



EFFECT OF HOSPITAL BOARD GOVERNANCE PRACTICES ON PATIENT SAFETY OUTCOME

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ABSTRACT:

Introduction: Hospital boards have a main role in the governance of hospitals as accountability for the patient safety finally rests with the boards. Recurrent problems regarding patient safety have raised the worry about the boards' ability to accomplish their role with appropriate effect.

Objective: The objective of this research was to explore the relation between different hospital board practices and patient safety outcome.

Methods: The study was conducted in Alexandria, Egypt. Survey data was collected from 90 hospitals' chairperson or chief executive officer using interview questionnaire that included data about board practices during the year 2019. Patient safety data (postoperative mortality, postoperative wound infection, readmission rate, patient fall% and medication errors %) during the same period was collected from hospital records. Survey was conducted during the period from January to July 2020.

Results: Effective board practices (use of patient safety reporting measures, members received training in relation to patient safety, presence of quality subcommittee, prioritization of safety issues and the time spent for discussing safety issues) had significant relation with all patient safety indicators.

Conclusion: Hospital board practices have direct impact on the patient safety. Boards that work on their development should focus on improving their practices regarding patient safety.

Keywords: Hospital board governance, Board practices, Patient safety indicators.

1. INTRODUCTION

Patient safety is a healthcare discipline that can be defined as the prevention of harm caused by healthcare services with special attention to the reporting, analysis, and prevention of medical errors that may lead to an adverse health care event (IOM, 2004). Hospital board is accountable for the safety of the care its hospital provides (Feesko & Rubenstein, 2013). It therefore has a

fundamental governance role in the oversight of patient safety by setting objectives, formulating strategy and designing systems of hospital control (Millar et al., 2013).

1.1 Theories of hospital board governance

Different theories were used to understand the role of hospital board

oversight of patient safety (Chambers et al., 2013; Mannion et al., 2016).

1-Agency theory, the role of hospital boards is to oversight and monitor their employees and holding them accountable for their performance (Jiang et al., 2011).

2-Stewardship theory, the role of the board regarding the oversight of safety focus on providing a suitable supportive culture of shared vision, values and shared objectives, and there is less attention on monitoring the performance.

3-Stakeholder theory, the role of the board is to interpret and respect the views of all stakeholders in ensuring the delivery of safe services, and to make difficult trade-offs between various health care stakeholders (Chambers et al., 2013; Mannion et al., 2016).

4-Resource dependency theory, the main function of the board here is to manage internal and external relations effectively in order to increase the influence and resources (Hillman & Dalziel, 2003).

5-Group decision process theories concentrates on the processing and management of information inside hospital boards, and the methods by which this information influence the decisions of the group (Brown, 2005).

6-Performative and symbolic framings concentrate on the importance of the symbolic and celebration value of boards. These approaches are premised on the assumption that boards conduct

important tasks outside the official board meetings (Freeman *et al.*, 2016).

1.2. Literature review

The previous research findings begin to propose the importance of boards for providing high quality of care, but they do not yet clarify the main mechanisms through which boards have impact on patient safety (Millar *et al.*, 2013).

Previous studies of board governance and patient safety have identified a wide range of governance practices that are associated with higher performance. Some are related to routine monitoring and feedback in the corporate board environment, like setting patient safety goals at the theoretical ideal level rather than national or average levels benchmarks, spending time on discussing quality issues, regularly reviewing dashboard indicators to monitor patient safety and using quality performance reports. Others are more strategic in focus, such as having a quality committee, involving medical staff in the quality strategy, and developing new services and clinical programs to meet quality-related standard (Jha and Epstein, 2010; Jiang *et al.*, 2009; Jiang *et al.*, 2011; Vaughn *et al.*, 2006).

Literature of board governance and patient safety were conducted in different countries all over the world, Prybil and colleagues (2010) examined specific board practices, structures, and cultures related to good governance in health systems in United State (U.S). Baker and colleagues (2010) conducted the first significant study of board governance and patient safety in Canadian hospitals, and studies from Britain examined the formal governance arrangements for medication errors and hospital-acquired infections (Ramsay *et al.*, 2010). Botje *et al.* (2013) in a large study that included 210 hospitals in seven European countries examined specific board practices, structures in relation the engagement of the hospital in quality improvement programs.

1.3 The objective of this research was to explore the relation between different board practices and patient safety outcome.

Methods:

Data collection procedures

The study was conducted in a group of hospitals in Alexandria, Egypt. The population of interest for this research was the hospital boards in Egypt. The study included 90 boards (one centralized boards for all ministry of health hospitals, one centralized board for all university hospitals, one centralized board for all insurance hospitals and eighty seven boards for 87 private hospitals). Regarding 87 private hospitals, most of these hospitals were general hospitals (only five hospitals were purely specialised), and all of them were still seeking the accreditation from general authority of

healthcare accreditation and regulation (GAHAR). These hospitals were different in size and their capacity ranged from 25 to 95 beds.

Data about board practices during the year 2019 were obtained by interviewing boards' chairperson or hospitals' chief executive officer. Data about the patient safety during the year 2019 were collected from each hospital. The survey was conducted during the period from January to July 2020.

Variables and measures

Dependent variables

Patient safety indicators are a set of measures that screen for adverse events that patients experience as a result of exposure to the health care system. (Kristensen *et al.*, 2007). They include post-operative mortality rate, post-operative wound infection rate, readmission rate, percentage of patient falls and percentage of medication errors (Ramsay *et al.*, 2010).

Independent variables

Board practices: Use of patient safety reporting measures, board training in relation to patient safety, presence of quality subcommittee, time spent for discussing safety issues and prioritization of safety issues that was measured by priority score (assigning 4 to third priority for safety issues, 3 to fourth priority, 2 to fifth priority and 1 to sixth priority).

Research hypotheses and model

Based on the theoretical applications discussed in the literature the following hypotheses were tested in this study:

H1: Use of patient safety reporting measures will improve patient safety outcome.

H2: Board members training in relation to patient safety will improve patient safety outcome.

H3: Presence of quality subcommittee will improve patient safety outcome.

H4: Increase time spent for discussing safety issues will improve patient safety outcome.

H5: Prioritization of safety issues will improve patient safety outcome.

The research model addresses each of the stated hypotheses listed above (Fig.1).

Data analysis

Data analysis was performed using the SPSS software package version 25. Significance of the obtained results was judged at the 5% level. Descriptive measures were conducted. The normality of the collected data was tested by formal normality tests. Also spearman rank correlation coefficient was used to assess the relation between two skewed variables. Finally, non-parametric statistical tests were used for comparison between two (Mann-Whitney U test) or more (Kruskal-Wallis test) independent categories of quantitative variables that did not follow a normal distribution. They were used for testing the distribution of

each of different patient safety indicators among two or more independent categories of different board practices

RESULTS

3.1 Descriptive Statistics

Table 1 shows summary statistics (minimum, maximum, mean, median, standard deviation, skewness and kurtosis) for all numeric variables in this study. All numeric data were found to be not normally distributed by using formal normality tests.

3.2. Hypothesis Testing and Results

Table 2 shows that there was a strong negative significant correlation between the all board practices all patient safety indicators.

3.2.1 Regarding hypothesis 1, boards were categorized into two categories according to use of patient safety reporting measures. **Table 3** shows that there was statistically significant difference in the distribution of all patient safety indicators across categories of boards according to use of patient safety reporting measures. As hypothesized, the use of patient safety reporting measures will improve patient safety outcome.

3.2.2 Concerning hypothesis 2, boards were categorized into two categories according to board training. **Table 4** shows that there was statistically significant difference in the distribution of all patient safety indicators across categories of boards according to board training. As hypothesized, the board training will improve patient safety outcome.

3.2.3 Regarding hypothesis 3, boards were categorized into two categories according to presence of quality subcommittee **Table 5** shows that there was statistically significant difference in the distribution of all patient safety indicators across categories of boards according to presence of quality subcommittee. As hypothesized, the presence of quality subcommittee will improve patient safety outcome.

3.2.4 As regards hypothesis 4, boards were categorized into three categories according to time spent for discussing safety issues **Table 6** shows there was statistically significant difference in the distribution of all patient safety indicators across categories of boards according to time spent by board for discussing safety issues. As hypothesized, increase in time spent by board for discussing safety issues will improve patient safety outcome.

3.2.5 As regards hypothesis 5, boards were categorized into four categories according to priority score. **Table 7** shows that there was statistically significant difference in the distribution of all patient safety indicators across categories of boards according to priority score. As hypothesized, prioritization of safety issues by the board will improve patient safety outcome.

DISCUSSION

Board oversight of patient safety tends to reflect a main message from the quality improvement research as a whole that strong and committed leadership from the board is essential to the success of patient safety and quality improvement programs (Conway, 2008; Healthcare

Commission, 2009; Sandrick, 2005). In health care, leadership is associated with perceiving failing in patient safety to be a problem with the system rather than with individual employees.

The review of board oversight of patient safety found multiple varieties of empirical evidences and consultant advices suggesting that specific board practices are related to the improvement in the patient safety in hospitals. The results also suggest that the adoption of such practices remains variable and that the understanding of the impact of the board on patient safety is still limited (Millar et al., 2013). However Botje et al. (2013) failed to relate the quality orientation of hospital board to hospital's performance and referred that failure due to the utilization of process indicators instead of outcome indicators because they supposed that governing boards have impact on hospital processes, while medical staff have impact on patient outcomes.

In this study, 47% of boards were found to use patient safety reporting measures that was significantly related to patient safety outcome. High-performing hospitals are more likely to use issue written policy throughout the hospital, quality scorecards or dashboards, establish strategic goals for quality improvement and demand frequent reports on the progress of action in response to patient harm and adverse events (Jha and Epstein, 2013; Jiang et al., 2008, 2009; Prybil et al., 2013). Mannion et al. (2015) found that hospital boards were using a wide range of performance metrics with regard to patient safety. They reported that quantitative data were reportedly used at every board meeting in over 80% of hospital boards, including a range of clinical outcomes measures, infection rates and process measures such as medication errors and readmission rates.

In this study some members of 58% of hospital boards were received patient safety training course that was significantly related to patient safety outcome. Similar work in the US examined the relations between board engagement in quality outcomes, revealed large variations in reported board practices (Jha and Epstein, 2010, Tsai et al., 2015) with high performing hospitals being significantly more likely to have board training programs.

The presence of quality subcommittees of boards has been reported to be associated with the effective oversight of patient safety (Bader, 2006). In this study 72.2% of boards were found to have quality subcommittee that was significantly related to patient safety outcome. Similar results from U.S. national survey revealed that boards with a separate quality subcommittee are more probably to be high performing than are those without such a subcommittee (Jha and Epstein, 2013; Jiang et al., 2008, 2009). But in depth qualitative research in England into a hospital board by Ramsay et al. (2010) found various opinions about the effectiveness of quality subcommittees. Despite concern that the duplication of messages might lead to mistakes in reporting, it also was seen as necessary to sustain staff engagement in safety-related issues.

The boards' agendas and the extent to which patient safety are discussed at board meetings are considered effective board practices. In this study the mean time spent by the board for discussing safety issues was 23.3 % and it was

significantly related to patient safety outcome. Findings from U.S. hospitals propose that having patient safety as a standing item on the board agenda gives a critical lever for engagement in patient safety issues (Joshi and Hines 2006). Jiang and colleagues (2008) found that even though most board meetings had agenda items on service quality, only 41 percent of hospital boards declared that they spent more than 20 percent of their meeting time on service quality. Hospitals whose boards spent 20 percent or more of meeting time on service quality had better process-of-care indicators than hospitals whose boards spent less time on service quality (Jiang *et al.*, 2009). Jha and Epstein (2010) found that, compared to the 10% low-performing hospitals, significantly more chairs in the 10% high-performing hospitals spending at least 20% of the meeting time on quality.

Mannion *et al.* (2015) reported that boards in England appear to give considerable time to safety and quality issues. Only 21% of trust boards reported that 30% or less of their time was spent discussing safety and quality and a quarter (26%) of the trusts reported that more than 60% of their board time was spent on these issues.

In this study patient safety was not the first or second item on the board agenda compared to financial matter or meeting the

targets. In depth qualitative research in England into a hospital board revealed that patient safety was rarely the first item on the board agenda (Healthcare Commission, 2009), that is supported by observational research by Machell and colleagues (2010), whose key conclusion was that considerations of service quality were given a low priority in board meetings, compared with organizational restructuring, financial matters, and the need to meet performance targets.

One limitation of this study was that the patient safety data were provided by a secondary source (hospital records) and may be limited with regard to standardized interpretation among sample frame. Also the external accountability of hospital boards and management as regard the disclosure and transparency of patient safety information must be considered.

CONCLUSION

Hospital board practices have direct impact on the patient safety outcome as effective board practices means that the boards were involved more in quality issues and were interested to improve the systems in their hospitals.

Figuer1. Proposed research model

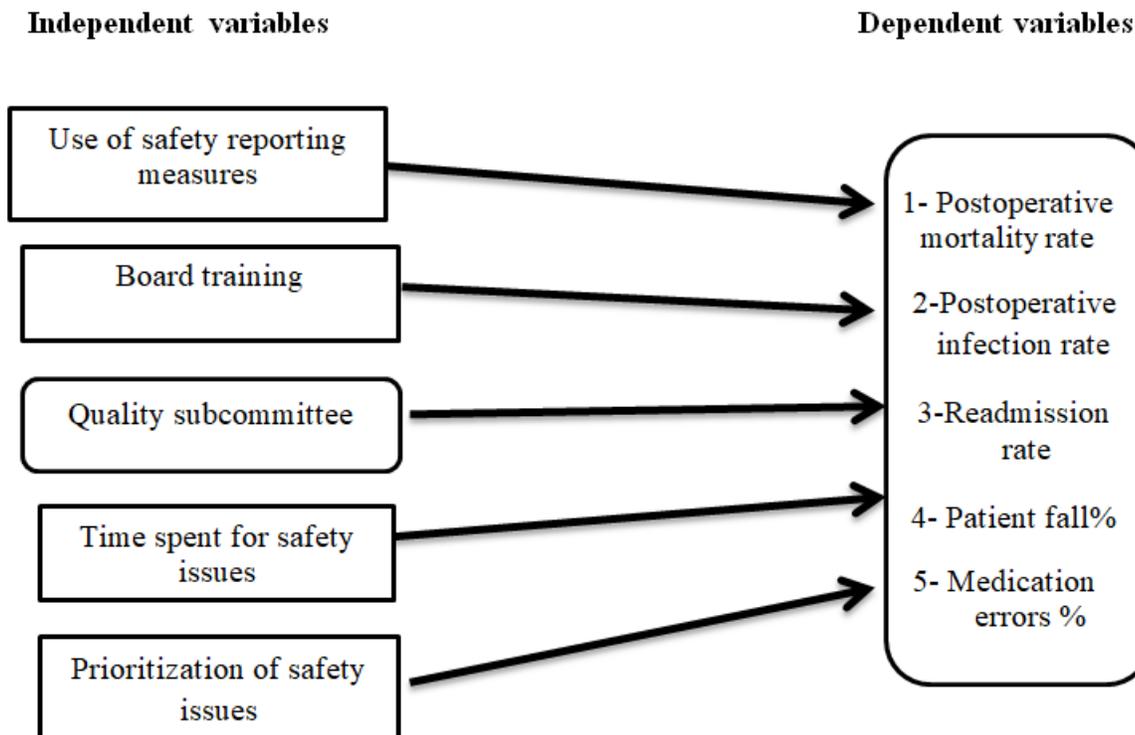


Table1. Descriptive statistics observed for the numeric variables in the study

Variables	Minimum	Maximum	Mean	Std. Deviation	Median	Skewness	Kurtosis
Time spent for safety issues	.05	.50	.233	.09	.225	.827	1.16
Postoperative mortality rate	.01	.10	.05	.017	.05	.589	.906
Postoperative infection rate	.03	.16	.084	.028	.08	.535	.396
Readmission rate	.003	.10	.044	.015	.05	-.104	1.42
Patient fall %	.005	.06	.027	.009	.03	.317	1.14
Medication errors %	.01	.10	.05	.015	.05	.261	1.57

Table2. Spearman correlation between rates of patient safety indicators and different board practices

Patient Safety indicators		Use of safety reporting measures	Board training	Quality subcommittee	Time spent for safety issues	Priority of safety issues
Postoperative mortality rate	Coefficient	-.901*	-.705*	-.715*	-.910*	-.896*
	Sig. (2 - tailed)	.000	.000	.000	.000	.000
	N	90	90	90	90	90
Postoperative infection rate	Coefficient	-.911*	-.686*	-.697*	-.922*	-.899*
	Sig. (2 - tailed)	.000	.000	.000	.000	.000
	N	90	90	90	90	90
Readmission rate	Coefficient	-.902*	-.702*	-.713*	-.922*	-.904*
	Sig. (2 - tailed)	.000	.000	.000	.000	.000
	N	90	90	90	90	90
Patient fall %	Coefficient	-.806*	-.567*	-.587*	-.822*	-.814*
	Sig. (2 - tailed)	.000	.000	.000	.000	.000
	N	90	90	90	90	90
Medication errors %	Coefficient	-.892*	-.751*	-.765*	-.912*	-.909*
	Sig. (2 - tailed)	.000	.000	.000	.000	.000
	N	90	90	90	90	90

*. Correlation is significant at the 0.01 level.

Table3. Distribution of patient safety indicators across categories of boards according to use of patient safety reporting measures

Safety indicators	Use of safety measures	N	Median	Range	<i>p</i>
Postoperative mortality rate	Yes	43	.045	.01 - .085	.000
	NO	47	.065	.06 - .10	
	Total	90			
Postoperative wound infection rate	Yes	43	.075	.03 - .11	.000
	NO	47	.10	.085 - .16	
	Total	90			
Readmission rate	Yes	43	.035	.003 - .05	.000
	NO	47	.07	.04 - .1	
	Total	90			
Patient fall %	Yes	43	.025	.005 - .04	.000
	NO	47	.04	.035 - .06	
	Total	90			
Medication errors %	Yes	43	.04	.01 - .06	.000
	NO	47	.075	.065 - .1	
	Total	90			

Mann-Whitney *U* test was used

Table4. Distribution of patient safety indicators across categories of boards according to board training

Safety indicators	Board training	N	Median	Range	<i>p</i>
Postoperative mortality rate	Yes	52	.05	.01 - .08	.000
	NO	38	.07	.05 - .10	
	Total	90			
Postoperative wound infection rate	Yes	52	.07	.03 - .1	.000
	NO	38	.10	.07- .16	
	Total	90			
Readmission rate	Yes	52	.035	.003 - .05	.000
	NO	38	.065	.055 - .1	
	Total	90			
Patient fall %	Yes	52	.02	.005 - .04	.000
	NO	38	.035	.03 - .06	
	Total	90			
Medication errors %	Yes	52	.04	.01 - .075	.000
	NO	38	.07	.06 - .1	
	Total	90			

Mann-Whitney *U* test was used

Table5. Distribution of patient safety indicators across categories of boards according to presence of quality subcommittee

Safety indicators	Quality Subcommittee	N	Median	Range	<i>p</i>
Postoperative mortality rate	Absent	25	.065	.055 - .10	.000
	Present	65	.045	.01 - .09	
	Total	90			
Postoperative wound infection rate	Absent	25	.10	.08- .16	.000
	Present	65	.075	.03 - .12	
	Total	90			
Readmission rate	Absent	25	.055	.05 - .1	.000
	Present	65	.04	.003 - .06	
	Total	90			
Patient fall %	Absent	25	.035	.03 - .06	.000
	Present	65	.02	.005 - .045	
	Total	90			
Medication errors %	Absent	25	.06	.055 - .1	.000
	Present	65	.05	.01 - .08	
	Total	90			

Mann-Whitney *U* test was used

Table6. Distribution of patient safety indicators across categories of boards according to time spent for discussing safety issues

Safety indicators	Time spent	N	Median	Range	Chi-Square	<i>p</i>
Postoperative mortality rate	<20%	20	.75	.05 - .10	65.857	.000
	20-30%	50	.6	.025 - .09		
	>30%	20	.35	.01 - .06		
	Total	90				
Postoperative wound infection rate	<20%	20	.1	.07- .16	67.695	.000
	20-30%	50	.08	.05 - .12		
	>30%	20	.06	.03 - .1		
	Total	90				
Readmission rate	<20%	20	.085	.055 - .1	69.048	.000
	20-30%	50	.065	.05 - .09		
	>30%	20	.025	.003 - .05		
	Total	90				
Patient fall %	<20%	20	.045	.03 - .06	56.261	.000
	20-30%	50	.03	.01 - .055		
	>30%	20	.015	.005 - .04		
	Total	90				
Medication errors %	<20%	20	.085	.06 - .1	65.389	.000
	20-30%	50	.06	.05 - .09		
	>30%	20	.04	.01 - .075		
	Total	90				

Kruskal -Wallis test was used

Table7. Distribution of patient safety indicators across categories of boards according to prioritization of safety issues

Safety indicators	Priority score	N	Median	Range	Chi-Square	P
Postoperative mortality rate	1	8	.085	.07 - .1	71.526	.000
	2	18	.06	.055 - .09		
	3	44	.05	.04 - .07		
	4	20	.03	.01 - .04		
	Total	90				
Postoperative wound infection rate	1	8	.15	.12 - .16	72.31	.000
	2	18	.1	.08 - .12		
	3	44	.08	.07 - .1		
	4	20	.05	.03 - .065		
	Total	90				
Readmission rate	1	8	.065	.055 - .1	72.891	.000
	2	18	.055	.05 - .065		
	3	44	.045	.03 - .05		
	4	20	.02	.003 - .04		
	Total	90				
Patient fall %	1	8	.045	.03 - .06	60.635	.000
	2	18	.035	.03 - .045		
	3	44	.03	.02 - .04		
	4	20	.015	.005 - .02		
	Total	90				
Medication errors %	1	8	.08	.065 - .1	73.801	.000
	2	18	.06	.055- .08		
	3	44	.05	.03 - .055		
	4	20	.035	.01 - .05		
	Total	90				

Kruskal- Wallis test was used

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