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THE IMPACT OF HOSPITAL ACCREDITATION ON THE PATIENTS SATISFACTION OF RADIOLOGY DEPARTMENT SERVICES

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ABSTRACT

The quality of hospital radiology department service is one of the most relevant parameter of health care quality perceived by patients and by their families. Patient satisfaction is considered a way of measuring the quality of services provided. *Objectives:* To study the impact of National Accreditation Board for Hospitals & Healthcare Providers (NABH) Accreditation, India on Patients Satisfaction of Radiology Department Service. *Methods:* It is a quantitative, descriptive and inferential research based case study in which sample of a population was studied by structured satisfaction survey questionnaires (before and after the accreditation) in a private tertiary care hospital at Secunderabad, Telangana State, India to determine its characteristics, and it is then inferred that the population has the same or different characteristics. *Significance of Research:* It was observed initially before the accreditation that there was a lower patient satisfaction rate of the hospital Radiology Department Services, which was affecting the study hospitals' business. *Hypothesis:* Null Hypothesis (Ho) and Alternative Hypothesis (H1) were used and tested to compare the before and after impact of accreditation by applying to each question in the questionnaire. *Study Design:* The closed ended questionnaire was developed considering the Radiology Department Services by incorporating the six dimensions of quality Safe, Timely, Effective, Efficient, Equitable, and Patient-centred (STEEP) and tested prior to implementing. Questionnaires were given to the patients' families for completion upon using the Radiology Department Services two months before and two months after the accreditation. The data were collected in order to cover all three shifts of the Out-Patient Department Services. *Study Population:* Simple random sampling method was selected; the researcher had involved all conscious patients (clinical conditions) from all age groups. *Data Collections:* Primary data were collected from the survey questionnaires. Secondary data were collected from relevant published journals, articles, research papers, academic literature and web portals. *Conclusion:* At the 5 % level of significance, the t-test results indicate that there is a significant difference in the responses between before (M=37.32, SD=15.75) and after accreditation (M=47.02, SD=9.54) with p-value <0.001. The

mean satisfaction score has improved from before accreditation compared to after accreditation.

Key words: Patient Satisfaction, National Accreditation Board for Hospitals & Healthcare Providers (NABH) Accreditation, Radiology Department Services

INTRODUCTION

Patient satisfaction is one of the established yardsticks to measure success of the services being provided in the health facilities. But it is difficult to measure the satisfaction and gauze responsiveness of the health systems as not only the clinical but also the non-clinical outcomes of care do influence the customer satisfaction.[i] Satisfaction has been defined as a consumer's emotional feelings about a specific consumption experience.[ii] Today, developed and developing nations are working towards continuous quality improvement and patient safety by achieving the national and or international healthcare accreditation and providing safe, effective, patient-centred, timely, efficient and equitable health care services to all their patients, families and caretakers.[iii] Accreditation of a health care organization is an external evaluation of the level of compliance against a set of organizational standards. Healthcare accreditation standards are advocated as an important means of improving structure, process and outcome. [iv]

REVIEW OF LITERATURE:

The increased international focus on improving patient outcomes, safety and quality of care has led stakeholders, policy makers and health care provider organizations adopt standardized processes for measuring health care systems.[v] Patient satisfaction has become a key criterion by which the quality of health care services is evaluated. The literature emphasizes that patients who are satisfied with the provision of health care tend to be more compliant to their treatment plan, maintain their follow up visits; and are more willing to recommend the hospital to others.[vi] The literature emphasizes that hospital accreditation and patient satisfaction are both considered important quality indicators of healthcare delivered.[vii] The results of patient satisfaction surveys can be used to monitor the quality of health care provided,[viii] to find out any shortages, to provide the necessary interventions, and as a valuable source of strategic planning of health services.[ix] It is judgment that a product or a services feature, or the product or service itself, provide a pleasurable level of consumption related fulfilment. The main beneficiary of a good health care system is clearly a patient. As a customer of healthcare, the patient is the focus of the health care delivery system.[x] Patient's perceptions about health care system seem to have been largely ignored by the health care managers in the developing countries.[xi] Patient satisfaction depends upon many factors such as: quality of clinical services provided, availability of medicine, behaviour of doctors and other health staff, cost of the services, hospital infrastructure, physical comfort, emotional support and respect for patient preferences. Mismatch between patient expectation and the service received is related to decreased satisfaction.[xii] Therefore, assessing patient perspectives gives them a voice, which can make private and public health services more responsive to people's need and expectations.[xiii]

DATA ANALYSIS

Table1. Patient participation before and after accreditation

Group	Frequency	Percentage
Before Accreditation	400	50.0
After Accreditation	400	50.0
Total	800	100.0

Table 1 depicts that there were 400 patients participated before accreditation and 400 patients participated after accreditation. There is no increase in the number of patient participants after accreditation.

Association analysis of Demographic variables:

Table2. Group and Age distribution

Group	Age categories					Chi-square test statistic, p-value
	<17yrs	17-25yrs	25-55yrs	55-65yrs	>65yrs	
Before Accreditation	58	93	105	92	52	1.490, 0.828
After Accreditation	51	100	114	89	46	
Total	109	193	219	181	98	

Hypothesis:

H_0: There is no significant difference in the Age categories between before the accreditation group and after accreditation group

H_1: There is a significant difference in the Age categories between before the accreditation group and after accreditation group

Table 2 depicts that at the 5 % level of significance, the chi-square test performed indicates, there is no significant difference between the age distribution between before and after accreditation groups. Hence H_0 is accepted and H_1 is rejected.

Table3. Group and Gender Distribution

Group	Gender		Chi-square test statistic, p-value
	Male	Female	
Before Accreditation	216	184	0.182, 0.670
After Accreditation	222	178	
Total	438	362	

Hypothesis:

H_0: There is no significant difference in the gender distribution between before the accreditation group and after accreditation group

H_1: There is a significant difference in the gender distribution between before the accreditation group and after accreditation group

Table 3 depicts that at the 5 % level of significance, the chi-square test performed indicates, there is no significant difference between the gender distribution between before and after accreditation groups. Hence H_0 is accepted and H_1 is rejected.

Table4. Group and geographical states (of India) Distribution

Group	Geographical states		Chi-square test statistic, p-value
	Same Sate	Other State	
Before Accreditation	258	142	0.198, 0.656
After Accreditation	264	136	
Total	522	278	

Hypothesis:

H_0: There is no significant difference in the geographical states (of India) of patients between before the accreditation group and after accreditation group

H_1: There is a significant difference in the geographical states (of India) of patients between before the accreditation group and after accreditation group

Table 4 depicts that at the 5 % level of significance, the chi-square test performed indicates, there is no significant difference between the geographical states (of India) between before and after accreditation groups. Hence H_0 is accepted and H_1 is rejected.

KY Publications

Table5. Distribution of patients who speak Telugu, Non-Telugu and Group

Group	Language		Chi-square test statistic, p-value
	Telugu	Non-Telugu	
Before Accreditation	268	132	0.140, 0.708
After Accreditation	263	137	
Total	531	269	

Hypothesis:

H_0: There is no significant difference in the language patients speak between before the accreditation group and after accreditation group

H_1: There is a significant difference in the language patients speak between before the accreditation group and after accreditation group

Table 5 depicts that at the 5 % level of significance, the chi-square test performed indicates, there is no significant difference between those who speak Telugu and those don't speak people who have visited the hospital and before and after accreditation groups. Hence H_0 is accepted and H_1 is rejected.

Table6. Type of visits and Group

Group	Type of visit		Chi-square test statistic, p-value
	Out Patient Department	Emergency Department	
Before Accreditation	240	160	0.638, 0.424
After Accreditation	251	149	
Total	491	309	

Hypothesis:

H_0: There is no significant difference in the type of hospital visits between before the accreditation group and after accreditation group

H_1: There is a significant difference in the type of hospital visits between before the accreditation group and after accreditation group

Table 6 depicts that at the 5 % level of significance, the chi-square test performed indicates, there is no significant difference between the geographical states between before and after accreditation groups. Hence H_0 is accepted and H_1 is rejected.

Table7. Type of payment and Group

Group	Type of payment			Chi-square test statistic, p-value
	Cash	Insurance	Government	
Before Accreditation	152	210	38	5.429, 0.066
After Accreditation	154	225	21	
Total	306	435	59	

Hypothesis:

H_0: There is no significant difference in the type of payment made between before the accreditation group and after accreditation group

H_1: There is a significant difference in the type of payment made between before the accreditation group and after accreditation group

Table 7 depicts that at the 5 % level of significance, the chi-square test performed indicates, there is no significant difference between the type of payment between before and after accreditation groups. Hence H_0 is accepted and H_1 is rejected.

Table8. Responses in the satisfaction with respect to the registration process and between Groups

Group	How satisfied were you with the registration process? (Efficient)					Chi-square statistic, p-value test
	Highly Dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Highly Satisfied	
Before Accreditation	63	73	27	116	121	111.728, **<0.001**
After Accreditation	8	15	14	169	194	
Total	71	88	41	285	315	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in the satisfaction with respect to the registration process before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the satisfaction with respect to the registration process before the accreditation group and after accreditation group

Table 8 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the satisfaction with respect to the registration process between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=363 (Satisfied=169, Highly satisfied= 194) from N=237 (Satisfied = 116, Highly satisfied= 121). Hence H_0 is rejected and H_1 is accepted.

Table9. Responses in the satisfaction with respect to the duration of waiting time after registration and between the before and after accreditation groups

Group	How satisfied were you with the duration of waiting time after registration? (Timely)					Chi-square test statistic, p-value
	Highly Dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Highly Satisfied	
Before Accreditation	78	76	24	103	119	132.915, **<0.001**
After Accreditation	9	15	13	165	198	
Total	87	91	37	268	317	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in the satisfaction with respect to the duration of waiting time after registration before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the satisfaction with respect to the duration of waiting time after registration before the accreditation group and after accreditation group

Table 9 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the satisfaction with respect to the duration of waiting time after registration between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=363 (Satisfied=165, Highly satisfied= 198) from N=222 (Satisfied = 103, Highly satisfied= 119). Hence H_0 is rejected and H_1 is accepted.

Table10. Responses in the satisfaction with respect to the professionalism/friendliness of the staff between the before and after accreditation groups

Group	How satisfied were you with the professionalism/friendliness of the staff? (Patient centred)					Chi-square test statistic, p-value
	Highly Dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Highly Satisfied	
Before Accreditation	73	72	20	119	116	133.757, **<0.001**
After Accreditation	8	12	7	206	167	
Total	81	84	27	325	283	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in the satisfaction with respect to the professionalism/friendliness of the staff between before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the satisfaction with respect to the professionalism/friendliness of the staff between before the accreditation group and after accreditation group Table 10 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the satisfaction with respect to the professionalism/friendliness of the staff between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=373 (Satisfied=206, Highly satisfied= 167) from N=235 (Satisfied = 119, Highly satisfied= 116). Hence H_0 is rejected and H_1 is accepted.

Table11. Responses in the satisfaction with respect to the level of patient privacy and between the before and after accreditation groups

Hypothesis:

Group	How satisfied were you with the level of patient privacy? (Safe)					Chi-square test statistic, p-value
	Highly Dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Highly Satisfied	
Before Accreditation	59	88	33	118	102	138.018, **<0.001**
After Accreditation	12	8	17	198	165	
Total	71	96	50	316	267	

p-value in bold represents a significant test with p-value<0.05

H_0: There is no significant difference in the responses in the satisfaction with respect to the level of patient privacy between before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the satisfaction with respect to the level of patient privacy between before the accreditation group and after accreditation group

Table 11 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the satisfaction with respect to the level of patient privacy between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=363 (Satisfied=198, Highly satisfied= 165) from N=202 (Satisfied = 118, Highly satisfied= 102). Hence H_0 is rejected and H_1 is accepted.

Table12. Responses in the satisfaction with respect to the cleanliness of the facility and between the before and after accreditation groups

Group	How satisfied were you with the cleanliness of the facility?					Chi-square test statistic, p-value
	Highly Dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Highly Satisfied**	
Before Accreditation	70	64	29	132	105	107.557, **<0.001**
After Accreditation	13	15	12	164	196	
Total	83	79	41	296	301	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in the satisfaction with respect to the cleanliness of the facility between before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the satisfaction with respect to the cleanliness of the facility between before the accreditation group and after accreditation group

Table 12 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the satisfaction with respect to the cleanliness of the facility between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=283 (Satisfied=135, Highly satisfied= 148) from N=171 (Satisfied =79, Highly satisfied= 92). Hence H_0 is rejected and H_1 is accepted.

Table13. Responses in the satisfaction with respect to the radiation safety precautions and instruction provided and between the before and after accreditation groups

Group	How satisfied were you with radiation safety precautions and instruction provided? (Safe)					Chi-square test statistic, p-value
	Highly Dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Highly Satisfied**	
Before Accreditation	69	70	22	128	111	118.622, **<0.001**
After Accreditation	12	9	11	206	162	
Total	81	79	33	334	273	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in the respect to the radiation safety precautions between before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the respect to the radiation safety precautions between before the accreditation group and after accreditation group

Table 13 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the respect to the radiation safety precautions between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=368 (Satisfied=206, Highly satisfied= 162) from N=239 (Satisfied =128, Highly satisfied= 111). Hence H_0 is rejected and H_1 is accepted.

Table14. Responses in the satisfaction with respect to the overall performance and between the before and after accreditation groups

Group	If you spent time with our Radiologist/Doctor, please rate your satisfaction level with regards to their overall performance.					Chi-square test statistic, p-value
	Highly Dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Highly Satisfied**	
Before Accreditation	55	51	26	140	128	66.526, **<0.001**
After Accreditation	11	16	12	189	172	
Total	66	67	38	329	300	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in the satisfaction with respect to the overall performance between before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the satisfaction with respect to the overall performance between before the accreditation group and after accreditation group

Table 14 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the satisfaction with respect to the overall performance between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=361 (Satisfied=189, Highly satisfied= 172) from N=268 (Satisfied =140, Highly satisfied= 128). Hence H_0 is rejected and H_1 is accepted.

Table15. Responses in the satisfaction with respect to the time it took to receive the reports and between the before and after accreditation groups

Group	How satisfied were you with the time it took to receive the reports? (Timely)					Chi-square test statistic, p-value
	Highly Dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Highly Satisfied**	
Before Accreditation	55	73	24	139	109	104.626, **<0.001**
After Accreditation	13	10	12	172	193	
Total	68	83	36	311	302	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in the satisfaction with respect to the time it took to receive to receive the reports between before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the satisfaction with respect to the time it took to receive to receive the reports between before the accreditation group and after accreditation group

Table 15 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the satisfaction with respect to the time it took to receive to receive the reports between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=365 (Satisfied=172, Highly satisfied= 193) from N=248 (Satisfied =139, Highly satisfied= 109). Hence H_0 is rejected and H_1 is accepted.

Table 16. Responses in the satisfaction with respect to the explanation of radiology results from the physicians and between the before and after accreditation groups

Group	How satisfied were you with the explanation of radiology results by the physicians? (Effective)					Chi-square test statistic, p-value
	Highly Dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Highly Satisfied	
Before Accreditation	63	67	22	141	107	107.497, **<0.001**
After Accreditation	9	11	16	177	187	
Total	72	78	38	318	294	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in satisfaction with respect to the of radiology results from the physicians between before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in satisfaction with respect to the of radiology results from the physicians between before the accreditation group and after accreditation group

Table 16 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in satisfaction with respect to the of radiology results from the physicians between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=364 (Satisfied=177, Highly satisfied= 187) from N=248 (Satisfied =141, Highly satisfied= 107). Hence H_0 is rejected and H_1 is accepted.

Table17. Responses in the satisfaction with respect to the efficiency of the staff and the process in place in the radiology department and between before and after accreditation groups

Group	How satisfied were you with the efficiency of the staff and the processes in place in the radiology department? (Efficiency)					Chi-square test statistic, p-value
	Highly Dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Highly Satisfied	
Before Accreditation	56	68	25	137	114	90.357, **<0.001**
After Accreditation	12	16	8	205	159	
Total	68	84	33	342	273	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in the satisfaction with respect to the efficiency of the staff and the process in place in the radiology department between before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the satisfaction with respect to the efficiency of the staff and the process in place in the radiology department between before the accreditation group and after accreditation group

Table 17 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the satisfaction with respect to the efficiency of the staff and the process in place in the radiology department between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=364 (Satisfied=205, Highly satisfied= 159) from N=251 (Satisfied =137, Highly satisfied= 114). Hence H_0 is rejected and H_1 is accepted.

Table18. Responses in the satisfaction with respect to the overall experience of our radiology services and between before and after accreditation groups

Group	How would you rate your level of satisfaction with respect to the overall experience of our radiology services? (Patient centred)					Chi-square test statistic, p-value
	Highly Dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Highly Satisfied	
Before Accreditation	55	73	24	139	109	94.036, **<0.001**
After Accreditation	14	14	13	164	195	
Total	69	87	37	303	304	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the responses in the satisfaction with respect to the overall experience of our radiology services between before the accreditation group and after accreditation group

H_1: There is a significant difference in the responses in the satisfaction with respect to the overall experience of our radiology services between before the accreditation group and after accreditation group

Table 18 depicts that at the 5 % level of significance, the chi-square test results indicate that there is a significant difference in the responses in the satisfaction with respect to the overall experience of our radiology services between before and after accreditation with p-value <0.001. The responses of satisfaction have improved from N=359 (Satisfied=164, Highly satisfied=195) from N=248 (Satisfied =139, Highly satisfied=109). Hence H_0 is rejected and H_1 is accepted.

Table 19. Overall satisfaction score by combining the responses: (Higher the score the better the satisfaction)

Group	N	Mean	Std. Deviation	T test statistic, p-value
Before Accreditation	400	37.32	15.75	-10.539, **<0.001**
After Accreditation	400	47.02	9.54	

p-value in bold represents a significant test with p-value<0.05

Hypothesis:

H_0: There is no significant difference in the overall satisfaction by combining the responses between before the accreditation group and after accreditation group

H_1: There is a significant difference in the overall satisfaction by combining the responses between before the accreditation group and after accreditation group

Table 19 depicts that at the 5 % level of significance, the t-test results indicate that there is a significant difference in the responses between before (M=37.32, SD=15.75) and after accreditation (M=47.02, SD=9.54) with p-value <0.001. The mean satisfaction score has improved from before accreditation compared to after accreditation. Hence H_0 is rejected and H_1 is accepted.

CONCLUSION

At the 5 % level of significance, the t-test results indicate that there is a significant difference in the responses between before (M=37.32, SD=15.75) and after accreditation (M=47.02, SD=9.54) with p-value <0.001. The mean satisfaction score has improved from before accreditation compared to after accreditation. The satisfaction score has improved from before accreditation compared to after accreditation which indicates that the accreditation has a positive impact on the satisfaction of Radiology Department Services of the study hospital.

LIMITATIONS OF THE STUDY: This study is limited to the Radiology Department Services of the study hospital and for a limited duration (before two months and after two months of accreditation) only.

DIRECTIONS FOR FUTURE RESEARCH: In future such research should be conducted to study the impact of national and international accreditations on the other services of the hospitals over a large period of time.

SOURCES OF FUNDING FOR THE STUDY:

This research was self financed by the author himself.

IMPLICATIONS OF THE FINDINGS:

The accreditation has a positive impact on the satisfaction of Radiology Services of the study hospital.

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