted R square number of at least 50% is required for an average model.

Table 4.1. 6 : Model Summary



Regression
Figures Explanation

Model	Value R	Value R Square	Values Adjusted R Square	Value Std. Error of the Estimate
1	.506 ^a	.256	.249	.72389

a. Static Predictors: Exterior Design, Ambient Condition, InteriorDesign

Table 4.1.7:

displays the ANOVA test's findings. The sig value is less than 0.05 values that demonstrate the significance of the ANOVA test, and as a result, the null hypothesis that all means are equal may be denied.. The ANOVA outcome indicates the regression model's fit.

Table 4.1.7:

ANOVA^b

Model	Values of Sum of Squares	Df	values Mean Square	F	Sig.
Regression	61.702	3	20.567	39.249	.000 ^a
Residual	179.738	343	.524		
Total	241.440	346			

Predictors: (Constant), Exterior Design, Ambient Condition, InteriorDesign

b. Dependent Variable: patient Satisfaction

The Regression model may be used depending on the outcomes of the ANOVA and Reliability test. Regression Model is available below which has been developed for my study:

$$PS = \beta_0 + \beta PE + e$$

Table 4.1. 8: display the outcome of Regression model. The model to assess the



influence of

Physical environment (interior design, exterior design, ambient conditions) on patients' satisfaction would be as follows:

$$PS = \beta_0 + \beta PE + e$$

$$PS = 1.367 + 0.7436e$$

The components of physical environment are interior design, exterior design and ambient conditions. The beta of exterior design is insignificant since its sig value is more than 0.05. the beta of ambient condition and interior design are significant.

The equation (and the results of Beta coefficients in table 4.1.8) depicts positive sign which endorses the positive impact of all factors on patients' satisfaction.

Table 4.1.8

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.367	.187		7.317	.000
Ambient condition	.434	.067	.375	6.449	.000
Interior Design	.283	.082	.231	3.441	.001
Exterior Design	-.080	.063	-.077	1.269	.205



a. Dependent Variable: patient Satisfaction

H1: The physical environment has a significant effect on patients' satisfaction. The sig value of ambient condition (0.000), interior design (0.001) and exterior design (0.205). The sig values of ambient conditions and interior design supports the study's acceptance of its first hypothesis. for these two components of physical environment, whereas exterior design is excluded.

Secondly the independent variable (impact of physical environment and (perceived service quality)(mediating variable) on patients satisfaction is examined. For the statistical study, the following regression model has been used:

$$PS = \beta_0 + \beta_1 PE + \beta_2 PSQ + e$$

To determine how well a model fits the data and how reliable it is, use the ANOVA test and the Adjusted R square number.

Table 4 .1.9

Declare that 0.47, the acceptable value for the model, is the value of Adjusted R square. as Adjusted R square number of at least 50% is required for an average model.

Table 4.1.9

Regression Model Explanation

Mode l	Value of R	Value of R Squar e	Value of Adjusted R Square	Value of Std. Error of the Estimate
1	.692 ^a	.478	.472	.60695

a. Predictors: (static), Perceived Quality, Exterior Design, Ambient Condition, Interior Design

Table 4.1.10

display the outcome of ANOVA test findings. The null hypothesis that all means are equal may be denied because the sig value is less than 0.05, which is significant and demonstrates that the ANOVA test is significant. The ANOVA outcome shows how well the regression model fits the data.



Table 4.1.10

ANOVA^b

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	115.451	4	28.863	78.349	.000 ^a
Residual	125.989	342	.368		
Total	241.440	346			

a. Predictors: (Constant), Perceived Quality, Exterior Design, AmbientCondition, Interior Design

b. Dependent Variable: patient Satisfaction

Based on the results of ANOVA and Reliability test the Regression model may be applied. Regression Model is available below which has been developed for my study:

$$PS = \beta_0 + \beta_1 PE + \beta_2 PSQ + e$$

Table 4.1. 11: gives the regression model's findings provides the results of Regression model. The model to find out the impact of physical environment on patients satisfaction by taking perceived quality as mediating variable n would beas follows:

$$PS = 1.024 + 0.2963 PE + 0.592PSQ + e$$



Table 4.1.11:

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.024	.159		6.433	.000
Ambient Condition	.237	.059	.205	4.036	.000
Interior Design	-.030	.074	-.025	-.408	.683
Exterior Design	-.088	.053	-.085	-1.679	.094
Perceived Quality	.592	.049	.611	12.079	.000

a. Dependent Variable: patient Satisfaction

Since there is full mediation between interior design and patients satisfaction ($\beta = -0.30, P > 0.05$) and there is partial mediation between ambient condition and patients satisfaction ($\beta = 0.237, P < 0.05$), therefore, it can be said that the suggested model has a mediating role for perceived service quality.

Since there was an insignificant direct effect of exterior design on patients' satisfaction in equation no.1, therefore this variable is to be excluded from the mediation model as no mediation is possible between exterior design and patients' satisfaction.

H2: The perceived service qualities mediate the influence of physical environment on satisfaction of patients. The sig value of ambient condition (0.000), interior design (0.683) and exterior design (0.094). The sig values of ambient conditions and interior design proves that second hypothesis of the research is accepted for these two components of physical environment; whereas exterior design is excluded at first step.

4.2) **Summary of the Hypothesis Assessment**



Table 4.2.1:

Hypo.	Hypothesis	Empirical Conclusion
NO		
1	The physical environment has a significant effect on satisfaction of patient	Accepted
2	The perception of service quality mediates the impact of Physical surroundings on patients' satisfaction.	Accepted

5) Conversation , conclusion, and potential future research direction:

5.1) Conversation

The study's results demonstrate that the physical environment has a big effect on how customers perceive the quality of the services they receive as well as how satisfied they are. This study's findings demonstrates how a patient's perception of the hospital's service quality and their satisfaction—both of which will encourage them to suggest it to others—are influenced by the physical environment.

Among all the components of physical environment ambient condition and interior design has significant impact on patients satisfaction as supported by Boom and Bitner(1981),they stated the importance of physical evidence in service marketing and introduce it as one important P of marketing mix for service marketing .

5.1) Conclusion:

The marketing aspect of services is quite different as the marketing of tangible products as statedby Zaithaml, Parasuraman and Berry (1985) that with tangible product various cues are presentbut because of intangibility of services few cues are available due to which for services physicalenvironment plays a crucial role in building image of service provider and for customer satisfaction. The literature on healthcare services also emphasized on importance of physical environment as explained by Ulrich et al., (2004).



This study has focused on two factors for investigating the patients' satisfaction. The physical environment (dependent variable) which is examined by three factors ambient conditions, interior design, exterior design and perceived service quality (mediating variable). Among these factors ambient condition and interior design have significant impact on patients' satisfaction

, also interior design is fully mediated by perceived service quality whereas ambient condition is partially mediated. Public hospitals can achieve customer satisfaction by improving their physical environment and the patients' perception for their services.

5.2) Managerial implication:

Certain decisions should be made for their development in order to improve sustainability notably in the public sector, in the healthcare sector where a large portion of Pakistan's population is concerned. The creation of transparent policies, greater monetary support for tangible infrastructure and involvement of all parties in decision-making are just a few examples of the serious actions that to address the issues in the healthcare industry, governments should take action. To reduce traffic and the time it takes to locate files and records, to digitise hospital records, the healthcare administration should collaborate with the provincial health agency.

Our findings will serve as a crucial reminder for healthcare care taker, who will then be better capable to consistently keep hygienic and aesthetically pleasing conditions on hospital grounds to win back the trust and loyalty of patients. The government must develop clear policy structures for raising the maintenance levels of each organization in order to sustain a better environment.

Our findings demonstrated the importance of ambiance and internal hospital design for hospital administration teams. The physical surroundings significantly affects how satisfied patients feel. The availability of potable water, sanitary circumstances in restrooms and waiting areas, noise level, parking area, waiting facilities garden, etc. should all be improved by hospital managers. The findings of this research are related to the WHO 2006 Framework's quality criteria, which suggests that health services to sustain the healthcare industry can use these results to enhance service delivery. Giving a redesigned service delivery process a patient-centric focus should be a priority for healthcare organizations. Improved medical care and increased return on confidence for the organizations could be the outcomes of this strategy. This assessment is anticipated to provide a substantial contribution to the literature in the healthcare industry. These results will be useful to researchers, and we expect they will carry out similar studies involving more variables to enhance Pakistan's healthcare system.

5.3) Potential Future Direction for Research:



This Work has several restrictions that can be used by academics in the future. Researchers in the area of marketing are given opportunities by this.

At First it includes only 347 patients from three hospitals of Karachi. Future research can be done in other areas of Pakistan; it can provide more information regarding influence of physical environment on patient's satisfaction.

Secondly only physical environment and perceived service quality are investigated for assessing the impact on patients' satisfaction, but many other variables as doctors, nursing staff, pricing also influence the patients' satisfaction. These factors can be used by the researchers for future research.

Finally, the research only evaluates public hospitals and excludes private hospitals. Future study can compare perceptions of both public and private hospitals and patient satisfaction in Pakistan as well as examine the effect of physical environment on patient satisfaction for private hospitals.



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