e-ISSN 2795-3248
p-ISSN 2795-3222

GPH-International Journal of
Health Science & Nursing
www.gphjournal.org || editor@gphjournal.org

10.5281/zenodo.7130029 Vol. 05 Issue 09 Sept - 2022 Manuscript ID: #0714

STRATEGIES USED BY NURSES IN PAEDIATRIC CRITICAL NURSING PRACTICE AT THE BAMENDA HEALTH DISTRICT

Ngoran Florence
Department of Nursing and Midwifery, University of Bamenda,Cameroon
Prof. Samje Moses, Dr. Lifoter Kenneth Navti
Department of Biochemistry, University of Bamenda, Cameroon
Yufanyi Philippa Vuyeh
Nkwen Baptist hospital, Bamenda Cameroon
Prof. Mary BiSuh Atanga
Department of Nursing and Midwifery, University of Bamenda,Cameroon

Corresponding author: *Ngoran Florence
Email : ngoranyenla@gmail.com

ABSTRACT

Background: This study titled: "Strategies used by nurses for paediatric critical nursing practice" was conducted in selected hospitals in the Bamenda Health district in the North West Region of Cameroon. There is a great burden on critically ill children in developing countries. (7) Greater than 80% of the global 6.64 million annual deaths in children and adolescents in 2017 occurred Low-and middle-income countries LMICs. (19)
The major objective: To assess strategies used by nurses in paediatric critical and emergency care at the Bamenda health district.
Methods: The study population included nurses of the Bamenda health district. This study made use of a descriptive and analytical cross-sectional method that employed both the survey and the observational methods of data collection. Purposive convenience and sampling techniques were used to select the study sites and the study population respectively. The instrument for data collection was a well-structured questionnaire and an observational/interview guide. Pretesting was done to validate these instruments in Kumbo. Data were analysed using SPSS version 21.0 and presented using frequency tables and charts.
Results: A relative majority 42 (39.25 %) of nurses were within the age range of 18-28, and 79 (73.83%) were females. Findings on the first steps in an emergency revealed that 64.49% of the respondents said they will first assess the airway. The majority 84(78.5%) of the nurses had no training in critical care while 23(21.50%) had in-service training in critical/emergency care and not in paediatric critical /emergency care. Training of paediatric critical and emergency nurses and building separate ICUs and EDs for critically ill children was identified by 78 (72.90%) as a major area that needs improvement. Chi-square statistical analysis on in-service training in critical/emergency care and successes of care registered showed a significant relationship between in-service training and non-invasive airway management(p= 0.002) and invasive airway management (p= 0.026)at 95% CI.
Conclusion: From the findings, it can be deduced that most of the nursing strategies used by nurses for paediatric critical care are not adequate as many nurses do not have formal training in paediatric critical and emergency care.

KEYWORDS: Strategies, Nurses, paediatric critical nursing practice.

Introduction

This study titled: **"**Strategies used by nurses for paediatric critical nursing practice at the Bamenda health district" was conducted in selected hospitals in the Bamenda Health district in the North West Region of Cameroon. There is a great burden of critically ill children in developing countries. (7) Greater than 80% of the global 6.64 million of annual deaths in children and adolescents in 2017 occurred Low-and middle-income countries LMICs. (19) Based on the Malaysian Child Act 2001 or Act 611, a child is defined as a person under the age of 18 years or below 18 years old similar with the definition from UNICEF which regards paediatric to all persons under the age of 18 (18).

The care of critically ill patients has become increasingly complex as severity of illness continues to increase, the amount of clinical information available at the bedside is growing. (1).To ensure that the critically ill children receive the highest quality of care, various strategies are used; one of these is use of protocols and guidelines for management of various conditions. Equally important is the role of well-trained staff working in the PICUs. (2)In an emergency, a child may manifest strange or more withdrawn and less alert behaviour, unconsciousness or no response when you talk with a child, rhythmic jerking, increasing effort or trouble with breathing, skin or lips that look blue, purple, or gray, neck stiffness with fever, increasing or severe persistent pain, a cut that is large, deep, or to the head, chest, or abdomen, bleeding that does not stop after applying pressure for 5 minutes, a burn that is large or involves the hands, feet, groin, chest, or face and any loss of consciousness, ongoing or worsening confusion, headache, or vomiting after a head injury.(15)

Statement of problem

In LMIC settings, the burden of paediatric mortality remains high and a largely undocumented burden of critical illness exists (10). Despite the published guidelines for triage and fundamentals of care described, the recognition and ability to provide rapid interventions still remains largely absent in many LMIC settings. (10).The rapidly growing prevalence and complications from non-communicable diseases [Lozano R, Naghavi M et al.] (6), such as cardiovascular and diabetes, further contribute to the need for appropriate emergency care services in the region. Despite its important and increasing role, however, the development of emergency care delivery system has largely been overlooked and neglected in these low-and middle-income countries (LMIC) in Africa (17).In developing countries like Nigeria, majority of mortalities occur due to infectious diseases which are treatable and have potential for full recovery if appropriate definitive care as well as intensive care is given to those who come critically ill. (2, 3)In Cameroon, maternal, child and adolescent related diseases account for 18.3% of the burden of disease and 14.4% of deaths. (11)

The WHO global workforce data shows that there are huge shortfalls of medical and nursing staff in LMIC settings. One study evaluating the shortage of health workers in Africa calculated that "it would take 36 years for physicians and 29 years for nurses and midwives to reach WHO's recent target of 2.28 professionals per 1000 population for the countries taken as a whole – and some countries would never reach it."10 (16) However, paediatric critical care services are largely unavailable in most developing countries. (4,5)

Hypothesis

There is no significant relationship between training in critical/emergency nursing care and successes of care.

Objectives

The objectives of this study were:

1. To assess the first steps taken by nurses during emergencies.
2. To assess use of guidelines for paeditric nursing care

3. To identify areas of lapses in paediatric critical and emergency care.
4. To identify challenges in paediatric critical nursing care

Materials and Methods

Study design

This study was a mixed study of both quantitative and qualitative methods. The study employed a descriptive, analytical cross sectional design using survey and observation of nurses.

Study area

This study was carried out in the North West Region of Cameroon, precisely in the Bamenda health district using the major health care facilities owned by the state, the Presbyterian, the Baptist and the Catholics. Bamenda is the capital of the North West Region of Cameroon.

Study population

The participants were nurses of the Bamenda health district, working in the paediatric intensive care units, paediatric wards and the emergency units of the respective hospitals.

Sample size and sampling technique

Purposive and convenience sampling techniques were used to get a sample size of 107 nurses. Health areas and hospitals were purposively selected based on the availability of critical/emergency care services. This was in order to have a representation of all the carder of healthcare services; State owned and faith based hospitals. All the paediatric ICUs, general paediatric wards and the emergency departments/casualties of the selected hospitals were studied due to the small population size. Convenience sampling techniques was used to select the 107 nurses who took part in the study. All the nurses who were available during the period of data collection were studied.

Validation of instrument

Pretesting of the questionnaire was conducted in Kumboin both state-owned and faith-based hospitals specifically at the Banso Baptist hospital and the District hospital (PMI) Kumbo. The feedback from the pre-test was used to determine the level of modification of the final questionnaire after which corrections were made; some questions were modified, some deleted and some added before the commencement of the study.

Data collection procedure

Well-structured questionnaires were self-administered to collect data from the participants. Time was allowed for them to fill and return these questionnaires to the principal investigator.

Data analysis

Data was keyed in using the statistical software SPSS version 21.0 (IBM Inc., 2012).Consistency, data range and validation checks were also be performed in SPSS version 21.0 to identify invalid codes. Data was made essentially of categorical and numerical variables and was analysed using frequencies and proportions to aggregate responses within conceptual components. Chi-Square test was used to measure the association or relationships between the study variables/indicators. All statistics were presented at the 95% Confidence Level (CL), Alpha =0.05.

Results

Demographic Characteristics of Nurses

From the data obtained, relative majority 42 (39.25 %) of the nurses were within the age range of 18-28, 39(36.45%) were between 29-38years, 17 (15.89%) were of the ages 39-48years while 9(8.41%) were between 49-58 age range. Majority of the nurses 79 (73.83%) were females and 59 (55.14%) had tertiary education. There was no nurse with a formal training on critical care though 23(21.50%) had in-service training in critical/emergency. In terms of longevity, 81 (75.70%) had worked for <5years. Majority of the nurses 49 (45.8%) were from the Baptist health facilities, 28 (26.2%) from Catholic,24 (22.4%) from the Government and 6 (5.6%) from the Presbyterian hospital.

Chi-square analysis on in-service training in critical/emergency care and successes of care registered was done results showed that there was a significant relationship between in-service training and non-invasive airway management; p- value 0.002, and invasive airway management (intubation) p= 0.026.

Strategies used by nurses for paediatric critical and emergency care

Table 1: First steps taken during an emergency

Steps	Freq.	Percent
Assess/manage the airway	69	64.49
Assess the circulation	2	1.87
Monitor the vital signs	25	23.36
All	11	10.28
Total	**107**	**100.00**

The table above reveals that 64.49% of the respondents will first assess the airway, 25(23.36%) said they will first monitor the vital. signs.

Table: 2: Guides used for paediatric critical/emergency nursing care

Guide used	Freq.	Percent
Guidelines	30	28.04
Protocols	30	28.04
Physicians treatment orders	50	46.73
Your initiative and knowledge at time	46	42.99
Read books on critical and emergency care	15	14.020

According to the table above, 30(28.04%) said they use guidelines and protocols, while 50 (46.73%) said they use only physician orders as guide to care.

Table 3: Strategies in which successes were recorded

Strategies	Freq.	Percent
In airway management	62	57.94
Control of bleeding	57	53.27
Control of abnormal vital signs	70	65.42
Prevention of complications	40	37.38

From the above table, more than half of the participants said they recorded successes in airway management and in control of bleeding and 65.42% in control of abnormal vital signs.

Statistics showed no significant relationship between the socio-demographic variable (longevity) and successful airway management, P value=0.052. Majority(38) of those nurses with less than 5 years of service were not

often successful in airway management, whereas, those with more than 10years of working experience who did not succeed were few(2).

Areas of lapses

Areas of lapses according to 64 (59.81) were lack of well-equipped emergency units and paediatric ICUswhile 36 (33.64% said well-equipped paediatric wards were lacking.

Table 3: Areas of improvements for paediatric/emergency care

Variables	Freq.	Percent
Training of paediatric critical and emergency nurses	78	72.90
Building of separate ICU and ED for care	60	56.07
Adequate supply of resuscitation equipment	62	57.94
Procurement of emergency drugs	21	19.63
Effective transportation systems	24	22.43

From the table above, areas of improvements for paediatric critical/emergency care identified were training of paediatric critical and emergency nurses and building of separate ICU and ED for care by 78 (72.90%) and 60 (56.07%) of the respondents respectively and adequate supply of resuscitation equipment according to 62 (57.94%) of the respondents.

Table 4: Challenges experienced in paediatric critical care

Challenges	Freq.	Percent
Lack of trained critical and emergency staff	54	50.47
Shortage of ICU and ED staff	57	53.27
Inadequate equipment supplies	68	63.55
Inadequate skills for management of critically ill children	41	38.68
Inadequate supervision and support from administration	15	14.02
Too much work load	47	43.93
Constant presence of relatives making work difficult	25	23.36
Delay in getting emergency assistance	28	26.17

Table above shows that 68 (63.55%) faced challenges of inadequate supply of equipment. More than 50% said lack of trained critical and emergency nurse/staff and shortage of ICU and ED staff was two areas that were challenging. According to 47 (43.93%), too much work load was a challenge.

Table 5: Specific aspects of care nurses experienced challenges in

Variable	Freq.	Percent
Handling unconscious patients	34	31.78
Intubation and ventilation of patients	50	46.73
Meeting needs of parents such as complete information	31	28.97
Getting intravenous access for critically ill	28	26.17
Intravenous fluid administration	8	7.48
NGT insertion and feeding	11	10.28
Monitoring of arterial blood gases	42	39.25

From Table above, 34 (31.78%) of the participants said handling unconscious patients was challenging to them, 50 (46.73%) said they experienced challenges in intubation an ventilation of critically ill children while 31(28.97%) experienced challenges in meeting needs of parents such as complete and accurate information and lastly 42 (39.25%) had challenges in monitoring of arterial blood gases. There was no significant association between longevity and challenges faced in the intubation of critically ill children, P-value was 0.823. There was also no significant relationship between longevity and arterial blood gas monitoring and interpretation, P-value is 0.449.

More than 50% of the participants identified some negative outcomes such as; patient gets worse i.e. failure to rescue, the patient develops complication and the patient stays longer in the hospital;34 (31.78%) of the respondents said patient sometimes dies finally.

A univariate logistics regression analysis was done to determine the relationship between fluid replacement and failure to recue/respond, odd ratio (OR) =2.4, (p= 0.035). The relationship between arterial blood gas monitoring (predictor) and failure to respond (outcome) was measured and results showed an OR =2.9 and P=0.188.

Discussion

From the results obtained, out of the 107 nurses who took part in the study, 42(39.25 %) a relative majority, were within the age range of 18-28. This indicates a youthful manpower in the nursing profession in the Bamenda health district. Majority of the nurses, 79 (73.83%) were females. This goes to confirm the fact that nursing is viewed by many as a feminine profession.

Only 23(21.50%) had in-service training in critical/emergency care. This is in line with those of (12) who did a study on emergency care in Yaounde in Cameroon and found out that the staff had always received the appropriate basic training, and they were all graduates of government-run or government-recognized schools, however, none of the staff had specific training on management of the injured (e.g., ATLS, TNCC, DTSC). (12)

A greater majority 90 (84.11%) could identify one major criteria for critically ill children as respiratory distress while circulatory and neurological emergencies were identified by less than or a little above half of the nurses. This is similar to the findings of (8) in a study where there were 391 admissions of which 130 were critically ill. They had one or more of the following; respiratory distress 93(28.3%), respiratory failure 35 (19.0%), shock 65(50%), central nervous system/metabolic derangements 64 (49.2%). This shows that majority of nurses knew what critical illness is.

These study findings revealed that 64.49% of the respondents said they will first assess the airway in emergency situations. This is supported by (14) who identified airway assessment as the first step of triage in emergency management.

Less than 30% of nurses said they use protocols and guidelines in care of the critically ill children. This finding is supported by the findings of (12) who said most hospitals in Yaoundé were either not compliant or partly compliant with the WHO/IATSIC guidelines for essential trauma care. (12)

Areas of improvements for paediatric/emergency care according to 78 (72.90%) of the respondents was training of paediric critical and emergency nurses while more than 55 % said the building of separate ICU and ED for care as well as adequate supply of resuscitation equipment were areas of care that needed improvement. Shortage of nursing staff-lack of trained staff and resources was highlighted by the WHO estimates with the density of physicians and nurses as 0.8 and 4.4 per 10 000 population, respectively. (13) Medical and nursing students graduate with little specialty training in emergency care due to lack of comprehensive curriculum in emergency medicine, which leaves emergency care providers difficult to evaluate and manage a broad spectrum of emergency conditions. (9)

Chi-square analysis on in-service training in critical/emergency care and successes of care registered showed a significant relationship between in-service training and non-invasive airway management with a p=0.002, and invasive airway management (intubation), p=0.026. This goes to support the fact that training in specialized care in this case, the care of critically ill children is very necessary if care outcomes must be improved.

Conclusion

From the findings of this study, it can be deduced that most of the nursing strategies used by nurses for paediatric critical care are not adequate as many nurses do not have formal training in paediatric critical and emergency care. Statistics also indicates the importance of training as there is a significant relationship between in-service training and successes in selected care strategies.

Recommendations

From the findings of this study, it is therefore recommended that:

- Nurses should ensure regular and continuous monitoring of the critically ill children through the care process
- Nurses should encourage and ensure team work amongst themselves to quickly identify gaps and lapses in care given.
- Nurses should advocate for improvements in procurement of equipment and trainings in critical care including triage.
- Nurses should encourage the development of local guidelines and protocols that can be quickly used as a decision tool in case of emergencies and during discharge.

References

1. Turner EL, Nielsen KR, Jamal S, von-Saint Andre-von Arnim A, Musa NL. A review of pediatric critical care in resource-limited settings: a look at past, present and future directions. Frontiers in Pediatrics. 2016;4) 012;39(2):71-4.)

2. Rakesh Lodha&Sushil Kumar Kabra Protocol Based Treatment in Pediatric Intensive Care Units. Indian J Pediatr (2010) 77:1277 1278 –DOI 10.1007/s12098-010-0269-9

3. Saini N, Sharma V, Arora S et al. Roy's Adaptation Model: Effect of Care on Pediatric Patients. Int J NursMidwif Res 2017; 4(1): 52-60.© ADR Journals 2017.

4. Almeida Valera, Ingrid Mayara; Soares de Souza, et al., Online Brazilian Journal of Nursing E-ISSN: 1676-4285 objn@enf.uff.brUniversidade Federal FluminenseBrasil.Available in: http://www.redalyc.org/articulo.oa?id=36145

5. WHO Library Cataloguing-in-Publication Data Guideline: updates on paediatric emergency triage, assessment and treatment: care of critically-ill children. I.World Health Organization.ISBN 978 92 4 151021 9 (NLM classification: WA 320)

6. Ro YS, Shin SD, Jeong J, et al. Evaluation of demands, usage and unmet needs for emergency care in Yaoundé, Cameroon: acrosssectional study. BMJ Open 2017;7:e014573. doi:10.1136/bmjopen-2016- 014573

7. Akindolire AE Tongo OO Paediatric critical care needs assessment in a tertiary facility in a developing country Department of Paediatrics, University College Hospital, Ibadan. Niger J Paediatr 2018; 45 (1): 10 – 14

8. Bechard LJ, Duggan C, Touger-Decker R, et al. Nutritional status based on body mass index is associated with morbidity and mortality in mechanically ventilated critically ill children in the PICU. Critical Care Med. 2016;44:1530-1537.

9. The Global ICU: Challenges in Critical Care in Africa: Perspectives and Solutions. ICU Volume 12 - Issue 4 - Winter 2012/2013 – Cover Story:

10. Tina M. Slusher, Andrew W. Kiragu, and Scott A. Hagen. Pediatric Critical Care in Resource-Limited Settings—Overview and Lessons Learned.

11. Ministry of the Public Health.Health Analytical Profile 2016 Cameroon. Website: http:/www.afro.who.int/fr/cameroun/

12. Alain Chichom-Mefire , Nicole Therese M. Martin Ekeke M, MarcelinNgowe N. (2014) Compliance of District Hospitals in the Center Region of Cameroon with WHO/IATSIC Guidelines for the Care of the Injured: A Cross-Sectional Analysis.SocieteInternationale de Chirurgie 2014 (World J Surg) DOI 10.1007/s00268-014-2609-9

13. Susan Fuchs, Mark Terry, Kathleen Adelgais et al. Definitions and Assessment Approaches for Emergency Medical Services for Children.

14. Triage and emergency (WHO pocket book of Hospital care for children; guidelines for the management of common childhood illnesses second edition. 2013 edition.

15 20. Academy of Pediatrics. When Your Child Needs Emergency Medical Services (Copyright © 2006 American Academy of Pediatrics, Updated 12/2015) Last Updated 9/24/2019

16.21. Paediatric Emergency Medicine Special Interest Group: Standards of Care for Children in Emergency Department. Version 3.0. International Federation of Emergency Medicine. 2019

17. Razzak JA, Kellermann AL. Emergency medical care in developing countries: is it worthwhile? Bull World Health Organ. 2002; 80(11):900–5. PMID: 12481213; PubMed Central PMCID: PMCPMC2567674.

18. Chu-Chuan Lin, Kai-Sheng Hsieh. Pediatric Critical Care—A New Frontier * Department of Pediatrics, Veterans General Hospital, Kaohsiung, Taiwan.

19. Kortz TB, Nielsen KR, Mediratta RP, Reeves H, O'Brien NF, Lee JH, et al., (2022) The Burden of Critical Illness in Hospitalized Children in Low- and Middle-Income Countries: Protocol for a Systematic Review and Meta-Analysis. Front. Pediatr. 10:756643. doi: 10.3389/fped.2022.756643.