THE USE OF RAPID RESPONSE SYSTEM IN TEACHING HOSPITALS: AN EMPIRICAL ASSESSMENT

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ABSTRACT: *In recent times, diverse challenges have been faced in the health sector, part of this include the response of health personnel or officials to an emergency situation. This has been a major bridge between the health care personnel and the victimized individual which has therefore aimed at GPS positioning, and to ensure efficiency of services. A cross – sectional study design was used to examine the knowledge, attitude and perception of medical personnel on the use of Rapid response system in Babcock University Teaching Hospital. This research work was carried out among 174 nurses and 122 medical doctors. The study is descriptive in nature and involved 150 participants. Data were collected with the use of pre-tested questionnaire and analysed using simple percentage. The result revealed that the medical personnel possess high knowledge, positive attitude and good perception of the use of Rapid response system in Babcock University Teaching Hospital. It was concluded that that Babcock University Teaching Hospital is ready to use the Rapid response system and they are willing to learn more about Rapid response system and put it into practice.*

KEYWORDS: Rapid Response System, Babcock University, Teaching Hospital

INTRODUCTION

In developing countries, most people feel threatened by technological advancement and this is often due to fears on inability to keep up with the trend or the risks attached to this technological advancement. Nigeria, in 2015 recorded a death rate of 13.16 deaths/ 1,000 population (CIA, 2015). Research has shown that in the US, Canada, Australia, and the United Kingdom (UK) forecast that inauspicious events occur in 10% of patients that are hospitalized with a mortality rate of 5–8%, half of which are judged to be preventable (Baker, Norton, Flintoft, Blais, Brown, Cox, 2004)

A study found that suboptimal care occurred in 54% of the hospitalized patients who required Intensive Care Unit admission with an Intensive Care Unit mortality of 48%; almost twice the mortality of well-managed patients. This contributes to the failure to rescue at-risk hospitalized patients. Buist, Moore, Bernard, Waxman, Anderson, and Nguyen, (2002) studied the effects of Rapid Response Teams on the incidence of and mortality from unexpected cardiopulmonary arrests. Prior to implementation, the hospital used a traditional method of notifying a physician of a patient's deterioration. These included paging the intern on call and moving up the medical chain of command. In 1997 the Rapid Response Team was implemented, using established criteria to notify the RRT of a patient's condition. A one year pre-implementation time-frame was compared with a one-year post-implementation. Prior to implementation of the RRT, there were 73 unexpected cardiopulmonary arrests calls, compared to 47 after the RRT was implemented (p<0.001). In addition, in the pre-implementation timeframe, 56 of the 73 (77%)

patients died, while the proportion of deaths decreased to 26 of the 47 (55%) after the RRT was implemented (p<0.001) (Buist, *et al*,2002).

Intensive care medicine was for many years practiced within the four walls of an intensive care unit (ICU). Evidence then emerged that many serious adverse events in hospitals were preceded by many hours of slow deterioration, resulting in multi-organ failure and potentially preventable admissions to the ICU. Ironically, these admissions may have been prevented if the skills within the ICU had been available to the patient on the general ward at an earlier stage.

The failure to rescue these patients could have been due to lack of knowledge on the part of the health giver or failure to supervise. There are many factors that have prompted the need to implement RRTs with a variety of structures. The failure in planning, communicating, and recognizing deteriorating patient conditions has led to failure to rescue (Simmonds, 2005).

Rapid response systems (RRSs) are one of the first organization-wide, patient-focused systems to be developed to prevent potentially avoidable deaths and serious adverse events such as cardiac arrests (Hillman, Chen., & Jones (2014). Rapid response system was developed to improve the recognition of deterioration in patients and to provide critical care and assistance to the patient with the response.

Rapid response system usually comprises of two branches which include the Efferent Limb System and Afferent Limb System. The Efferent Limb System refers to the team that responds to the signal. The components of the Efferent Limb System are an Intensive Care Unit (ICU), qualified registered Nurse (RN), a registered Respiratory Therapist (RT), and an ICU Physician (Larson, 2005). Although the RRS's structure has varied from hospital to hospital depending on the size of the institution, the concept remains the same - at least two experienced critical care clinicians to rapidly assess the patient and implement interventions to prevent further deterioration (Larson, 2005). The Afferent Limb System on the other hand is the system that alerts the response team and performs the tracking and recognition of the deterioration. The Efferent Limbisa key component of Rapid response system, which has been put in place because of evidence of "failure to rescue" with available clinical services, leading to serious adverse events (DeVita, Bellomo, 2011). The process involved in a RRS is the simple notification of the Efferent Limb by the Afferent Limb which could be a bed-side nurse who monitors the patient's status trying to identify any signs of deterioration such as hypotension, tachycardia or low oxygen and so on.

A recent report from the United Kingdom (UK) found that the three most common reasons for potentially avoidable mortality in UK hospitals were mismanagement of deterioration (35%), failure of prevention (26%) and deficient checking and oversight (10%) (Donaldson, Panesar, Darzi, 2014). The Rapid response systems provide extensive care to deteriorating non- ICU patients. The Rapid response systems goal is to intervene early before unplanned circumstances occur such as death. This project is related to the Sustainable Development Goals 3, 6, 9 and 17 which are a) good health and well-being; b) decent work and economic growth; c) industry, innovation and infrastructure; and, d) partnership for the goals.

The German heath system which is ranked number twenty-five (25) in the World Health Organization health system ranking makes use of Medical emergency teams which consists of an ambulance with physicians and nurses that provide emergency attention for the patient. The physicians are referred to as "Rettungassistent". As of 2012, Germany spent a percentage Gross

Domestic Product(GDP) of 11.7% on Healthcare. The implementation of these Rapid response system has helped Germany's health care system to be twenty-five in the world.

From the foregoing, this research assessed the readiness of Babcock University Teaching Hospital on the use of Rapid response system which is being used around the world to reduce mortality rate.

Research Questions

1. What is the level of knowledge of Babcock University Teaching Hospital doctors and nurses on Rapid response system?

2. What is the attitude of medical doctors and nurses towards the use of Rapid response system in Babcock University Teaching Hospital?

3. What are the perceptions of medical doctors and nurses towards the use of Rapid response system in Babcock University Teaching Hospital?

4. What are the factors that would influence the use of Rapid response system in Babcock University Teaching Hospital?

METHODOLOGY

Research Design: A cross – sectional study design was used to examine the knowledge, attitude and perception of clinical staff on the use of Rapid response system in Babcock University Teaching Hospital.

Study Site: The study was conducted within Babcock University Teaching Hospital which is situated in Babcock University, located in Ilishan-Remo, Ogun State, Nigeria. Ilishan-Remo is an urban community located in the South-Western part of Nigeria with a total population of 34,928 (NPC, 2010) estimated by Ikenne Local Government. Ilishan town is in Remo division of Ogun State and fourth largest town among the thirty –three towns in Remo land. It is situated sixty-eight kilometers North-West of Lagos, sixty kilometers South-West of Ibadan and approximately sixty kilometers away from Abeokuta the Ogun state capital. It is slightly evaded by Lagos-Ibadan express way from Shagamu-Benin express way runs through the Ikenne end of the town (Ikenne Local Government Secretariat). Babcock University Teaching Hospital formerly known as Adventist Medical Centre and was first run by a nurse Mrs. Sufficool in 1960 and handed over to Mrs. Canthrel in 1963 and handed over to Mrs. Awoniyi in 1968. Chief M.A.K. Sonowo, chief Osibodu and his brothers who helped in securing a building in the community. Mrs Awoniyi handed over to Mrs. Christian Onwere in 1973. In 1979, the college moved to Owodunni's house to Sofola's house on Irolu road. The clinic developed to a hospital with the efforts of late Chief Adetola, Mr J. O. Famodu and late Oba Onasoga who made a request to the Adventist Mission to build a hospital in Ilshan –remo and that helped to set the foundation of Babcock University Teaching Hospital and the newly added Tristate cardiovascular centre.

Study Population: The population of study are clinical staff of Babcock University Teaching Hospital which consist of doctors and nurses. The total number of Babcock University Teaching Hospital clinical staff are two hundred and ninety – six (296) 174 nurses and 122 medical doctors.

Sample and Sampling Technique*:* The sample frame included twelve (12) secondary schools (6 private and 6 public). A sample of one hundred and fifty (150) health personnel were randomly selected for the study. The selected sample was based on proportional probability sampling (PPS) method in which the population of the study was stratified into two groups (174 nurses and 122 medical doctors). However, the participants were selected using simple random sampling method in which all the 174 nurses and 122 medical doctors had equal chance of being selected or included. The participants age range from 23-56 years with a mean of 27.1 and a standard deviation of 13.9. Out of the 150 participants, 93 were female (62%) and 57 males (37%).

Instrumentation: The instrument that was used in this study is a self-constructed questionnaire. For the purpose of attaining the set objectives of this project, an interview using questionnaire was administered to conveniently selected respondents. The purpose of this is to assess Babcock University Teaching Hospital clinical staff on their knowledge of RRS, perception of RRS and their readiness towards the use of RRS and also to obtain information about their different demographic characteristics. A likert scale format questionnaire ranging from strongly disagree, disagree, undecided, agree and strongly agree.

Validity and Reliability of the instrument: This was determined by carrying out a pre-test/pilot study at Olabisi Olabanjo University Teaching Hospital (OOUTH). This pre-test was a total of twenty (20) questionnaires that was administered. The instrument (questionnaire) was assessed by my supervisor for screening and final correction and approval before it was administered to the respondents. The reliability was determined through the calculation of the Cronbach's Alpha after the pre-test was carried out and reliability result was 0.74.

Data Analysis: The data gathered was analyzed using the latest version of Statistical Package of Social Sciences (SPSS).

Ethical Consideration: Ethnical issues are important to be considered in any type of research work. Therefore, since this research is not subjecting the respondents to any intervention program or collection of any bodily fluid, a verbal consent was obtained from the respondents before administering the questionnaires and also an approval was gotten from Babcock University Health Research Ethics Committee (BUHREC).

RESULTS

Table 1: Knowledge on Rapid response system.(n = 150)

	Frequency (N)	Percentage (%)
I know about Rapid response system.		
NO	54	36.0
YES	96	64.0
There is a difference between Rapid response team and Medical		
emergency team.	106	70.7
YES	44	29.3
NO		

Rapid response system identifies deteriorating signs in patients.		
NO	42	28.0
YES	108	72.0
Rapid response system is beneficial to ICU patients.		
NO	47	31.3
YES	103	68.7
Rapid response system is beneficial to NON -ICU patients.		
YES	47	31.3
NO	103	68.7
Rapid response system averts disabilities.		
NO	49	32.7
YES	101	67.3
Rapid response system averts deaths.		
NO	48	32.0
YES	102	68.0
There are four components of rapid response system.		
NO		
YES	35	23.3
	115	76.7

The knowledge on Rapid response system was measured on an 8 point scale where 0 – 4 indicates poor knowledge, 5–8 indicates good knowledge on Rapid response system with a mean of 5.85, standard error 1.73. Therefore, the knowledge of the doctors and nurses of Babcock University Teaching Hospital is good (5-8) due to the mean score of 5.85 which signifies good knowledge of Rapid response system. At the same time, using the frequency and the percentage, result shows that 103 (68.7%) had poor knowledge on Rapid response system while 47 (31.3%) had good knowledge on Rapid response system

Table 2: Attitude towards the use of Rapid response system. (n =150)

	FREQUENCY (N)	PERCENTAGE (%)
I believe there is opportunity to practice Rapid response system		
Agree	94	62.67
Disagree	56	37.33
I feel Rapid response system is not important.		
Agree	58	38.67
Disagree	92	61.33

I believe that workers should be trained on the use of Rapid response system.		
Agree	92	61.33
Disagree	58	38.67
I am not interested in Rapid response system.		
Agree	15	10.0
Disagree	135	90.0

This result was measured on a 15 point scale, where 0 – 7.5 indicated a negative attitude towards the use of Rapid response system and 7.6 – 15 indicated a positive attitude towards the use of Rapid response system in Babcock University Teaching Hospital with a mean of 9.84, standard error of 0.13, standard deviation of 1.62 and variance of 2.619. So therefore, the attitudes of the doctors and nurses of Babcock University Teaching Hospital are positive (7.6 - 15) due to the mean score of 9.84 which signifies positive attitudes toward the use of Rapid response system in Babcock University Teaching Hospital. At the same time, 94 (62.67%) said that there is opportunity to practice Rapid response system in Babcock University Teaching Hospital while 56 (37.33%) said that there is no opportunity to practice Rapid response system in Babcock University Teaching Hospital. On the importance of Rapid response system in Babcock University Teaching Hospital, 92 (61.33%) said that Rapid response system is important while 58 (38.67%) said that Rapid response system is not important. On the training on how to use Rapid response system in Babcock University Teaching Hospital, 92 (61.33%) said that workers should be trained while 58 (38.67%) said that workers should not be trained. On the interest of workers in Rapid response system, 135 (90%) said that they were interested while 15 (10%) said that they were not interested.

Table 3: Perception towards the use of Rapid response system. (n =150)

	FREQUENCY (N)	PERCENTAGE (%)
I can use the device that activates the Rapid response system if taught.		
Appropriate	128	85.33
Inappropriate	22	14.67
It could get really stressful using Rapid response system.		
Appropriate	106	70.67
Inappropriate	44	29.33
Use of Rapid response system could be frustrating.	100	66.67
Appropriate	50	33.33
Inappropriate		

I can effectively inform clients on what Rapid response is.

Appropriate	38	25.33
Inappropriate	112	74.67

I can effectively inform clients on the benefits of Rapid response system.

Appropriate	54	36
Inappropriate	96	64

I can effectively inform clients on how to use this service.

Appropriate	49	32.67
Inappropriate	101	67.33

I can effectively offer this service to clients.

Appropriate	66	44
Inappropriate	84	56

Rapid response system helps reduce mortality.

Appropriate	67	44.67
Inappropriate	86	55.33

Rapid response system makes work efficient.

Appropriate	75	50
Inappropriate	75	50

Rapid response system helps the hospital attain a good standard and reputation.

Appropriate	73	48.67
Inappropriate	77	51.33

Rapid response system increases the effectiveness of workers.

Appropriate	67	44.67
Inappropriate	83	55.33

It is measured on a 36 point scale, where 0 – 18 indicating bad perception towards the use of Rapid response system and 18.1 – 36 indicating good perception towards the use of Rapid response system with a mean of 16.18, standard error of 0.64, standard deviation of 7.84 and variance of 61.48. So therefore, the perception of the doctors and nurses of Babcock University Teaching Hospital is bad (0 - 18) due to the mean score of 16.18 which signifies a bad perception towards the use of Rapid response system. At the same time, using the frequency and the percentage, result showed that 89 (62.1%) had bad perception towards the use of Rapid response system while 61 (37.9%) had good perception towards the use of Rapid response system.

Table 4: Factors that would influence the use of Rapid response system in Babcock University teaching Hospital. (n =150)

	FREQUENCY (N)	PERCENTAGE (%)
Availability of equipment for Rapid response system.		
Yes	131	87.33
No	19	12.67
Availability of staff to use the equipment for Rapid response system.		
Yes	118	78.67
No	32	21.33
Availability of storage space for the equipment for Rapid response system.		
Yes	126	84
No	24	16
Functioning internet services		
Yes	130	86.67
No	20	13.33
Constant power supply		
Yes	150	100
Essential Drugs		
No	150	100

Majority 131 (87.33%) of the respondents said that Babcock University Teaching Hospital needs equipment for operating Rapid response system, 118 (78.67%) said that Babcock University Teaching Hospital has competent staff that would use the equipment if they are available, 126 (84%) said that availability of storage space was a factor that would influence the use of Rapid response system. Majority, 130 (86.67%) said that a functioning internet service is needed and all the respondents 150 (100%) said that constant power supply is needed while essential drugs is not a factor that would influence the use of Rapid response system in Babcock University Teaching Hospital.

CONCLUSION

This study assessed the readiness of Babcock University Teaching Hospital medical doctors and nurses on the use of Rapid response system. The level of knowledge, attitude towards, and perception of the medical personnel towards the use of Rapid response system was specifically assessed. Results from this study signifies that Babcock University Teaching Hospital is ready to use the Rapid response system and they are willing to learn more about Rapid response system and put it into practice.

RECOMMENDATIONS

Based on the findings, the following have being recommended:

1. The administration should see the need for putting a Rapid response system in place.

2. The administration should provide all the necessary equipment, staff, space, internet services and constant power supply for the operation of the Rapid response system.

3. The administration should provide adequate training for doctors, nurses and other clinical staff that would function under Rapid response system.

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