

those patients who are not medically insured. Highly trained technical staff and less waiting time for the diagnostic procedure also leads to patient satisfaction that has a positive impact on health care facility ^[7].

© GSJ

4. Research Hypotheses

Following hypotheses have been tested in this paper:

H1: Physician interaction has a significant impact on patients' satisfaction.

H2: Paramedic interaction has a significant impact on patients' satisfaction.

H3: Waiting time has a significant impact on patient's satisfaction.

H4: Diagnostic process has a significant impact on patients' satisfaction.

H5: Hygienic condition has a significant impact on patients' satisfaction.

5. METHODOLOGY

After approval from Ethical Review Committee of Bahria University Karachi Campus, this study was conducted at Abbasi Shaheed and Jinnah Hospitals located in the city of Karachi. Deductive approach was adopted whereby hypotheses were first developed after thorough review of relevant literature, followed by preparation of a research instrument. Five IVs, including Physician interaction, Paramedic interaction, Waiting time,

Hygienic condition and Diagnostic process were selected for checking their impact on Dependent Variable (Patient Satisfaction). Total number of patients admitted in different wards of the two hospitals were around 400 (target population). A total of 107 patients, both male and female of varying ages, were accessed on the basis of their availability and health condition. Informed consent was obtained from all the patients. Sample size (107) was calculated online using Monkey survey. Non-probability, convenience sampling technique was adopted for accessing respondents [8]. Primary quantitative data were collected with the help of a questionnaire, on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). Statistical tools used for statistical analysis included Pearson correlation and Regression. Further analysis was done with the help of SPSS software version 22.

6. Results

6.1. Respondents' Profile Analysis

The characteristics of respondents include Gender, Age group, Profession and Experience (in years) which are explained in tables 1 to 4.

Table 1: Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	68	63.6	63.6	63.6
Female	39	36.4	36.4	100.0
Total	107	100.0	100.0	

The information in the above table shows that maximum respondents were male respondents and female respondents were less. Male respondents were 68 (63.6%) and Female respondents were 39 (36.4%).

Table 2: Age Group

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 22-30	36	33.6	33.6	33.6
31-40	64	59.8	59.8	93.5
More than 40	7	6.5	6.5	100.0
Total	107	100.0	100.0	

Table 2 shows the Age Groups of the respondents. 33.6% are between 22-30 years, whereas 59.8% lie in between 31-40 years of age, 6.5% are more than 40 years old.

Table 3: Positions

	Frequency	Percent	Valid Percent	Cumulative Percent
Doctor	18	16.8	16.8	16.8
Head Nurse	34	31.8	31.8	48.6
Nursing Aid	19	17.8	17.8	66.4
Lab Technician	11	10.3	10.3	76.6
House Keeping Staff	18	16.8	16.8	93.5
Others	7	6.5	6.5	100.0
Total	107	100.0	100.0	

Table 3 shows that out of 107 respondents, 16.8% were Doctors, 31.8% were Head Nurses and Nurses, 17.8% were Nursing Aids (Assistants), 10.3% Laboratory Technicians and 16.8% housekeeping staff and 6.5 % other staff members.

Table 4: Job Experience

	Frequency	Percent	Valid Percent	Cumulative Percent

	less than 2 years	7	6.5	6.5	6.5
	2-5 years	40	37.4	37.4	43.9
Valid	6-10 years	47	43.9	43.9	87.9
	more than 10 years	13	12.1	12.1	100.0
	Total	107	100.0	100.0	

The respondents' data displayed in the table 4 indicates that 6.5% have less than two years of experience, 37.4% have 2-5 years of experience, 43.9% have 6-10 years of experience and 12.1% are having more than 10 years of job experience.

6.2. Pearson's Correlation

Relationship of independent and dependent variables has been presented in table 5. **Table 5: Pearson's Correlation**

		PI	PMI	WT	HC	DP	PS
PI	Correlation	1					
	Sig. (1-tailed)						
	N	107					
PMI	Correlation	.022	1				
	Sig. (1-tailed)	.395					
	N	107	107				
WT	Correlation	.112	.572**	1			
	Sig. (1-tailed)	.087	.001				
	N	107	107	107			

HC	Correlation	.055	.592**	.623**	1		
	Sig. (1-tailed)	.250	.001	.000			
	N	107	107	107	107		
DP	Correlation	.121	.247**	.334**	.256**	1	
	Sig. (1-tailed)	.070	.001	.000	.001		
	N	107	107	107	107	107	
PS	Correlation	.019	.477**	.446**	.472**	.255**	1
	Sig. (1-tailed)	.409	.000	.000	.001	.000	
	N	107	107	107	107	107	

**Correlation is significant at the 0.01 level (1-tailed)

6.3. Regression analysis statistics

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.553 ^a	.305	.281	.48613

a. Predictors: (Constant), Diagnostic Processes, Physician Interaction, Paramedics Interaction, Hygienic Condition, Waiting time

Table 7: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	14.964	5	2.993	12.664	.000 ^b
Residual	34.030	144	.236		
Total	48.993	149			

a. Dependent Variable: Patient Satisfaction

b. Predictors: (Constant), Diagnostic Processes, Physician Interaction, Paramedics Interaction, Hygienic Condition, Waiting time.

Table 8: Co-efficient Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.020	.303		3.362	.001
Physician Interaction	.026	.070	-0.26	-.365	.716
Paramedics Interaction	.180	.067	.245	2.689	.008
Waiting Time	.119	.080	.143	1.486	.140
Hygienic Conditions	.146	.065	.214	2.242	.026
Diagnostic Processes	.072	.056	.095	1.272	.205

a. Dependent Variable: Patient Satisfaction

7. Discussion

7.1. Relationship between Physician Interaction and Patient Satisfaction

Our results show that the correlation value of first variable (r), as depicted in table 5 is .019 which shows a weak but insignificant relationship between Physician Interaction and Patient Satisfaction as p value is .40 which is >.05.

7.2. Relationship between Paramedics Interaction, Hygienic Conditions, Diagnostic Processes and Patient Satisfaction

For the second variable, correlation value (r) is .477; it indicates that the relationship between Paramedics Interaction and Patient satisfaction is moderate which is consistent with previous studies ^[9] and significant as p value is .000 ($<.05$). For third variable, the r value is .446, significant value = .000. For the fourth variable, the r value is 0.472 which indicates the relationship of Hygienic Conditions and Patient Satisfaction is moderate, significant value is .000 which is less than .05. For next variable, the r value is 0.255 which reflects that relationship between Diagnostic Processes and Patient Satisfaction is weak but it is significant as p value is .001 ($<.05$).

The values in table 6 (model summary) determine how well a regression model fits the data. The value of R is 0.553 which indicates a moderate level of prediction. The value of R Square is 0.305 and it tells that this model explains 30% variation of all independent variables in the dependent variable. The value of adjusted R Square is 0.281 and the Std. error of the estimate is .48613.

7.3. Positive Correlation of Independent Variables with Patient Satisfaction

ANOVA is used to compare differences of means among more than two groups. Table 7 shows that the all independent variables statistically significantly predict the patient satisfaction which is dependent variable; $F = 12.664$ at the significance level of $.000$ ($p < .005$). The findings of our research work match with the previous research work ^[10].

7.4. Statistical Results Supporting/Negating Influence of Independent Variables on Patient Satisfaction

As depicted in table 8, 'Sig' values predict significance of the variables and their usefulness. In case of first variable i.e. physician interaction, the p value is $.716$ which is greater than $.05$; it means that this variable is not useful but impact of physician interaction on patient satisfaction is not significant. The p value of the second independent variable 'paramedics' interaction' is $.008$ which is less than 0.05 ; this variable is a useful and it creates positive impact on patient satisfaction ^[11]. The p value of third independent variable "waiting time" is $.140$ which is greater than 0.05 ; this variable is also not useful and has no significant impact on satisfaction

of patients. Fourth independent variable 'hygienic conditions' has the p value of .026 ($< .05$); it shows that this variable is useful and has a positive impact on patient satisfaction ^[12]. The p value of fifth and last independent variable is .205 ($> .05$); so this variable is also not useful and does not have any positive impact on patient satisfaction ^[13]. The data analysis has revealed that out of five hypotheses developed for testing, two have been accepted whereas remaining three have been rejected.

8. Conclusion

This study has identified some factors and examined their relationship with and impact on patient satisfaction in public sector hospitals. The results indicate out of the 5 factors, two IVs i.e. paramedics' interaction and hygienic conditions have significant positive impact on patient satisfaction. However, physicians' interaction, waiting time and diagnostic processes have weak relationship and their impact on patient satisfaction is not significant. This is in line with a similar study done in a public sector hospital in the city of Karachi ^[14]. Physician interaction has a weak relationship with patient satisfaction because patients were generally dissatisfied with the overall hospital facilities and services. Waiting time

also has a low impact on patient satisfaction as they are required to wait quite longer than expected time to see the doctor [15,16]. Diagnostic processes are also assumed to be lengthy and complicated. Since overall influence of all independent variables on patients' satisfaction is only 30%, there is a need to explore more related variables responsible for patients' satisfaction, through another study.

© GSJ

Conflict of Interest:

The authors declare no conflicts of interest.

Acknowledgements:

Authors would like to thank the management staff of hospitals under study for support to carry out the present study.

Funding:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

© GSJ

References

1. Lei P, Jolibert A. A three-model comparison of the relationship between quality, satisfaction and loyalty: an empirical study of the Chinese healthcare system. *BMC Health Services Research* 2012; 12(1):436. <https://doi.org/10.1186/1472-6963-12-436>.
2. Xesfingi S, Vozikis A. Patient satisfaction with the healthcare system: Assessing the impact of socio-economic and healthcare provision factors. *BMC Health Services Research* 2016; 16:1. <https://doi.org/10.1186/s12913-016-1327-4>.
3. Moret L, Nguyen JM, Volteau C, Falissard B, Lombrail P, Gasquet I. Evidence of a non-linear influence of patient age on satisfaction with hospital care. *International Journal for Quality in Health Care* 2007; 19(6):382–389. <https://doi.org/10.1093/intqhc/mzm041>.
4. Davis BA, Kiesel CK, McFarland J, Collard A, Coston K, Keeton A. Evaluating instruments for quality: testing convergent validity of the consumer emergency care satisfaction scale. *Journal of Nursing Care Quality* 2005; 20(4):364–368.
5. Soleimanpour M. Emergency department patient satisfaction survey in Imam Reza Hospital, Tabriz, Iran. *International Journal of Emergency Medicine* 2011; 4(1):1–7. <https://doi.org/10.1186/1865-1380-1-2>.
6. Khammany P, Yoshida Y, Sarker MA, Touy C, Reyer JA, Hamajima N. Delivery care satisfaction at government hospitals in Xiengkhuang province under the maternal and child health strategy in Lao PDR. *Nagoya Journal of Medical Science* 2015; 77(1–2):69–79. <https://doi.org/10.18999/nagjms.77.1-2.69>.
7. Birhanu Z, Assefa T, Woldie M, Morankar S. Determinants of satisfaction with health care provider interactions at health centres in central Ethiopia: a cross sectional study. *BMC Health Services Research* 2010; 10(1):1. <https://doi.org/10.1186/1472-6963-10-78>.
8. Farrokhi F, Mahmoudi-Hamidabad A. Rethinking Convenience Sampling: Defining Quality Criteria. *Theory & Practice in Language Studies* 2012; 2(4):784-792. <https://doi.org/10.4304/tpls.2.4.784-792>.

9. Bacon CT, Mark B. Organizational Effects on Patient Satisfaction in Hospital Medical-Surgical Units. *The Journal of Nursing Administration* 2009; 39(5):220–227. <https://doi.org/10.1097/NNA.0b013e3181a23d3f>.
10. Medway AM, de Riese WT, de Riese CS, Cordero J. Why patients should arrive late: The impact of arrival time on patient satisfaction in an academic clinic. *Healthcare* 2016; 4(3):188–191. <https://doi.org/10.1016/j.hjdsi.2015.09.002>.
11. Soufi G, Belayachi J, Himmich S, Ahid S, Soufi M, Zekraoui A, Abouqal R. Patient satisfaction in an acute medicine department in Morocco. *BMC Health Services Research* 2010; 10(1):1. <https://doi.org/10.1186/1472-6963-10-149>.
12. Sebo P, Herrmann FR, Haller DM. How do GPs in Switzerland perceive their patients' satisfaction and expectations? An observational study. *BMJ Open* 2015; 5(6):e007085. <https://doi.org/10.1136/bmjopen-2014-007085>.
13. Georgieva E, Tsankova G, Kaludova V, Ermenlieva N. Patients' satisfaction with laboratory services at selected medical-diagnostic laboratories in varna. *Journal of IMAB - Annual Proceeding (Scientific Papers)* 2014; 20(2):500–501. <https://doi.org/10.5272/jimab.2014202.500>.
14. Khan NA, Aslam SK, Rehman AU, Quresh MS, Inam S, Samo KA, Shallwani A. Satisfaction level and its predictors among out patients at public sector hospital in Karachi. *Journal of Dow University of Health Sciences* 2014; 8(3): 104-110.
15. Schaal T, Schoenfelder T, Klewer J, Kugler J. Determinants of patient satisfaction and their willingness to return after primary total hip replacement: a cross-sectional study. *BMC Musculoskeletal Disorders* 2016; 17(1):330. <https://doi.org/10.1186/s12891-016-1196-3>.
16. Anderson RT, Camacho FT, Balkrishnan R. Willing to wait?: The influence of patient wait time on satisfaction with primary care. *BMC Health Services Research* 2007; 7(1):30. <https://doi.org/10.1186/1472-6963-7-31>.