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Factors Associated with Nurses' Competence in Averting Failure-To-Rescue in Acute Care Settings of a Tertiary Institution, Ogun State, Nigeria

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Abstract:

Background: The concept of failure-to-rescue entails the idea that not all complications developed by patients are preventable, but nurses should be able to promptly identify and treat complications immediately they occur by virtue of their training and experience, but why some nurses are not able to thoroughly assess a patient's level of acuity and render the appropriate care has not been extensively studied.

Objectives: To assess the knowledge level of the Nurses' on the concept of failure-to-rescue; determine nurses' level of competence in averting failure-to-rescue; describe how the nurses' educational level, years of experience, organizational characteristics, and training and certification in capacity building skills is associated with their level of competence in averting failure-to-rescue respectively.

Methods: A correlation research design and purposive sampling technique was utilized to collect data from the respondents. A self-structured (Sections A, B and C) and adapted (Section D - PES-NWI) 38-item questionnaire was used to retrieve data from registered nurses in state government tertiary healthcare centre in sagamu, Ogun State, Nigeria. Data were analyzed using both descriptive and inferential statistics with p-value set at 0.05.

Results: Most nurses have high knowledge regarding failure-to-rescue with a mean score of 5.91 and were moderately competent in averting failure-to-rescue with a mean score of 29.3. A significant correlation between educational level of respondents and level of competence in averting failure-to-rescue with a p – value of 0.038 was found. Respondents' years of experience was found to be significantly correlated to their level of competence in averting failure-to-rescue with p – value of 0.015. A significant correlation between organization characteristics and nurses' level of competence in averting failure-to-rescue with a p – value of 0.036 was also elicited. Nurses' training/certification in capacity building skills (such as BLS, ACLS and LSS (Midwifery) was found to be correlated to their level of competence in averting failure-to-rescue with a p – value of 0.044.

Conclusions: The study concluded that failure-to-rescue could be reduced in acute care settings with increased educational attainment, years of experience and modification of organization characteristics respectively.

Keywords: Acute care settings, failure-to-rescue, nurses' competence, nurses' experience, organizational characteristics

1. Introduction

1.1. Background to the Study

Every patient coming into the hospital often hopes that the doctors and nurses will treat them adequately and above all professionally, and that complications which may arise by virtue of their ailment or treatment regimen will be promptly recognized and treated. But deaths from preventable complications of illness or plan of care during hospitalization occur more than likely to be admitted. Sequel to the report of Institute of Medicine (IOM, 2010), the initiatives of the Agency for Healthcare Research and Quality (AHRQ, 2010), and The Joint Commission (TJC) as well as other accreditation bodies, there has been a public outcry and a paradigm shift of attention on this phenomenon – “failure-to-rescue” by various hospitals, as the root cause of adverse hospital events, including patient's death.

The concept of failure-to-rescue entails the idea that not all complications developed by patients are preventable but nurses and other healthcare teams should be able to promptly identify and treat complications immediately they occur. According to Agency for Healthcare Research and Quality (2017) high quality hospitals have better chances of averting patient death from complications, even though they care for patient populations with significant surgical risk factors. This is simply because the variation in complication rates may be dependent on the patient characteristics that may be present on admission, whereas the ability to rescue patients (prevent death from complications) may reflect the resources and preparedness of the organizational characteristics which includes resource management, communication pattern, culture of practice environment, and educational and career development (Agency for Healthcare Research & Quality, 2017).

The importance of Nurses' role in the management of patients in the healthcare industries cannot be overemphasized. Nurses are the single largest healthcare professionals and are closer to the patient than any other healthcare professionals and greater percentages of patient demands are usually directed towards the nurse. Nurses are trained to use their cognitive, affective and psychomotor skills in monitoring and providing prompt and adequate care to the patient. Therefore, when the standard of the nursing care provided is hindered or inadequate whether by virtue of allocation of scarce hospital resources including reduced nursing workforce, lack or inadequate instrument/equipment and inappropriate hospital policies, the responsibility is directed towards the nurse (Hughes, 2008).

Studies have shown that nurses educational training and preparation is a crucial factor in assessing and monitoring of patient's health status (Chua, et al., 2013; Hart, Spiva, Baio, Huff, Whitfield, Law, Wells &Mendoza, 2014; McDonnell, Tod, Bray, Bainbridge, Adsetts &Walters, 2013; Pantazopoulos, et al., 2012). According to Pantazopoulos, et al., 2012, nurses with baccalaureate degree identified patient deterioration significantly better than nurses with diploma certificates; and Nurses with a postgraduate degree tend to decipher patient's deterioration with confidence. In addition, some researchers have postulated an inverse relationship between baccalaureate degree nurses and reduction in patient's hospital mortality. Aiken et al., 2003⁹ opined that increasing the total number of baccalaureate prepared nurses by 10% decreases hospital mortality by 5%. However, a study by Sasichay-Akkadechanunt, et al (2003)refuted this claim.

According to Benner's (1984) theoretical knowledge imparts clinical nursing practice. The higher the nurse's level of educational attainment or preparation such as BNSC, MSC, PHD and some specific professional trainings, the better the competency or expertise. The utilization of theories and principles acquired via education permits nurses to contribute meaningfully to patient plan of care. Well-structured educational bedrock accelerates the development of skills and competence via experience (Benner, 1984). With adequate knowledge background, nurses are able to make good clinical judgment and equipped with means to learn from practice experience. Increased educational preparation for nurses (McHugh, & Lake, 2010) and total nurse years of practice (Lehwaldt, 2016) has been linked to improved patient care outcome in recent times. Nurses' experience is another pivotal factor that promotes competency in clinical practice. A nurse experience entails the number of years spent in practice and the process of self-reflection that permits preconceive ideas and projections to be established, improved or refuted in real situations (Benner, 1984). Experience is not just the process of encountering the patient condition and situation but an unconscious and intuitive act of reflecting on the encountered situation in order to improve the decision making (Benner, 1984; McHugh & Lake, 2010). Nurse's years of practice experience has been linked by several studies as a factor that influences competency in nursing practice and better patient outcome (Benner, 1994; McHugh & lake, 2010; Beth, Cooney-Miner& Perloff, 2012; Blegen, Goode, park, Vaughn & Spetz, 2013).

According to Orsolini-Hain and Malone (2007) many expert nurses have left and more are also planning to leave hospital practice as a result of the negative organizational characteristics such as work environment. According to Benner (1984) clinical competence can be achieved in a hospital with good work environment and culture as this promote both inter and intra-professional learning from colleagues especially nursing colleagues. Therefore, hospitals that embrace a culture of good work environment and promote nursing autonomy, educational and career advancement tend to have reduced patient morbidity and mortality, and a better quality of care (Aiken, Sloane, Clark, Poghosyan, Cho, You L.... et al., 2011). The process by which a health organization manages its resources – tangible (equipment, instrument, and materials) and intangible (people - nurses) efficiently and effectively may promote or hinder the nurse's health and quality of care delivered at the long run.

Medical equipment or instrument is one of the pivotal components of healthcare system. It is used mostly by nurses to monitor, diagnose and treat patients suffering from one ailment or another. The world health organization estimated that 50% to 80% of medical equipment in developing countries such as Nigeria is not functioning and further stated that those countries are in lack of technology assessment systems and regulatory controls necessary to prevent importation of substandard medical equipment or instrument (WHO, 2010). Therefore, hospitals with inadequate medical equipment or instrument, either as a result of unavailability or improper functioning, has a negative impact on the nursing care rendered, nursing profession and the healthcare organization (Merriam, Sogo & Mokoko, 2017).

Proper monitoring of patients can be possible when there is a balance in the nurse to patient ratio. Nurses who are working in hospitals with excessive patient workloads and poor working environment are prone to burnout and job dissatisfaction, thus may not be able to adequately monitor and care for their patients. Studies have buttressed the fact that hospitals with adequate staffs and better wages have less incidence of burnout, job dissatisfaction, nurse's turnover, and better patient outcome (McHugh & Ma, 2014). A reduction in the nurse-patient ratio with increased workload has been identified as a recipe for poor quality of care rendered by the nurse (ANA, 2017).A higher staffing of competent nurses is associated with lower hospital-acquired infection, lower incidence of failure-to-rescue, reduced mortality, and

reduced length of hospitalization (Finkelman, 2017). According to McGahan, Kucharski and Coyer (2012), the safety of patient is ensured when the nurse-to-patient ratios is balanced and thus preventing failure-to-rescue.

In addition, hospitals that encourage nurses to practice according to their knowledge, judgement and professional scope has shown to reduce cost, improves nurse's performance and increased quality and safety of patient outcomes (Weston, 2010). When nurses are allowed by the various organizations, they worked for to attend continuing educational programs and learning, this will increase their competency and autonomy in clinical practice. Hospital institutions that gives out tuition reimbursement and support for nurses who wish to further their education enhances not only the development of appropriate skills and competency of the individual nurse but also help to make active the institutional goals and objective. Therefore, hospitals that embrace a culture of good work environment and promote nursing autonomy, educational and career advancement experiences lower burnout of nurses, reduction in job dissatisfaction, reduced intent to leave nursing profession, reduced patient morbidity and mortality, and better quality of care (Aiken, Sloane, Clarke, Poghosyan, Cho et al, 2011; McHugh & Ma, 2014).

Nurses' clinical competency involves information sharing between healthcare professionals. Interprofessional communication and collaboration has been identified as a key factor for the development of competency in clinical practice and improvement in the health outcome of the patient. Nurses by virtue of their proximity to the patients on a day-to-day basis know the patient clinical state, what works and does not work well for the patients. Hence, communicating this information via a team approach will result in a better plan of care than each would achieve working alone. Hospitals that encourages individual collective skills and experiences of health care team members in the management of patients tend to have improvement in patient outcome and quality of care rendered (Campaign for Action, 2015; Reeves, Zwarenstein, Goldman, Barr, Freeth, hammock & Koppel, 2008; Reeves, Perrier, Goldman, Freeth & Zwarenstein, 2013; Tsakitidis, Timmermans, Callewaert, Verhoeven, Lopez-Hartmann et al, 2016).

The nurses' communication skill is of essence here in sharing of the patient's data in a timely manner and adequately so that effective treatment plan can be instituted. Poor or inadequate communication could lead to error in drug administration, ineffective treatment plan, incidence of preventable complications and even death (Bailey, 2016; Taran, 2011). Nurses' leadership style, communication skills, conflict resolution skills and the unit's abilities are seen to be related to a reduction in patient's length of hospitalization, reduction in nurses' replacement rate and better quality of care (Guidet & González-Romá, 2011; Kieft, de Brouwer, Francke & Delnoij, 2014).

Furthermore, patient quality of care is associated with the nurses' level of involvement in the plan of care and active and central role they play in the organizational decision or policy making and vice versa (Molouk & Ali, 2010). Sequel to the world-wide debate concerning health policy reforms, there has been a public outcry to engage nurses in policy making, because nurses occupies the largest global workforce in the health care industry delivering care to patients and their families in different health care settings. Therefore, nurses' broad knowledge and years of clinical experience may be an inestimable value in improving the delivery of quality health care service and health system strengthening. Because many health care policies and decisions made without the nurses input have an impact on the nurses' work environment and professional practice, therefore, it become imperative for health care organizations (both governmental and private) to involve the nurses in healthcare policies and decisions so as to ensure that supportive clinical work environment are considered amongst other things (Juma, Edwards & Spitzer, 2014). Competent nursing practice is no doubt of a paramount necessity in order to avert failure-to-rescue in clinical practice. A competent nurse may be distinguished from others not because he/she failed-less but only that he/she rescued more patients. In nursing practice, patient's conditions may suddenly change and things can sometimes go wrong. But when the nurse is adequately prepared for negative possibilities, when the capacity is indeed strong to reduce the damage, then a competent nurse emerges.

1.2. Conceptual Model

Novice to expert nursing theory by Patricia Benner (1984) was used to describe and establish associations between variables of interest. The following are the independent variables (cause): nurses' educational level, nurses' years of experience, organization characteristics, and nurses' training/certification in capacity building skills. The dependent (effect) variable is the nurses' competency in averting failure-to-rescue in acute care setting.

The stages of clinical competence embedded in Benner's theory corroborates the idea that as a nurse continuously acquire knowledge via education and training, and experience, the higher the level of competence and expertise acquired in averting failure-to-rescue in clinical practice. Benner postulated that nurses tend to develop knowledge and skills overtime via science and experience. It distinguishes the practicum 'knowing how' and theoretical knowledge 'knowing that' in nursing practice (Brykczynski, 2010). The Dreyfus model was adapted by Patricia Benner as a theoretical framework because it recognizes increase in the skilled performance of an individual based on his/her situational experience and education (Nursing Theories, 2011).

Benner (1984) theorized that nurses pass through five interrelated stages in clinical practice. These stages include: novice, advanced beginner, competent, proficient, and expert stages (Benner, 1984; Dreyfus & Dreyfus, 1986); and as the nurse moves via these stages, there is a progression from reliance on conceptual or conjectural rules to real (concrete) experience, modification in the nurse's understanding from a compendium of separate, equal parts to a complete whole with definite parts being viewed as important and finally to an involved performer as compared to the former role of an observer (Benner, 1984).

A novice is regarded as one with limited or no experience of the situation is expected to perform. Nursing students are generally regarded as novices, as they have limited or no experience to base their clinical judgment, and thus practice according to rules or principles. Nurses at this stage view all part of a situation as important and thus unable to filter or

isolate relevant part from the whole. They tend to do what they are told to do only (Nursing Theories, 2011). It is also important to note here, that sometimes an experienced nurse may be regarded as a novice when he/she is posted to a new specialty area without a previous training.

The advance beginner stage is characterized by exposure and management of enough clinical situations to gain proficiency and experience marginally. As a result, the nurse is able to readily recognize recurrent meaningful situational components referred to as aspects of the situations (Benner, 1984; Nursing Theories, 2011). Fresh graduate nurses are generally referred to be at this stage. The third stage is termed competent stage. This stage encompasses nurses with 2 to 3 years of clinical experience in somewhat same practice environment (Benner, 1984). The nurse at this stage has developed confidence in noting patterns and managing situations according to priority and instituting actions plan and on a long-term goal, even though the mastery of speed and flexibility are not fully acquired (Benner, 1984).

The fourth stage is termed proficient stage. Nurses at this stage have acquired three to five years of clinical experience in somewhat same practice environment. The nurse at this stage has developed good analytic skills and thus able to perceive situations holistically rather than as an aspect, with resultant improvement in decision making (Nursing Theories, 2011). The nurse brings to memory past experiential know how as guide when delivering care (Benner, 1984). Furthermore, a proficient nurse has a sharp and incisive cognizance in recognizing and responding to cues indicating patient's deterioration, even before vital signs changes are readily observable (Benner, 1984). Though maxims are still used at this stage (proficient) to guide performance, the nurse needs to gain more experience in clinical practice before maxim can be utilized in order to decode the subtlety of the situations. This is because; maxims could be viewed by a novice or competent performer as enigmatic as a result of the subtlety of the situation, meaning different things at different times (Benner, 1984).

The expert stage, which is the final stage in the Benner's skill acquisition model is said to occur after an experience of five years or more. The nurse at this stage has developed a deep and sound knowledge, and understanding of the situations via years of practice experience. Therefore, he/she no longer relies on formal analytical principles, but uses his/her intuition to determine as well as guide his/her practice. The expert nurse performance is smooth, pliant and highly skillful. An exceptional adroit practice nurse (Benner, 1984). Because expert nurses harness the power of intuition during practice, it may be hard for nurses at this stage to enunciate the justification for their actions (Benner, 1984). Intuition can be used by an expert nurse sometimes to reduce the available treatment options prior to the logical and rational analysis of the situation is done. Or vice versa: the initial thorough logical and rational analysis may reveal some options that appears as beneficial, and then intuition is needed by the expert nurse to decipher the correct one by virtue of his/her experience of the situation.

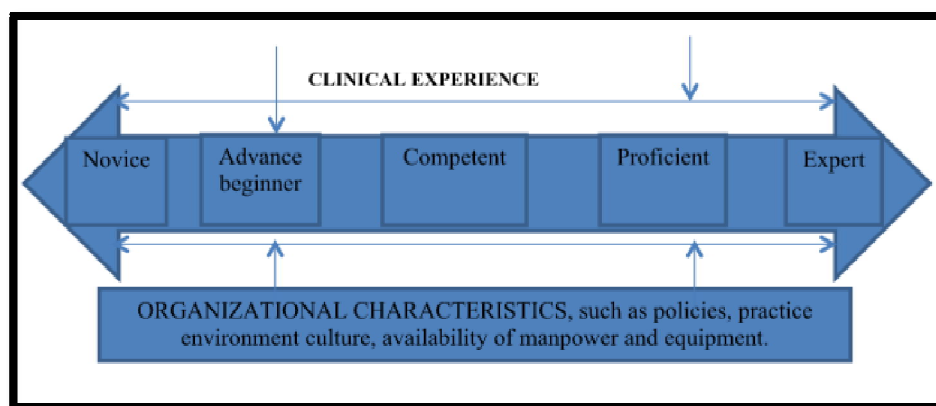


Figure 1: Conceptual Framework of Factors Associated with Nurses' Competency in Clinical Practice as Adapted from Patricia Benner's Model (1984)

1.2.1. Nurses' Educational Training and Competency

According to Benner (1984) theoretical knowledge imparts clinical nursing practice. The higher the nurse's level of educational attainment or preparation, such as BNSC, MSC, PHD and some specific professional trainings, the better the competency or expertise. The utilization of theories and principles acquired via education permits nurses to contribute meaningfully to patient plan of care. Well-structured educational bedrock accelerates the development of skills and competence via experience (Benner, 1984). With adequate knowledge background, nurses are able to make good clinical judgment and equipped with means to learn from practice experience. According to Benner (2004), hands-on learning is said to be the core of sound clinical sagacity. A nurse can move back and forth the continuum, from an area of acquired expertise to a new one and become a novice again in pursuit of more knowledge (Benner, 1984; Cangelosi, 2009).

1.2.2. Experience and Competency

Nurses' years of practice experience and attainment of competency or expertise are somehow related but truly different concept. Experience entails the number of years spent in practice and the process of self-reflection that permits preconceive ideas and projections to be established, improved or refuted in real situations (Benner, 1984). Experience is not just the process of encountering the patient condition and situation, but an unconscious and intuitive act of reflecting on the encountered situation in order to improve the decision making (Benner, 1984; McHugh & Lake, 2010). Experience

may be a requisite, but not an adequate proviso for the attainment of nursing competence or expertise. A nurse can move back and forth the continuum, from an area of acquired expertise to a new one and become a novice again in pursuit of more experience (Benner, 1984; Cangelosi, 2009).

1.2.3. Organizational Characteristics and Nurses' Competency

Benner (1984) observed that competent nursing practice can be achieved largely in a supportive clinical environment. Hospitals with practice environment culture that promotes nurses' autonomy, capacity building and career development, and teamwork / collaboration amongst healthcare professionals facilitate the development of competence and better quality of care (Lake & Friese, 2006). Therefore, organization factors could interfere by hindering or fostering the acquisition of knowledge or experience necessary in developing competency in averting failure-to-rescue in clinical practice.

The acquisition of competency is germane to nursing. The concept of competence lacks a universal definition, but there seems to be common themes across various literatures which include: knowledge, skills and attitudes. The conceptual framework for this research is Patricia Benner theory of novice to expert, as it postulates that knowledge and skills are acquired via experience in clinical nursing practice. The experiential process enables the smooth transition from relying on strict rules or principles-based practice to being capable of assessing and monitoring of patient's change in health condition.

1.3. Statement of the Problem

Nurses by virtue of their proximity to the patients are at the frontline of distinguishing alteration in the health status of a patient in order to improve outcome during patient care. Therefore, nurses have a profound and enormous obligation towards patients committed to their care in deciphering those subtle cues indicative of deterioration in order to avert failure-to-rescue (Purling & King, 2012). Though there is a surging consciousness of some factors limiting nurses from increasing the thorough monitoring and care for deteriorating patients (Duffield, Diers, O'Brien Pallas, Aisbett, Roche, King, et al., 2011; Gaberson, Oermann, Shellenbarger, 2014; Massey, Chaboyer & Aitken, 2014; Shearer, Marshall, Buist, Finnigan, Kitto, Hore, et al., 2012), but why some nurses are not able to thoroughly assess a patient's level of acuity, decipher the signs and symptoms suggestive of alteration in patient's health status and promptly reports this findings and render appropriate care has not been extensively studied.

In a study carried out in OOUTH Sagamu from January 2002 to December 2004 on all (77) patients admitted with abdominal trauma that had laparotomy done, the research findings revealed the following developed complications: 5 patients (6.5%) had acute renal failure, 5 patients (6.5%) had multiple organ failure, 8 patients (10.4%) had wound infection and 10 patients (13%) died. The researchers recommended that early presentation, prompt resuscitation and quick recognition of renal compromise by medical personnel (doctors and nurses) will reduce the attending mortality (Ayoade, Salami, Tade, Musa & Olawoye, 2006).

Though there are no records of studies done on the area of failure-to-rescue cases in OOUTH Sagamu, but injuries and deaths from preventable complications of illness, or plan of care during patient's period of hospitalization may occur more than likely to be admitted. With the intent of improving competency in nursing practice, there is a need for a research to expound the concept of failure-to-rescue and identify its associated factors. The researcher hopes that delving into this complicated clinical problem, the lacunae in knowledge gap will be illuminated and better understood.

1.4. Objective of the Study

The main objective of the study is to describe the factors associated with Nurses' Competence in Averting Failure-to-Rescue in Acute Care settings at Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu. The specific objectives are to:

- Assess the knowledge level of the Nurses' on the concept of failure-to-rescue;
- Determine nurses' level of competence in averting failure-to-rescue;
- Describe how the nurses' educational level is associated with their level of competence in averting failure-to-rescue;
- Determine how the nurses' years of experience may be associated with their level of competence in averting failure-to-rescue;
- Determine how nurses' organizational characteristics could be associated with nurses' level of competence in averting failure-to-rescue and
- Examine how the nurses' training and certification in capacity building skills may be associated with their level of competence in averting failure-to-rescue.

1.5. Research Questions

- Do nurses have adequate knowledge about the concept of failure-to-rescue?
- What is the nurses' level of competence in averting failure-to-rescue?

1.6. Hypotheses

- H_{01} There is no significant correlation between nurse's educational level and their level of competence in averting failure-to-rescue.

- H_{02} There is no significant correlation between nurse's years of practice and their level of competence in averting failure-to-rescue.
- H_{03} There is no significant correlation between organization characteristics and nurse's level of competence in averting failure-to-rescue.
- H_{04} There is no significant correlation between nurses' training and certification in capacity building skills and their level of competence in averting failure-to-rescue.

1.7. Scope of the Study

The study described the factors related with Nurses' Competence in Averting Failure-to-Rescue in Acute Care settings, Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu from October 2017 to April 2018. Total population sampling (purposive sampling technique) of registered nurses was utilized, as a result of the small sample size and they also share same characteristics.

1.8. Significance of the Study

This study might contribute to the improvement of nursing practice in the following ways by: increasing the awareness of the staff development educators in the various hospitals on the need to institute educational programmes that would enhance the staff nurse competency in practice, increasing the knowledge base of nurses on failure-to-rescue and its related factors in clinical practice, enhancing the nurse independent ability or competency in recognizing subtle cues suggestive of deterioration in a patient in clinical practice, and promoting the development of expert nurses in clinical practice. The researcher hopes that the findings would inspire institutions training nurses to better prepare future nurses and create a model for student nurses' competency development that can be implemented and researched upon.

1.9. Justification for the Study

In acute care settings, patients' health condition can change abruptly. Nurses by virtue of their proximity to the patients must be capable of recognizing these subtle cues or changes suggestive of deterioration and take necessary actions to remedy the situation in order to avoid complication or even death. Several possible factors have been identified by various researchers as variables related to nurses' competence in averting failure-to-rescue events. However, none of these studies have been able to explicitly examine the degree to which these variables are related to nurses' competence in averting failure-to-rescue in clinical practice.

1.10. Operational Definition of Terms

1.10.1. Acute Care Settings

These are hospital wards or units where sudden, urgent and emergency care are rendered to patients in order to prevent complications and death. Example of such settings includes, Accident & Emergency unit, Surgical wards, Medical wards, paediatric wards, Obstetrics & Gynaecology wards, Operating room/Theatre, ICU, and Dialysis Unit.

1.10.2. Competence in Averting Failure-to-Rescue

This is the ability of a nurse to promptly decipher signs and symptoms suggestive of patient's deterioration and react proactively in order to avert complications and preventable death.

1.10.3. Failure-to-Rescue

Inability to promptly decipher signs and symptoms suggestive of patient's deterioration and react proactively in order to avert complications and preventable death.

1.10.3.1. Nurse

Someone registered with the Nursing and Midwifery Council of Nigeria (N&MCN) and licensed to practice nursing.

1.10.4. Organization Characteristics

These are factors found in an institution where the nurse works that may affect competency in averting failure-to-rescue. These characteristics may include the nurse-to-patient ratio, culture of the practice environment, remuneration, career development, autonomy, relationship and communication pattern, hospital resources.

2. Methodology

2.1. Introduction

This chapter covers the research methodology used by the researcher. The research design, setting where the research was conducted, and the population as well as the sample were delineated. Furthermore, the search instrument utilized in the collection of required data, including methods applied to uphold validity and reliability of the instrument was also delineated.

2.2. Research Design

The researcher used a correlation design for this study. A correlational study helps to describe the relationships or associations that exist naturally between and among the variables of interest. This research design was chosen as it will help to determine whether an increase or decrease in one variable corresponds to an increase or decrease in the other variable of interest.

2.3. Research Setting

The study was conducted in the only-owned state government tertiary healthcare centre in sagamu. Sagamu is a town located 50 miles north of Lagos, South West, Nigeria. The OOUTH is a tertiary hospital with two hundred and fifty (250) beds and serves as a major referral centre for other healthcare facilities in all Remo Local Government Areas of Ogun state. The hospital provides acute care services amongst other healthcare services to approximate population of about 3 million, and Specialties offered include the following: accident & emergency; anaesthesia & intensive care; surgery (paediatric & general); orthopedic & trauma; medicine; paediatrics; obstetrics & gynecology amongst others (OOUTH, 2010).

2.4. Population

The total population is about 230 nurses. The target population for this study was 204 registered nurses providing sudden, urgent and emergency direct care to patients in the following acute care settings of the study hospital:

- In-patient: Medical Wards, Surgical Wards, Obstetrics & Gynaecology (O & G) Ward, Paediatric Wards
- Critical Care Areas: Accident & Emergency (A & E) Unit, Intensive Care Unit
- Procedural Areas: Operating Room (OR), Dialysis

2.4.1. Inclusion Criteria

Staff nurses working only in the identified acute care settings running the three shifts – morning, afternoon and night, and consented to participate was included into this study.

2.4.2. Exclusion Criteria

Staff nurses working in acute care settings on maternity leave, and annual leave, night off, study leave was excluded from this study as they were not available during this period. Staff nurses working in non-acute care settings within the hospital, such as general outpatient department and their clinics, and nursing administration were also excluded from this study as they do not provide sudden, urgent and emergency care to patients.

2.5. Sample Size and Sampling Technique

2.5.1. Sample Frame/Size

Total enumeration method was used to determine the sample frame or size for this research, as the nurses in this study were of small size and share similar characteristics of interest to the researcher. The total number of 204 nurses were utilized as the sample size for this study, as these numbers represent the total number of all nurses working only in the identified acute care settings and were running three shifts – morning, afternoon, and night. The total enumeration size of 204 nurses used in this study by the researcher will help to provide a desirable degree of precision.

Units / Wards		Number of Nurses
A.	In-patient	
1.	Male medical ward	12
2.	Female medical ward	13
3.	Pediatric ward	37
4.	Male surgical special	10
5.	Male surgical general	10
6.	Female surgical wards	11
7.	Pediatric surgical ward	7
8.	Obst & Gyne. Ward	38
B.	Critical Care Units	
1.	Accident & Emergency	19
2.	Intensive Care Unit	7
C.	Procedural Departments	
1.	Operating Room	34
2.	Dialysis Unit	6
Total		204

Table 1: Table Showing Units/Wards and Number of Respondents/Nurses

2.5.2. Sampling Technique

Purposive sampling technique was utilized for this research. The study included all registered nurses (total population sample) who were full time staff providing sudden, urgent and emergency direct care to patients in the

identified acute care settings and running the three shifts - on morning, afternoon and night shifts irrespective of their educational preparation.

2.6. Instrumentation

A researcher structured (Section A, B and C) and adapted (Section D) 38-item questionnaire was utilized as instrument for data collection. The instrument has four(4) sections:

- Section A: Demographic Data of the Respondents
- Section B: Respondents Knowledge on Failure-to-Rescue
- Section C: Opinion of Nurses' Competence in Averting Failure-to-Rescue
- Section D: Nurses' Organization factor (Nurses work environment)

2.6.1. Section A

Contains the respondent's demographic data as well as questions related to the independent variables – nurses' education level, years of nursing practice, area of nursing practice, number of certificated specialty areas, certificated specialty areas.

2.6.2. Section B

Entails questions to test the nurses' knowledge on failure-to-rescue derived from the various literatures reviewed during the course of this study. This section has a total number of six (6) questions/items which include knowledge on definition, contributing factors and preventive measures of failure-to-rescue. The researcher made use of dichotomous response scale, that is, "true" and "false". Each correct response was scored as 1 and wrong as 0, thus the maximum attainable score was "6" and the minimum score was "0". The mean was used to determine the level of knowledge of the respondents on a further dichotomized scale as follows:

Low – 0 to 2; Moderate – 3 to 4; High – 5 to 6.

2.6.3. Section C

Contains 12 questions on nurses' opinions regarding their competence in promptly deciphering signs and symptoms suggestive of patient's deterioration and responding appropriately averting failure-to-rescue in acute care settings. Seven (7) questions were formulated under the category of managing situations and five (5) questions under the therapeutic interventions. However, respondents were expected to assign a score to each statement made on a scale of 1 - 4, with 1 as the lowest score and 4 the highest score. The maximum score attainable was "48" and the minimum was "12". The nurses' responses were further dichotomized and assigned a numerical score (mean) depicting their levels of competence in averting failure-to-rescue, as follows: Incompetent – 1 - 12; Competent – 13 - 24; Moderately Competent – 25 to 36; Highly Competent – 37 - 48.

2.6.4. Section D

Encompasses 12 questions on organizational characteristics associated with nurses' competency in averting failure-to-rescue. These questions were adapted from the practice environment scale of the nursing work index (PES-NWI) which consists of 31 items in five subscales (Lake, 2002)⁵⁰: Five (5) questions were adapted from Nurses' Participation in Hospital Affairs (9 items); two (2) questions were adapted from Nursing Foundations for Quality of Care (10 items); two (2) questions were adapted from Nurse Manager Ability, Leadership and Support of Nurses (5 items); two (2) questions were adapted from Staffing and Resource Adequacy (4 items); and one (1) question was adapted from Collegial Nurse-Physician Relations (3 items). However, the respondents were expected to assign a score to each statement made on a Likert scale of 4 points (strongly agree, agree, disagree, and strongly disagree), with 1 as the lowest and 4 the highest score. The maximum score attainable was "48" and the minimum was "12". The practice environment scale of the nursing work index (PES-NWI) has established psychometric properties via homogeneity (internal consistency and intraclass correlation) and constructs validity (factor analysis). The five factors explained 48% of variance, and the coefficients of internal consistency of the subscales ranged between 0.71 and 0.84, with a Cronbach's alpha (α) (total) between 0.82 and 0.94.

2.7. Reliability and Validity of Instrument

2.7.1. Validity

The researcher submitted the questionnaire to the supervisor for modification where necessary in order to ensure face validity, and same was also given to three (3) experts' nurses in Babcock University Teaching Hospital, Ilisan Remo, Ogun State, to make necessary inputs.

2.7.2. Reliability

Reliability of the instrument was ensured by the researcher via performing a pre-test at Babcock University Teaching Hospital, Ilisan Remo. Twenty copies of the questionnaire were administered to twenty (20) staff nurses working in acute care settings. The filled questionnaire was retrieved and analyzed. The internal consistency reliability using Cronbach's Alpha (α) (total) yielded 0.938.

2.8. Method of Data Collection

An approval letter from Babcock University Health Research and Ethics Committee (BUHREC) and a formal letter of introduction from the school were presented to the Olabisi Onabanjo University Teaching Hospital Research and Ethics Committee for clearance. The clearance letter was presented to the head of nursing services by the researcher. The head of nursing services introduced the researcher to the head of continuing education unit, who in turn introduces the researcher to the various head of units of the study population.

The researcher also presented the study to the heads of units and nursing staffs during the units or wards meeting. The study survey was made available by the researcher through the office of the continuing education unit to the head's units for their staff nurses. Nurses who wished to participate accessed the study survey at their convenience irrespective of their duty. This process lasted for four (4) weeks in the month of March, 2018, after which the completed survey was retrieved for analysis. One hundred and seventy-three (173) of the 204 eligible registered nurses participated in this study, thus representing about 85% response rate (Table 2).

Sample Size	Total Encounters Respondents	Percentage (%) Response Rate
204	173	85%

Table 2: Nurses' Response Rate

2.9. Method of Data Analysis

Information retrieved at the end of study was coded and statistical analysis was performed via statistical package for social science (SPSS) version 21. The descriptive statistics include the use of frequency counts, percentages, mean, median and standard deviation and tables. Spearman's Rho correlation was used by the researcher to test the hypotheses based on the assumptions that the variables are measured on an ordinal scale and with p-value set at 0.05.

2.10. Ethical Considerations

The research ethical clearance was obtained from Babcock University Health Research Ethics Committee (BUHREC) and an introduction letter was obtained from the Babcock University School of nursing to Olabisi Onabanjo University Teaching Hospital Health Research and Ethics Committee for approval to conduct the study. All nurses who wished to participate in the study were duly informed regarding the study and that they have the right and privileges of withdrawing from the study at any time without any penalty. The confidentiality of the participants as well as the information provided was guaranteed by the researcher.

3. Data Analysis, Results and Discussion of Findings

3.1. Introduction

This section presents the results on Factors Associated with Nurses Competency in Averting Failure to Rescue in Acute Care Settings at Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu. One hundred and seventy-three (173) of the 204 eligible registered nurses participated in this study, thus representing about 85% response rate. This encompasses data analysis, presentation of research results and discussion of findings.

3.1.1. Data Analysis and Result

Variables In This Study	Frequency (N)	Percentage %
Age in groups		
26 – 35	55	31.8
46 – 55	70	40.5
56 – 65	48	27.7
Gender		
Male	03	1.7
Female	170	98.3
Marital Status		
Single	10	5.8
Married	162	93.6
Divorced	01	0.6
Educational Level		
Basic (RN)	173	100
Post Basic	169	98.0
Baccalaureate	60	35.0
Masters & Above	03	1.70
Total years of experience (in years)		
1 – 4	2	1.20

Variables In This Study	Frequency (N)	Percentage %
5 – 8	22	12.7
9 – 12	40	23.1
13 – 16	50	28.9
17 – 20	46	26.6
21 – above	13	7.5
Variables In This Study	Frequency (N)	Percentage %
Area of Practice		
In patient	126	73.0
Critical care areas	17	10.0
Procedure	30	17.0
Certificated specialty areas		
Registered nurse	173	100.0
Midwifery	157	90.8
Public health	13	7.5
Psychiatry	05	2.9
Paediatrics	09	5.2
Accident & Emergency	05	2.9
Peri-Operative	26	15.0
Renal Analysis	04	2.31
ENT	03	1.70
Training & Certificate		
BLS	71	41.0
ACLS	05	2.9
LSS	22	12.7

Table 3: Demographic Characteristics of Respondents

3.1.2. Description of Respondents Demographic Characteristics

From Table (3.1), majority of the respondents are predominantly female nurses (98.3%) compared to male 1.7%, most of the respondents were married (93.7%) and quite a few were single (5.8%), the educational level & qualification of respondents recorded a 100% of basic qualification (RN), almost all respondents 98% had additional post basic qualification aside basic qualification, and a little above thirty fifth percentile (35%) had baccalaureate degree and only 1.7% a master's degree. Respondents who had worked for 9 to 12 years were (23.1%), 13 to 16 years (28.9%) and 17 to 20 years (26.6%). Most the nurses (73%) work at the in-patient unit of the hospital, while a few works at critical care unit (10%) and procedure area (17%). All respondents (100%) sampled have basic qualification of RN, followed by those with perioperative qualification (23.0%). Other additional trainings for capacity building includes; BLS (41%), LSS (12.7%) and ACLS (2.9%).

Statement for Consideration	True (Percentage)	False (Percentage)	Mean	SD
Failure to rescue is a measure of the degree to which a nurse responds to adverse events that develops in a patient under care	167(96.5%)	6(3.7%)	1.00	0.189
Failure to rescue is an outcome measure of hospital quality of care rendered to hospitalized patient	166(95.9%)	7(4.1%)	0.97	0.210
Nurses variety of years of nursing practice experience help in detecting failure-to-rescue	164(94.8%)	9(5.2%)	0.98	0.231
The reduction in nurse to patient ratio is associated with failure-to-rescue	167(96.5%)	6(3.7%)	1.00	0.189
Patients health and safety can be compromised when there is delay in escalating care in response to clinical deterioration	170(98.3%)	3(1.7%)	1.00	0.134
Oxygen saturation <85% is one of the most common abnormal viral signs preceding cardiac arrest	154(89.0%)	19(11.0%)	0.96	0.431
Total			5.91	1.384

Table 4: Respondents' Knowledge about the Concept of Failure-to-Rescue

Knowledge Level	Low Knowledge	Moderate Knowledge	High Knowledge
Respondents Mean Score	0 - 2	3 - 4	5 - 6

Table 5: Respondents Knowledge about Failure-To-Rescue Scale

3.1.3. Description of Respondents' Knowledge about the concept of Failure-to-Rescue

Knowledge of nurses regarding failure-to-rescue was measured using six-item questions, with 0 as the lowest score and 6 as the highest score obtainable. The nurse's responses were further dichotomized and assigned numerical scores as: low – 0 to 2; moderate – 3 to 4; and high – 5 to 6 (shown in Table 5). Generally, the respondents' knowledge regarding failure-to-rescue was found to be high with a mean score of 5.91, which translate to a 98.5%. Specifically, the result revealed that majority (96.5%) of the respondents understands that failure to rescue is a measure of the degree to which a nurse responds to adverse events that develops in a patient under care, and failure-to-rescue is an outcome measure of the hospital quality of care rendered to hospitalized patients (95.9%). While most (94.8%) of the nurses' variety of years of nursing practice experience help in detecting failure to rescue. Other 96.5% of the respondents believed that the reduction of in nurse to patient ratio is associated with failure-to-rescue. Meanwhile 98.3% of the respondents indicated that patients' health and safety can be compromised when there is delay in escalating care in response to clinical deterioration, and 89.0% of the respondents also indicated that oxygen saturation <85% is one of the most common abnormal vital signs preceding cardiac arrest.

Statement for Consideration	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean/SD
Managing Situation					
Promptly detect and document significance changes in patient's mental status	4(2.3%)	2(1.2%)	79(45.7%)	88(50.9%)	2.48±0.58
Recognizes and responding to patient's temperature reading of < 35°C or > 38.9°C as sign of patient's deterioration	6(3.5%)	4(2.3%)	89(51.4%)	74(42.8%)	2.34±0.67
Recognizes and responding to patient's respiration reading of < 8 or > 28 as sign of patient's deterioration until physician's assistance is available	2(1.2%)	1(0.6%)	92(53.2%)	78(45.1%)	2.42±0.36
Utilizes the oxygen oximeter at all times to measure the oxygen saturation (SPO ₂) of my patients and recognizes a reading of < 90% as sign of patient's deterioration	2(1.2%)	-	89(51.4%)	82(47.4%)	2.47±0.52
Always uses both automated and manual BP apparatus as at when needed and recognizes a systolic BP reading of < 90 mm Hg or > 200 mm Hg as sign of patient's deterioration	2(1.2%)	-	81(46.8%)	90(52.0%)	2.51±0.52
Recognizes patient's pulse rate reading of < 40 b/m or > 120 b/m as sign of patient's deterioration	-	-	76(43.9%)	97(56.1%)	2.56±0.49
Assesses intake and output of all my patients and recognizes a urinary output of < 50 mL over 4 hours as a sign of patient's deterioration	7(4.0%)	1(1.0%)	89(51.0%)	76(44.0%)	2.40±0.57
Therapeutic Intervention					
Provides consultation to the healthcare team members	5(2.9%)	-	89(51.4%)	79(45.7%)	2.43±0.54
Utilizing evidence based clinical practice during care delivery in averting failure-to-rescue	-	-	92(53.2%)	81(46.8%)	2.47±0.50
Prioritizing and instituting care according to patients changing clinical condition	-	-	91(52.6%)	82(47.4%)	2.45±0.55
Integrate relevant theories into nursing practice	6(3.5%)	-	92(53.2%)	75(43.4%)	2.40±0.56
Contributes to the development of multidisciplinary course of treatment in averting failure-to-rescue	9(5.2%)	5(2.9%)	76(43.9%)	83(48.0%)	2.37±0.70
					29.34±6.56

Table 6: Opinion of Nurses' Competence in Averting Failure-to-Rescue among Respondents in this Study

Respondents Competence Level	Incompetent	Competent	Moderately Competent	Very Competent
Mean Score	1 - 12	13 - 24	25 - 36	37 – 48

Table 7: Nurses' Competence in Averting Failure-to-Rescue Scale

3.1.4. Opinion of Nurses' Competence in Averting Failure-to-Rescue

Using the data retrieved from the study, an outcome variable summarizing nurses' competence in averting failure-to-rescue was created. The nurses' responses were dichotomized and assigned a numerical mean score as: incompetent – 1 to 12; moderately competent – 13 to 24; moderately competent – 25 to 36; and very competent – 37 to 48 (shown in Table 7). Generally, the respondents' competence in averting failure-to-rescue was found to be moderate with a mean score of 29.34. Specifically, the study results show that 45.7% of the study respondents agreed they would promptly detect and document significant changes in patient's mental status while 50.9% strongly agreed, 51.4% Recognized and responded to patient's temperature reading of < 35°C or > 38.9°C as sign of patient's deterioration against 42.8% who strongly agreed. Majority (98.3%) of the respondents recognizes and responds appropriately to patient's respiration reading of < 8 or > 28 as sign of patient's deterioration until physician's assistance is available. Similarly 98.8% of the respondents would utilized the oxygen oximeter at all times to measure the oxygen saturation (SPO₂) of my patients and recognized a reading of < 90% as sign of patient's deterioration and always uses both automated and manual BP apparatus as at when needed and recognized a systolic BP reading of < 90 mm Hg or > 200 mm Hg as sign of patient's deterioration respectively. More so, 43.9% agreed and 56.1% strongly agreed recognizing patient's pulse rate reading of < 40 b/m or > 120 b/m as sign of patient's deterioration acts and 95% of the respondents assessed intake and output of all their patients and recognized a urinary output of < 50 mL over 4 hours as a sign of patient's deterioration. Over 97.1% of the respondents provided consultation to the healthcare team members, and 100% of the respondents' utilized evidence based clinical practice during care delivery in averting failure-to-rescue and prioritizing as well as instituting care according to patients changing clinical condition. Furthermore, 96.6% of the respondents integrated relevant theories into nursing practice and about 91.9% of the respondents contributed to the development of multidisciplinary course of treatment in averting failure-to-rescue (Table 6).

Statement for Consideration	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean/SD
There is increased nurse to patient ration for improved patient monitoring and timely intervention	92 (53.1%)	66 (38.1%)	12 (7.1%)	3 (1.8%)	0.73±0.67
There is availability of adequate hospital resources such as instrument, equipment, consumable, drugs etc. for usage when needed	90 (52.1%)	76 (44.2%)	2 (0.9%)	5 (2.7%)	0.62±0.64
Adequately reimbursed and remunerated by virtue of your education and expertise	90 (52%)	62 (36%)	9 (5%)	12 (7%)	0.84±0.81
Cordial relationship exists amongst nurses and doctors and others which promotes quality of care	17 (10%)	5 (3%)	97 (56%)	54 (31%)	2.16±0.70
Opportunity to participate in policy making and decisions	133 (76.8%)	10 (5.8%)	21 (12.1%)	9 (5.2%)	1.18±0.60
Hospital administration listens and responds to your concerns	133 (76.9)	5 (2.9%)	32 (18.5%)	3 (1.7%)	1.19±0.49
Hospitals management, nurse managers or head of units back up nursing staff actions and decisions, even if the conflict is with the physician or others	58 (33.5%)	9 (5.2%)	103 (59.5%)	3 (1.7%)	1.58±0.62
Supervisors support nurses and use their mistakes as learning opportunity, not criticism	54 (31.0%)	9 (5.0%)	98 (57.0%)	12 (7.0%)	1.65±0.69
Use nursing process in the delivery of care	6 (3.5%)	2 (1.2%)	34 (19.7%)	131 (75.7%)	2.71±0.57
There is presence of career development/clinical ladder opportunity	45 (20.0%)	3 (1.7%)	57 (32.9%)	68 (39.4%)	2.11±0.85
Practicing to the highest level of your education and training	41 (23.7%)	4 (2.3%)	54 (31.2%)	74 (42.8%)	2.13±0.87
Support for continuing education programs	15 (8.7%)	3 (1.7%)	61 (35.3%)	94 (54.3%)	2.42±0.72

Table 8: Organization Characteristics Affecting Nurses Competence in Averting Failure-To-Rescue

From Table 8, results show that poor resources management affects nurse's competency in averting failure-to-rescue includes; 38.1% of the respondents disagreed that there is increased nurse-to-patient ratio for improved patient monitoring and timely intervention compare to 53.1% who strongly disagreed. 44.2% of the respondents disagreed that there is sufficient and effective nurses' instrument/equipment, consumables, drugs and other needed materials in the hospital compare to 52.1% who strongly disagreed. Also, 36% of the respondents disagreed that salaries are paid based on one's educational qualification and experience compare to 52% who strongly disagreed.

According to the results, 56.6% of the respondents agree that cordial relationship that exists between nurses and doctors promote quality care compare to 9.7% who strongly disagreed. 76.2% of the respondents strongly disagrees that there is opportunity to participate in policy making and decisions as compared to 12.2% of respondents who agrees. In addition, 76.9% of the respondents strongly disagrees that Hospital administration listens and responds to their concerns as compared to 18.5% who agrees.

About 59.5% agrees that Hospitals management, nurse managers or head of units back up nursing staff actions and decisions, even if the conflict is with the physician or others, while 33.5% strongly disagreed.

The result also reveals that 56.6% of the respondents agreed that supports from supervisors and the use of their mistakes create an opportunity to improve on their practice against 31.0% who strongly disagreed. 57% of the respondents agreed that supervisors support them and use their mistakes as learning opportunity, not criticism, but 31% of the respondents strongly disagreed to this. About 95.4% of the total respondents in this study used the nursing process in the delivery of care, while 4.7% did not. 72.3% of the total respondents believed that there is presence of career development/clinical ladder opportunity for them, while 21.7% did not. 74% of the total population of the respondents in this study revealed practicing to the highest level of their education and training without interference from the organisation, as against 26% who are not. In addition, 89.6% of the total respondents revealed the organization support and encourage continuing education programs, while 10.4% refuted this claim.

3.2. Test of Hypotheses

		Educational Level	Nurses competence in averting failure-to-rescue
Educational level	Spearman's Rho Correlation	1	.571
	Sig. (2-tailed)		.038
	N	173	173
Nurses competency in averting failure-to-rescue	Spearman Rho Correlation	.571	1
	Sig. (2-tailed)	.038	
	N	173	173

Table 9: Correlational Analysis Showing Association between Educational Level and Nurses Competence in Averting Failure-To-Rescue

3.2.1. Null Hypothesis (H_0): There is no significant correlation between nurses' educational level/qualification and competence in averting failure-to-rescue

Using a correlational test, the association between nurses' educational level/qualification and competence in averting failure-to-rescue were computed. Spearman's Rho correlation coefficient (p) = 0.571 and p-value of 0.038 was recorded. The computed result showed that there is a positive and moderate association between nurses' Educational level and level of competence in averting failure-to-rescue with a p-value = .038 at 0.05 level of significance. The implication is that as the level of education increases, nurses' competence in averting failure-to-rescue increases as well. Therefore, the null hypothesis which says there is no significant correlation between nurses' educational level/qualification and competence in averting failure-to-rescue is rejected, and then the alternative hypothesis (H_1) is accepted, which states that there is a significant correlation between nurses' educational level/qualification and competence in averting failure-to-rescue.

		Nurses competence in averting failure-to-rescue	Total Years of Nursing Experience
Nurses competency in averting failure-to-rescue	Spearman's Rho Correlation	1	.651
	Sig. (2-tailed)		.015
	N	173	173
Total Years of Nursing Experience	Spearman's Rho Correlation	.651	1
	Sig. (2-tailed)	.015	
	N	173	173

Table 10: Correlational Analysis Showing Association between Nurses' years of practice and their Level of competence in averting failure-to-rescue

3.2.2. Null Hypothesis (H_0): There Is No Significant Correlation between Nurses' Years of Practice and Their Level of Competence In Averting Failure-To-Rescue

Using a correlation statistical test, the association between nurses' years of practice and their competence in averting failure-to-rescue were computed. Spearman's Rho correlation coefficient (p) = 0.651 and p-value of 0.015 was recorded. The computed result showed a moderate and positive association between nurses' years of practice and their level of competence in averting failure-to-rescue with a p-value of 0.015 at 0.05 level of significance. The implication of this is that nurse's competence in averting failure-to-rescue increases with an increase in nurses' years of practice. Therefore, we reject the null hypothesis which says there is no significant correlation between nurses' years of practice and their competence in averting failure to rescue, and then accept the alternative (H_1) which says that, there is a significant correlation between nurses' years of practice and competence in averting failure to rescue.

		Nurses competence in averting failure-to-rescue	Organizational characteristics affecting Nurses competence in averting failure-to-rescue
Nurses competency in averting failure-to-rescue	Spearman's Rho Correlation	1	.861
	Sig. (2-tailed)		.026
	N	173	173
Organizational characteristics affecting Nurses competency in averting failure-to-rescue	Spearman's Rho Correlation	.861	1
	Sig. (2-tailed)	.026	
	N	173	173

Table 11: Correlational Analysis showing Association between Organizations Characteristics and Nurses' Level of Competence in Averting Failure-To-Rescue

3.2.3. Null Hypothesis (H_0): There Is No Significant Relationship between Organization Characteristics and Nurses' Level of Competence in Averting Failure-To-Rescue

Using a correlation statistical test, the relationship between organizational characteristics and nurse's competence in averting failure to rescue were computed. Spearman's Rho correlation coefficient (p) = 0.861 and p-value of 0.026 was recorded. The computed result showed a strong and positive association between organizational characteristics and nurses' level of competence in averting failure-to-rescue with a p-value of 0.026 at 0.05 level of significance. The implication of this result is that as nurses' competence in averting failure-to-rescue variable increases this causes the other variable (organizational characteristics) to also increase as well. Therefore, we reject the null hypothesis which says there is no significant correlation between organizational characteristics and nurses' competence in averting failure-to-rescue, we then accept the alternative (H_1) which says that, there is a significant correlation between organizational characteristics and competence in averting failure-to-rescue.

		Nurses competence in averting failure-to-rescue	Training and certification in capacity building skills
Nurses competency in averting failure to rescue	Spearman's Rho Correlation	1	.318
	Sig. (2-tailed)		.044
	N	173	173
Training and certification in capacity building skills	Spearman's Rho Correlation	.318	1
	Sig. (2-tailed)	.044	
	N	173	173

Table 12: Correlational Analysis Showing Association between Nurses' Training/Certification Capacity Building Skills and their Level of Competence in Averting Failure-to-Rescue

3.2.4. Null Hypothesis (H_0): There Is No Significant Correlation between Nurses' Training/Certification Capacity Building Skills and Their Level of Competence in Averting Failure to Rescue

Using a correlation statistical test, the relationship between nurses' training/certification capacity building skills and their competence in averting failure to rescue were computed. The result showed Spearman's Rho correlation coefficient (p) = 0.318 and p-value of 0.044. The computed result showed a positive but weak association between nurses' training / certification in capacity building skills and level of competence in averting failure-to-rescue as the level of significance (p-value) is lesser than 0.05. The implication of this finding suggests that as the variable "nurses' competence in averting failure-to-rescue" increases this causes the other variable "training and certification in capacity building skills" to also increase. Therefore, we reject the null hypothesis which says there is no significant correlation between nurses' training/certification capacity building skills and their competence in averting failure-to-rescue, we then accept the alternative (H_1) which says that, there is a significant correlation between nurses' training/certification capacity building skills and competence in averting failure-to-rescue.

3.3. Discussion of Findings

3.3.1. Respondents Demographics

A total number of 173 (85%) respondents participated in this study out of a sample size of 204. Majority of the respondents were predominantly female nurses as it is still been viewed as a female profession (Zamanzadeh, Valizadeh, Negarandeh, Monadi, & Azadi. (2013). Almost all the respondents (98%) had additional post basic qualification aside Basic qualification. According to Benner's (1984) theoretical knowledge imparts clinical nursing practice. The higher the nurse's level of educational attainment or preparation, such as BNSC, MSC, PHD and some specific professional trainings, the better the competency or expertise. Increase educational preparation for nurses has been linked to improved patient care outcome in recent times (McHugh, & Lake, 2010). Similarly, literatures have shown that nursing specialty certification has tendency to increase nurses' knowledge, competence and confidence (Haskins, Hnatiuk & Yoder, 2011). Specialty certification allow for the validation of acquired knowledge, professional practice and commitment to nursing profession and the public at large (Watts, 2010).

About 86.1% of the respondents in this study had worked for more than 9 years. According to Lehwaldt, (2016), nurses' years of experience are associated with the acquisition of expertise which is necessary for better patient outcome. In addition, about 73% of the respondent worked in the in-patient wards of the hospital, and this may reflect an increasingly need of inpatient nurses to take cognizance of the ward complexities involved in the variety of patient's clinical status, signs and symptoms of deterioration, as well as nursing actions in those situations.

3.3.2. Research Question One: Do Nurses Have Adequate Knowledge about the Concept of Failure-to-Rescue?

The research findings show that nurses in this study sample have high knowledge regarding failure-to-rescue with a mean score of 5.91. This may be due to the fact that majority of the respondents (98%) have post basic qualifications and skill mix of those nurses with increased educational level (over 35%) and various training and certifications in capacity building skills (56.6%). This is consistent with several studies that have identified nurse's educational preparedness and certification in nursing specialty areas as ways of increasing the nurse's competency (IOM, 2010; Blegen, Goode, Park, Vaughn & Spetz, 2013; Kendall- Gallagher, Aiken, Sloane, and Cimiotti, 2011). Furthermore, McCarthy, Cornally, Mahoney, White and Weathers, (2013) postulates that nurses irrespective of their educational preparation and experience possess some knowledge in identifying patient deterioration, but however often fail to respond appropriately. However, training and certification in nursing specialty areas has shown to help validate the nurse's competency and promotes professionalism in practice (Kendall-Gallagher & Blegen, 2010).

About 95% of the respondents have clear understanding that patient's health and safety can be compromised when there is delay in escalating care in response to clinical deterioration, and that failure-to-rescue is a measure of the degree to which a nurse respond to adverse events that develops in a patient under their care, with a mean score of 1.00 respectively. This is congruent with many studies that support the fact that recognizing patients' physiological abnormalities and responding to deteriorating patient by escalating the care needed accordingly is primarily the nurses duty (Douglas, Osborne, Reid, Batch, Hollingdrake & Gardner & Members of The RBWH Patient Assessment Research Council, 2014; Massey & Meredith, 2010; Osborne, Douglas, Reid, Jones & Gardner, 2015).

From the study results, respondents showed a higher mean (X) score of 1.00 which implies that about 96.5% of the total respondents have better understanding that reduction in the nurse-to-patient ratio can result in increased failure-to-rescue rate in clinical practice. This is in support with previous study by Driscoll, Grant, Carrol, Dalton, Deaton et al., (2017) that higher nurse staffing in clinical practice decreases the risk of in hospital deaths by 14%. Furthermore, respondents also depicted good knowledge of the fact that years of experience may help to detect failure-to-rescue events promptly (Donilon, 2013; Kim & Kim, 2015) with a mean (X) score of 0.98; failure-to-rescue as an outcome measure of hospital quality of care rendered (AHRQ, 2006) with a mean (X) score of 0.97; and that oxygen saturation $\leq 85\%$ is one of the most common abnormal vital signs preceding cardiac arrest (Considine et al., 2016) with a mean (X) score of 0.96 respectively.

3.3.3. Research Question Two: What Is The Nurses' Level of Competence in Averting Failure-To-Rescue?

The Nurses' competency in averting failure-to-rescue was found to be within the "moderate" range in the dichotomous scale (Table 7) and with a mean score of 29.3 (0.43) \pm 4.61, which translates to a 61% prevalence performance for the study group. This implies that 61% of the total respondents' competence in averting failure-to-rescue is said to be moderate but not excellent. This may be attributed to the respondents increasing educational level, years of practice, certification in nursing specialty areas and trainings in capacity building skills as these has been identified by various studies as ways of increasing nurse's competence in practice (IOM, 2010; Blegen, Goode, Park, Vaughn & Spetz, 2013; Kendall- Gallagher, Aiken, Sloane, & Cimiotti, 2011).

- Hypothesis 1: There is no significant correlation between nurses' educational level/qualification and their level of competence in averting failure-to-rescue

A spearman's correlation was run to assess the association between nurse's educational level / qualification and their level of competency in averting failure-to-rescue using a sample of 173 respondents. From the study results (Table 9), there was a positive and moderate correlation between nurses' educational level / qualification and their level of competence in averting failure-to-rescue, which was statistically significant, with Spearman's Rho correlation coefficient (p) = 0.571 and p-value of 0.038. This corroborate the findings of previous studies (Chua et al., 2013; McDonnell, Tod, Bray, Bainbridge, Adsetts & Walters, 2013; Pantazopoulos et al., 2012) that nurses educational level is a crucial factor in assessing and

monitoring of patient's health status, but inconsistent with the assertion by Pantazopoulos et al., 2012, that nurses with baccalaureate degree identified patient deterioration significantly better than nurses with diploma certificates and Nurses with a postgraduate degree tend to decipher patient's deterioration with confidence. Though, according to Kendall-Gallagher et. al, (2011) baccalaureate prepared nurses was significantly related to lower patient's death and Institute of Medicine (IOM, 2010) report strongly advocate for more baccalaureate trained nurses that are better prepared in order to solve the raising healthcare demands.

- Hypothesis 2: There is no significant correlation between nurses' years of experience and their level of competence in averting failure-to-rescue

The hypothesis tested if significant association exists between nurses' years of experience and their competency in averting failure-to-rescue using Spearman's correlation analysis with a sample of 173 respondents. The study result (Table 10) revealed a moderate and positive correlation between nurses' years of experience and their level of competency in averting failure to rescue which is statistically significant with Spearman's Rho correlation coefficient (p) = 0.651 and p-value of 0.015; this support the findings of previous studies (Donilon, 2013; Hickey, Gauvreau, Curley, & Connor, 2013; Kim & Kim, 2015; McHugh, & Lake, 2010). In a study geared towards exploring paediatric critical care nursing and organizational factors that impact in-hospital mortality for cardiac surgery patients across children's hospitals in the United States by Hickey et al, (2013), the likelihood of patient death were increased when the percentage of Registered Nurses with 2 years' of experience or lesser was 20% or greater, and the likelihood of patient death decreases with increase in the percentage of critical care nurses with 11 years' of experience or more.

- Hypothesis 3: There is no significant correlation between organization characteristics and nurses' competency in averting failure-to-rescue

A spearman's correlation was run to assess the association between organization characteristics and nurses' level of competency in averting failure-to-rescue using a sample of 173 respondents. The study result (Table 11) revealed a strong positive correlation between organization characteristics and nurse' level of competency in averting failure-to-rescue, which was statistically significant with Spearman's Rho correlation coefficient (p) = 0.861 and p-value of 0.026, and this is consistent with previous studies (Johnston, Arora, King, Bouras, Almoudaris, Davis & Darzi, 2015; Osborne, Douglas, Reid, Jones & Gardner, 2015). According to Morgan and Somera, (2014) nurses' competency and work dissatisfaction remain correlated to organizational issues such as inadequate staffing, salary compression, cohesive, nurse-physician relations, nurse-manager support, lack of opportunity for professional and career advancement, disregard of nurses' opinions and inputs.

From this study, poor resource management in terms of manpower and equipment/material by the organization was identified as a bane to the development of competency in averting failure-to-rescue and this is in tandem with previous studies (Aiken, Linda, Sloane, Douglas, Bruyneel, Luk., Van den Heede, Koen., Griffiths, Peter., Busse, Reinhard.....et al., 2014). According to Aiken, Cimiotti, Sloane, Smith, Flynn and Neff (2011); and Griffiths, Ball, Murrells, Jones & Rafferty, (2016), a higher nurse-to-patient ratio is linked to nurses' job satisfaction, better assessment and monitoring, increased quality of care and decreased mortality. Recent researches have linked hospitals staffed with licensed registered nurses to reduced incidence of complication and patient mortality to about one-fifth of the entire hospital patient mortality (ANA, 2017; Griffiths, Ball, Murrells, Jones & Rafferty, 2016; Needleman, 2011).

Poor communication pattern and culture within the organization tend to inhibit the acquisition of competency in averting failure-to-rescue (Acquaviva, Haskell, & Johnson, 2013). Failure of the hospital administration to listen and responds to nurses' concern was also elicited in this study as one of the organizational characteristics associated with nurses' competency in averting failure-to-rescue. This may be due to the fact that nurses are perceived or viewed as rivals by the medical doctors, who are occupying key positions in the administration.

Furthermore, poor opportunity to participate in policy making was also revealed as one of the organizational characteristics associated with the development of competency in averting failure-to-rescue. This may be due to the level of education of the nurses in this study group, fear of being victimized or apathy toward participation in politics. According to Akunja, Kaseje, Obago, and Ochieng, (2012) policy makers argue that nurses do not have the required experience and political skills to participate in policy making. Other factors from literatures that hinders nurses' involvement in policy making include: inadequate skills in public relation in order to promote nursing (kunaviktikul, Nantsupawat, Sngounstrithan, Akkadechanuat, chitpakdee et al., 2010); competing priorities (Akunja, Kaseje, Obago, and Ochieng, 2012); limited time (Akunja, Kaseje, Obago, and Ochieng, 2012); inadequate resources (Richter, Mills, Muller, Kahwa, Etowa et al., 2012); insufficient participation in policy formulation committees (kunaviktikul, Nantsupawat, Sngounstrithan, Akkadechanuat, Chitpakdee et al., 2010). The international council of nurses and the world health organization posit that nurses can and should be involved in policy development by virtue of their proximity to the patients, as they can provide valuable policy information and the health policy often have a direct effect on the nurses (kunaviktikul, 2014).

In this study, moderate educational and career advancement support from the organization was observed, and this is congruent with Coventry, Maslin-Prothero, and Smith (2015) study that organizations in which nurses work influence their career advancement and competence via empowerment. Adeniran, Smith-Glasgow, Bhattacharya, et al. (2013) further stated that nurses' healthy work environment act as facilitator and unhealthy work environment act as inhibitor of nurses' educational and career advancement as well as their competency development.

- Hypothesis 4: There is no significant correlation between nurses' training/certification in capacity building skills and their competency in averting failure-to-rescue

A spearman's correlation was run to assess the association between nurses' training/certification in capacity building skills and their level of competency in averting failure-to-rescue using a sample of 173 respondents. From the study, result

(Table 12) shows a weak but positive correlation between the nurses' training / certification in capacity building skills and their level of competency in averting failure-to-rescue, which was statistically significant with Spearman's Rho correlation coefficient (p) = 0.318 and p -value of 0.044. This implies that nurses' training/certification in capacity building skills has the potential of equipping nurses with the necessary lifesaving skills, and this is consistent with the studies of Gary, Holland and Mulcahy (2015); and Sodhi, Singla and Shrivastava, (2011) that BLS and ACLS trained nurses promptly recognizes cardiac arrest and contribute independently to increase the patient survival rate. Nurses in acute care setting often render care to higher acuity patients that may require specific and advanced lifesaving skills such as BLS, ACLS, PALS, LSS (Midwifery). Therefore, competencies acquired via training in these capacity building skills can help nurses, especially fresh (novice) graduate nurses to monitor and assess patient critically and intervene appropriately to a deteriorating patient (Gary, Holland & Mulcahy, 2015).

4. Summary, Conclusion and Recommendations

4.1. Summary

This study assesses and describes the factors related to Nurses' Competence in Averting Failure-to-Rescue in Acute Care settings, Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu. A correlation study design was adopted with one hundred and seventy-three (173) of the 204 eligible registered nurses who participated in this study, thus representing about 85% response rate. The researcher critically considered two research questions and four hypotheses. Data retrieved were analyzed using statistical package for social sciences version 21.0. Generally, the baseline knowledge about the concept of failure-to-rescue amongst respondents is high and this implies that nurses irrespective of their educational preparation/level and experience possess some knowledge regarding failure-to-rescue. The outcome of this study also reveals that the level of nurses' competency in averting failure-to-rescue was found to be moderate. Furthermore, the findings from this study showed that as nurses' educational level/qualification and years of experience increases so also their level of competence in averting failure-to-rescue increases significantly. Furthermore, organization characteristics were found to be significantly associated with nurses' competence in averting failure-to-rescue. The study also revealed a significant relationship between nurses' training/certification in capacity building skills and their competence in averting failure-to-rescue.

4.2. Conclusion

Though nurses in this research were found to possess high knowledge and are found to be moderately competent in averting failure-to-rescue may be due to the fact that majority had additional post-basic qualifications and baccalaureate degrees, and most have over 9 years of practice experience. However, this may amount to nothing as the organization characteristics such as resources management (manpower and equipment/material) and communication pattern (support, involvement in policy and decision, inter-professional relationship) tend to influence their competence in averting failure-to-rescue. Therefore, organization characteristics must also be adjusted or modified in the bid to reduce failure-to-rescue in acute care settings.

4.3. Recommendations

In view of the findings noted earlier, the following are hereby recommended:

- Hospital administration of OOUTH, Sagamu should enhance the nurse independent ability or competence in recognizing subtle cues suggestive of deterioration in a patient in clinical practice via capacity building skills such as BLS, ACLS, PALS, LSS (Midwives).
- Adequate manpower (nurse-to-patient ratio) should be provided to avert failure-to-rescue events.
- Adequate equipment/instrument, drugs, consumables should be procured by the hospital administration for usage during care delivery in order to prevent patient's relations tagging the nurses as incompetent and also to promote patients' safety and outcome.
- Hospital management should listen and respond to nurse's concern
- Nurses should be involved in policy making and decisions
- Hospital management should provide a conducive and non-toxic practice environment devoid of favoritism, professional bullying and encourage professional autonomy in practice.

4.4. Nursing Implications

Acute care settings are predominantly a busy place with the different acuity of patients demanding attention coupled with various hospital restrictions or inadequacies which makes work difficult for nurses. Therefore, this study would help to increase the nurses' awareness about the concept of failure-to-rescue and the various factors that may influence their competency in averting failure-to-rescue in acute care settings. Increased nurses' educational level and specialized education on life saving skills (LSS) will equip nurses not just with the knowledge of failure-to-rescue but with the necessary competence in identifying early warning signs suggestive of patient's deterioration and thus promote prompt and adequate treatment. Intensive and comprehensive emphasis should be placed on failure-to-rescue in acute care setting in the curriculum of nursing schools, as this would provide them with in-depth knowledge about the concept

of failure-to-rescue and equip them with the right competence to avert failure-to-rescue in acute care settings when they start practicing.

The study result revealed a strong positive correlation between organization characteristics and nurses' level of competency in averting failure-to-rescue in acute care settings. Hospital administrators should endeavor to provide adequate manpower and instrument/equipment and a practice environment culture that promotes nurses' autonomy, capacity building and career development, and teamwork / collaboration amongst healthcare professionals which facilitates the development of competency in identifying early warning signs suggestive of patient's deterioration in acute care settings.

4.5. Limitation of the Study

The following are some of the researcher's encountered limitations:

- One of the limitations encountered by the researcher is the small sample size of 173 nurses and thus the result might not be generalizable to the larger populace of nurses working in acute care settings.
- Secondly, the study was limited to one tertiary hospital in Ogun State which may not be generalizable to a larger populace of nurses in Nigeria.
- All information obtained from the respondents via the questionnaire was assumed to be factual.

4.6. Suggestion for Further Studies

According to Benner (1984)¹¹ theoretical knowledge imparts clinical nursing practice. Further research is needed to ascertain how post-graduate degree influence nurse's competence in averting failure-to-rescue in acute care settings. Nursing training institutions needs evidence base studies for the formulation of curriculum for nurses as this helps to provide the rationale for content and method implementation during training.

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