HEALTH PROFESSIONALS' KNOWLEDGE ASSESSMENT OF HOSPITAL ACCREDITATION AND ITS IMPACT ON PATIENT CARE IN SAUDI ARABIA: A GENDER AND HOSPITAL SIZE STUDY

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Abstract

Hospital accreditation is gaining popularity to improve both the quality of patient care and hospital improvement. In this study, we intend to explore the perceptions of healthcare professionals toward Saudi Arab hospital accreditation. In addition to this to empirically measure differences in the perception of male and female health professionals and in the perception of health professionals connected with small, medium, and large size hospitals. The collected data reliability was tested through Cronbach's Alpha before and after exploratory and confirmatory factor analyses. Exploratory factor analysis and confirmatory factor analyses were carried out to extract the latent constructs of health professionals' perceived effects of hospital accreditation. Common variance method (CVM) Harman's single factor test were carried out to avoid any type of uncertain potential biases. The D'Agostino skewness test was used to investigate whether the distributions of the latent constructs were left or right-skewed. Chi-square test were used to identify correlations between healthcare professional's sociodemographic characteristics and their behavioral intentions toward hospital accreditation. The Wilcoxon rank-sum test and Kruskal–Wallis test were used to identify differences in the perception of male and female health professionals and in the perception of health professionals connected with small, medium, and large size hospitals. We found that health professionals believe that hospital accreditation plays a positive role in improving both patient quality care and the hospital. However, we found that there is a difference in the knowledge of male and female healthcare professionals about hospital accreditation. In Saudi Arab male healthcare professionals are more aware of hospital accreditation compared to female. In addition to this, we also found that there is a difference in the knowledge of local and non-local healthcare

professionals about hospital accreditation. Overall our study results suggest that hospital accreditation play a positive role in both providing quality care to patients and in the improvement of hospital. This study provides important practical implications for Saudi Arab hospitals on enhancing the quality of accreditation and more focus on local health professionals, especially females to provide different trainings for improvement knowledge about hospital accreditation and its importance in patients' quality care improvement of hospital.

Keywords: Knowledge Assessment, Hospital Accreditation, Patient Care,

Background

Hospital accreditation is an indispensable part of the advanced healthcare systems, currently, it accounts in more than 70 countries of the world and most often it is provided by independent and external assessment or audit (Greenfield, et al. 2009). 100 years ago The American College of Surgeons (ACS) started hospital accreditation, since then it has expanded rapidly and now there are a number of programs used for hospital accreditation. In 2000 the World Health Organization (WHO) identified 36 programs nationwide in healthcare accreditation (Shaw C., 2003). The hospital accreditation programs we defined as a systematic review or assessment of hospitals contrary to the accepted standards (Jovanovic B., 2005) and different certifications for confirmation of the characteristics of a person or organization and or an object against published standards (Shaw C., et al., 2010). Standard and systematic evaluation is a way to obtain regulatory peer review of healthcare services and organizational reliability and maturity (Grepperud S., 2015). Still there is limited information available on effective hospital accreditation top health national and international organizations recommended accreditation to health services providers which is being implemented widely. However, there is little evidence in the support of accreditation's effect on patient outcomes or hospital improvement.

Previous studies on the effects of accreditation on quality care and hospital improvement do not provide strong evidence due to certain limitations of the studies like the studies of (Loland, 2006), (Greenfield and Braithwaite, 2008), (Vist et al., 2009), (Thornlow, et al. 2009), (Nicklin and Dickson, 2011) and (Hinchcliff et al., 2012). The effects of accreditation on quality care and hospital improvement have been investigated with mixed results in different studies (Brubakk et al., 2015; Alkhenizan and Shaw, 2011; Thornlow, et al. 2009; Greenfield and Braithwaite, 2008). The systematic assessment of (Nicklin et al., 2008) found positive effects of accreditation, however, the study lacked rigor to support their conclusions. The study of (Shaw et al., 2014) found positive effects between accreditation, clinical leadership, systems for quality care of patients, and safety and clinical review. However, the conclusion fell short of recommended further analysis to explore the association of accreditation with different aspects of quality care and hospital improvement. The study by (Druică, et al. 2020) found a positive effect of accreditation on both the quality care of patients, improvement in institutional reputation, and healthcare services quality. The study by (Thornlow, et al. 2009) in U.S. acute care hospitals found a positive association between accreditation and patient outcomes. The systematic review of (Brubakk et al., 2015) found no measurable evidence to support accreditation linkage with quality

care of patients and hospital standards and quality improvement. The study also concluded that accreditation continuously growing nationally and internationally but researchers didn't reach to effectiveness of accreditation due to minimal evidence. The aim of this study is to assess the effects of accreditation on patient quality care and hospital improvement in Saudi Arabia and to explore perceptions of health professionals with respect to gender and hospital size.

Material and Methods

Data and Software

We used data that had been collected from healthcare services in Saudi Arabia through a questionnaire used in previous literature (Eljardaly and others, 2008). The questionnaire was applied online and data was collected from healthcare professionals (Physicians, Nurses, administrators, allied healthcare professionals, and others) with a sample of size 2731 which provides a margin of error of ±2% with 95% accuracy. The collected data comprises health professionals working in ---- hospitals located in --- localities in Saudi Arabia. To analyze the collected data, we used SPSS along with R-software.

Questionnaire and Measurement

The questionnaires were adopted from previous literature (Eljardaly and others, 2008) and applied in the English language. All the participants participated in the study voluntarily and data has been compiled in SPSS. In the initial stage, the questionnaire was checked for internal consistency, construct, and content validity by a panel of experts. The questionnaire consists of two parts: the first part is demographic characteristics and the second part consists of five domains assessing accreditation outcomes on quality of care. We measured health professionals' level of agreement by using five five-point Likert measurements 1–5, 1 for strongly disagree and 5 for strongly agree.

Methods

In this article, we used both types of statistical approaches parametric and non-parametric to analyze items observed on a 1–5 scale and for continuous variables, as rich literature available on it that a measurement scale of 1–5 can be transformed into continuous variables by many transformation approaches (Awang et al. 2016), (Maydeu-Olivares, 2005) and (Baggaley et al. 1983).

To achieve the objectives of the study at the very first we accompanied a reliability analysis of overall health professional's data and section-wise through Cronbach's Alpha. After accessing the reliability we used exploratory factor analysis (EFA) on data to ascertain most potential latent constructs measuring health professionals' perception regarding quality results (QR), leadership, commitment and support (LCS), strategic quality planning (SQP), human resources utilization (HRU) and accreditation (AC). Therefore, after extracting the most important factors, we conducted a reliability analysis along with a confirmatory factor analysis for assessing the model's performance (Schreiber et al. 2006). Also, the data has been checked for common variance method (CVM) by using Harman's single factor test to avoid any type of uncertain potential biases (Malhotra, et al. 2006). To examine whether health professionals recognize the effects of different factors as positive or not, we evaluated the latent constructs identified through factor analysis. For this purpose we used the D'Agostino skewness test to investigate whether the distributions of the

latent constructs were left-or right-skewed (Mudholkar, et al. 2002) with the null hypothesis skewness of the specific distribution is 0, while research hypothesis it is not. In our study, the D'Agostino test results showed that all four distributions were negative or left-skewed. In addition to this, to know whether the actual location parameter of these four distributions was positive, we used the nonparametric Wilcoxon rank-sum test and found that, the actual location parameter of these four distributions was positive (Natarajan, et al. 2012). Furthermore, we used the nonparametric Chi-Square test (McHugh, 2013), Wilcoxon rank-sum test, and Kruskal–Wallis test (McKight, et al. 2010) to determine the sociodemographic variables of health professionals that relate to the quality of health care to patients. The nonparametric Wilcoxon rank-sum test and Kruskal–Wallis test are used alternatives to parametric t-test and ANOVA which are robust to the normality violations.

Research Objectives

1. Health professionals recognize the effects of QR, LCS, SQP, and HRU as positive or not.
2. Health professionals working in small, medium, and large hospitals equally recognize hospital accreditation.
3. Knowledge about hospital accreditation depends on sociodemographic characteristics.

Hypotheses

1. There are positive effects of health professionals' knowledge of QR, LCS, SQP, and HRU on the quality of health care and hospital improvement.
2. There are significant differences in the knowledge of health professionals about hospital accreditation working in small, medium, and large size hospitals.
3. There is a significant impact of sociodemographic characteristics on health professionals' knowledge about hospital accreditation.

Table 1 presents the results of Cronbach's Alpha for the health professionals data the overall reliability for the data set is noted 0.800 and section-wise it is noted for QR 0.803, LCS 0.923, SQP 0.944, HRU 0.916, and AC 0.975. Along with both overall and section-wise reliability before and after factor analysis and tested based on average square loadings (ASL) and composite reliability (CR). Next, the Kaiser–Meyer–Olkin statistic was also 0.836 and Bartlett's Test of Sphericity noted 0.325(P = 0.000). The items loaded in five factors are presented in Table 2, which explains 75.9% cumulative variance. "Quality results" (QR), "Leadership, commitment and support" (LCS), "Strategic quality planning" (SQP), "Human resources utilization" (HRU), and "Accreditation" (AC). Our confirmatory factor analysis shows the excellent performance of the model with five factors (CFI0.868, TLI0.861, RMSEA0.032, and SRMR0.019). The result of Harman's single-factor test for CVM is noted as 17.03% of the total variance explained by the single factor which is less than the critical threshold value of 50.0% illustrating there is no problem with CVM.

Health Professionals' Perception Regarding the Effects of Hospital Accreditation

Reliability analysis

Table 1: The results of reliability analysis for the health professional's data the overall

Before factor analysis			After factor analysis				
Data	Cronbach's Alpha	No. of items	Data	Cronbach's Alpha	No. of items	Average Square Loadings	Composite Reliability
Overall	0.755	36	Overall	0.800	26	-	-
QR	0.803	5	QR	0.803	5	0.5648	0.856
LCS	0.738	9	LCS	0.923	7	0.6839	0.833
SQP	0.745	7	SQP	0.944	5	0.8133	0.956
HRU	0.806	6	HRU	0.916	4	0.8218	0.948
AC	0.692	9	AC	0.975	5	0.9128	0.981

Table 2. The results of exploratory factor analysis-health professionals' dataset.

Item (Measurement: Likert 1–5) Perceived Differences	QR	LCS	SQP	HRU	AC
Improvements in the quality of customer satisfaction	0.812				
Improvements in the quality of services provided by the administration	0.761				
Improvements in the quality of care provided to patients	0.602				
Improvements in the quality of services provided by clinical support departments	0.732				
Maintained a high quality health services despite financial constraints	0.829				
Senior hospital executives provide highly visible leadership in maintaining an environment that supports quality improvement.		0.839			
The top management is a primary driving force behind quality improvement efforts.		0.859			
Senior hospital executives allocate available hospital resources (e.g. finances, people, time, and equipment) to improving quality.		0.788			
Senior hospital executives consistently participate in activities to improve the quality of care and services.		0.850			
Senior hospital executives have articulated a clear vision for improving the quality of care and services.		0.875			
Senior hospital executives have demonstrated an ability to manage the changes (e.g. organizational, technological) needed to improve the quality of care and services.		0.783			

Senior hospital executives have started to act on suggestions to improve the quality of care and services.	0.790		
Healthcare professionals are given adequate time to plan for and test quality improvements.	0.949		
Each department and work group within this hospital maintains specific goals to improve quality	0.826		
Healthcare professionals are involved in developing plans for improving quality.	0.949		
Middle managers play a key role in setting priorities for quality improvement	0.826		
Patients' expectations about quality play a key role in setting priorities for quality improvement.	0.950		
Healthcare professionals are given education and training in how to identify and act on quality improvement opportunities based on recommendations from accreditation surveys.		0.943	
Healthcare professionals are given continuous education and training in methods that support quality improvement		0.895	
Healthcare professionals are rewarded and recognized (e.g. financially and/or otherwise) for improving quality		0.827	
Inter-departmental cooperation to improve the quality of services is supported and encouraged.		0.955	
Accreditation enables the motivation of staff and encourages team work and collaboration.			0.838
Accreditation enables the development of values shared by all professionals at the hospital			0.986
Accreditation enables the hospital to better use its internal resources (e.g. finances, people, time, and equipment).			0.972
Accreditation enables the hospital to better respond to the populations needs			0.987
Accreditation is a valuable tool for the hospital to implement changes.			0.986

Next, we tested whether the distributions of the identified latent constructs tended to be skewed towards positive values. Table 3 presents the results of two statistical tests, showing that health professionals' perception regarding the effects of accreditation was positive. The D'Agostino skewness test shows that each of the three distributions is left-skewed; therefore, the three latent constructs are not normally distributed.

Table 3. Statistical tests proving that the health professionals' perception regarding the effects of hospital accreditation was positive.

Variables	The D'Agostino Skewness Test	Wilcoxon Rank-Sum Test	Conclusion
QR	Skew = -0.178, Z= -12.342, P<.001	V = 3541307.500 P<1.005	The distribution of QR has a negative skewness, and the true location is positive
LCS	Skew = -0.919, Z= -19.620, P<.001	V = 171006.000 P<.001	The distribution of LCS has a negative skewness, and the true location is positive
SQP	Skew = -0.616, Z= -13.149, P<.001	V = 174700.500 P<.001	The distribution of SQP has a negative skewness, and the true location is positive
HRU	Skew = -0.344, Z= -7.343, P<.001	V = 174852.000 P<.001	The distribution of HRU has a negative skewness, and the true location is positive

Particularly the vital role played by accreditation in assuring quality of health care to patients as well as hospital improvement we asked respondents to what level they agree improvement in accreditation will assure both quality of health care and hospital improvement. A Wilcoxon rank-sum test shows that the actual location parameter of the distribution of respondents' answers was more than 3 (V = 3541307.500, p-value < 0.001), which proves that health professionals agree that accreditation assures both quality of health care as well hospital improvement.

Table 4. Healthcare professional knowledge about hospital accreditation depends on sociodemographic characteristics

Chi-square test	Knowledge about hospital accreditation	Difference by predictor
Hospital size	χ-Squared = 40.59, p-value = 0.203	No
Gender	χ-Squared = 21.53, p-value < 0.005	Yes
Nationality	χ-Squared = 45.56, p-value < 0.005	Yes
Age group	χ-Squared = 102.59, p-value < 0.005	Yes
Working place	χ-Squared = 112.40, p-value < 0.005	Yes
Occupational category	χ-Squared = 78.04, p-value < 0.005	Yes

Table 4 shows no significant difference in the knowledge of health professionals about hospital accreditation. No influence of hospital size and gender was observed on health professionals' knowledge about hospital accreditation. Hospital size is not correlated with the health professional's knowledge about hospital accreditation, small, medium, and large size hospital health professionals have equal knowledge about hospital accreditation. While differences in the knowledge about hospital accreditation were noted based on gender, the perceptions of both male and female health professionals were not similar. The chi-square test shows that health professional's knowledge is associated with gender such that males have more knowledge than female health professionals. Also, based on nationality, age group, working place, and occupational category significant differences are present in the knowledge of health professionals about hospital accreditation. Non-local health professionals have more knowledge about it, and experienced health professionals and those working in advanced localities also have more knowledge of hospital accreditation.

Table 5. Differences in knowledge of health professionals based on gender and hospital size regarding latent constraints

Latent constrains	Gender	Hospital size	Decision
QR	W = 1973390.500 P=0.489	Kruskal Wallis Chi-square = 1.470 P=0.479	No significant difference
LCS	W = 1736813.500 P=0.760	Kruskal Wallis Chi-square = 5.190 P=0.075	No significant difference
SQP	W = 1986920.000 P=0.976	Kruskal Wallis Chi-square = 0.275 P=0.872	No significant difference
HRU	W = 1707814.000 P=0.078	Kruskal Wallis Chi-square = 0.449 P=0.799	No significant difference
AC	W = 1947165.000 P=0.043	Kruskal Wallis Chi-square = 4.294 P=0.117	Significant difference based on gender while no difference based on hospital size

Table 5 shows no significant difference in the knowledge of different factors of health professionals based on gender except regarding knowledge about hospital accreditation. No significant difference in the knowledge of different factors of health professionals based on hospital size was found. The Wilcoxon rank-sum test shows no difference in the perception of male and female health professionals regarding knowledge of different factors that assure both patient quality care and hospital improvement except the hospital accreditation in which males are more aware than females. The Kruskal–Wallis test reveals no differences in the knowledge of

different factors of health professionals in connection to hospital size. All small-size hospitals, medium-size, and large-size health professionals have equal knowledge about different factors that assure both patient quality care and hospital improvement.

Discussion

In the study, we found that, overall, knowledge of health professionals about hospital accreditation resulted in positive effects increased patient quality care, improved hospital reputation, patient medical care quality, and administrative and managerial services. Our results are similar to previous research findings that, identified the positive aspect of hospital accreditation (Nicklin et al., 2008), (Thornlow, et al. 2009), (Shaw et al., 2014) and (Druică, et al. 2020). Our results show that men's health professionals in Saudi Arabia are more aware of hospital accreditation compared to women. Nationality, on the other hand, also shows a significant association with hospital accreditation, non-local health professionals are more aware and have more knowledge about hospital accreditation in connection to local health professionals of Saudi Arabia. Age, also shows a significant association with hospital accreditation aged health professionals are more aware and knowledgeable about hospital accreditation compared to young. This may be due to getting more experienced in the field. Working place also plays a significant role in the health professional's knowledge about hospital accreditation, health professionals working in the developed area of the country are more aware and knowledgeable about hospital accreditation compared to those working in the remote areas. Furthermore, in connection with the occupational category of health professionals, there is a significant difference. Hospital size is the only factor that does not play a role in the awareness and knowledge of health professionals about hospital accreditation.

Limitation

Our research study is not without limitations there are some limitations. First, the sample collected from health professionals, large in size and significant number of hospitals included, but mostly the hospitals considering hospital accreditation and protocols are included. In addition to this convincing sampling approach is used, health professionals who notice the positive aspects of hospital accreditation are more likely to participate. Another significant limitation is the adopted questionnaire in our perception the results are biased in way that, the non-local health professional's behavior is more intended towards hospital accreditation or more correlated with it. Developing a self-explanatory questionnaire can limit bias and provide equal weight to the behavior of local and non-local health professionals working in Saudi Arabia. Future research studies on hospital accreditation may address these aspects and further explore influential determinants of it for quality care of patients and improvement of hospitals.

Conclusion

Overall, the results of our research study show that health professionals working in Saudi Arabia believe hospital accreditation positively effects quality care of patients and improves the quality of the hospital its reputation, and administrative managerial services of hospitals. Our results also found there is no difference in knowledge of hospital accreditation in connection with hospital size as small, medium, and large size hospital health professionals in Saudi Arabia are similarly aware and have similar knowledge about it. In addition to this, our study shows that health professionals

working in remote hospitals have less knowledge about hospital accreditation which affects both patient quality care and hospital improvement. Also, our study results highlight the difference in knowledge between men and women health professionals in Saudi Arab men are more aware of it compared to women.

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Appendix

Table A: Demographics of participants

Gender	Count	Percent	Nationality	Count	Percent
Male	1455	53.3	Saudi	1223	44.8
Female	1276	46.7	Non-Saudi	1508	55.2
Total	2731	100.0	Total	2731	100.0
Age group	Count	Percent	*Working at*	Count	Percent
Less than 30	233	8.5	KAUA	775	28.4
Between 31-45	1269	46.5	PSHC	697	25.5
45-56	1193	43.7	KFMC	597	21.9
More than 56	36	1.3	KFSH	662	24.2
Total	2731	100.0	Total	2731	100.0
Task	Count	Percent	*Occupational category*	Count	Percent
Management	112	4.1	Physician	511	18.7
Operation	1156	42.3	Nurses	1208	44.2
Clinical	1463	53.6	Admin	763	27.9
Total	2731	100.0	Allied Professional	249	9.1
Accreditation Type	Count	Percent	Total	2731	100.0
National	227	8.3	*Hospital size*	Count	Percent
International	934	34.2	Small (less than 100 beds)	97	3.6
Both	1570	57.5	Medium (100-200)	883	32.3
Total	2731	100.0	Large (300+)	1751	64.1
Cycle	Count	Percent	Total	2731	100.0
First	950	34.8			
Second	155	5.7			
Third	1626	59.5			
Total	2731	100.0			