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Place of Nursing Theory during Cardiac Arrest Management: Case of HPRC and CPLR in Bujumbura

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Abstract

Background: This study explores the adoption of nursing theories, particularly those of Virginia Henderson and Dorothea Orem, in management of Cardiac Arrest at Prince Louis Rwagasore Clinic (CPLR) and Prince Regent Charles Hospital (HPRC) in Bujumbura. **Purpose**: The main objective is to analyze the distribution of Nursing staff and their use of nursing theories during patient's management in cardiac arrest. **Method**: A descriptive survey was conducted among 234 caregivers including nurses. **Findings**: Our findings revealed that 85.9% of respondents have not received any training in cardiac resuscitation, and 92.74% mainly applied Virginia Henderson's theory in management of cardiac arrest. **Conclusion**: Using a logistic regression model, enabled us to identify factors influencing the adoption of nursing theories; in addition, difficulties encountered in applying nursing theories had a significant impact on their adoption. On the other hand, age, department, or prior knowledge of the theories had no significant influence. The finding of this research underlines the importance of reinforcing cardiac resuscitation training and a systematic integration of nursing theories in order to improve cardiac arrest's management.

Keywords

Nursing, Cardiac Arrest, Resuscitation, Theories, Management

1. Introduction

Cardiac arrest is a major public health phenomenon, affecting millions of people

worldwide every year. It is considered one of leading causes of death in many countries, including developing ones where healthcare systems are often ill-equipped to respond rapidly to this type of emergency. American Health Association (2020) [1], around 356,000 cardiac arrest occur each year outside hospitals in the United States, which survival rates still low despite medical advances. In addition, this alarming figure reflects a similar reality in other parts of the world, including Africa, where emergency care infrastructures are often limited; therefore, cardiac arrest still a critical situation. However, rapid well-executed interventions such as cardiopulmonary resuscitation (CPR) and the use of automated external defibrillators (AEDs) are widely recognized as vital measures for restoring blood flow and preventing brain damage (Nolan *et al.*, 2019) [2].

Furthermore, in many developing countries including Burundi, resources and technologies required for those interventions are not always accessible; therefore, the lack of adequate and regular training for healthcare professionals, particularly nurses, further compromised the quality of cardiac arrest care [3].

Nursing theories offer interesting conceptual frameworks for structuring and improving clinical practice in emergency situations. Virginia Henderson's theory, is one of nursing theories focused on meeting patient's basic needs and which could prove crucial in a context where rapid assessment of vital needs is required (Henderson, 2017) [4] [5]. Similarly, Dorothea Orem's patient autonomy theory, while difficult to apply in emergency situations, encourages a proactive approach to care management (Orem, 2018) [6] [7]. Finally, Jean Watson's theory, with its emphasis on compassion and human support, could improve the quality of interaction between caregivers and patients in crisis situations (Watson, 2019) [8].

2. Study Aims and Assumptions

Study objective was to evaluate the comparative effectiveness of nursing theories of Virginia Henderson, Dorothea Orem and Jean Watson during the management of cardiac arrest and then, to propose recommendations for improving nursing practice [9].

As assumptions, Virginia Henderson's theory is less widely used than those of Dorothea Orem and Jean Watson in management of cardiac arrest; Jean Watson's theory is seen as the most effective for emotional support of intensive care patients and their families in the event of cardiac arrest; and then, an appropriate continuing education based on the integration of three theories would significantly improve the skills and quality of nursing care in the management of cardiac arrest [10] [11].

3. Methodology

3.1. Type and Period of Study

A descriptive and analytical cross-sectional study was conducted to assess the place of nursing theory during management of cardiac arrest in hospital settings over a one-month period, from July 15 to August 14, 2024.

3.2. Study Framework

Our study was carried out at Prince Regent Charles Hospital (HPRC) and Prince Louis Rwagasore Clinic (CPLR), two healthcare facilities (HCFs) located in Bujumbura town hall. The HPRC inaugurated in 1949, is one of country's largest hospital with a capacity of over 600 beds. It is a third referral hospital which employs 269 nurses and offers various specialized services like: internal medicine, surgery, pediatrics, dialysis, etc. the CPLR, built in 1945, is an autonomous hospital supervised by the Public Health Ministry and Fight against AIDS, which had in total 123 beds and sees around 150 patients a day in its various department, including emergency, radiology, surgery and ambulatory consultations.

3.3. Sampling and Data Analysis

In our study, the population consisted of nurses of all levels (high school and university), working at HPRC and CPLR in front of departments of: emergency, internal medicine, surgery, operating theater, pediatrics, intensive care, and obstetrical gynecology. In these two HCFs, we found 216 and 123 nurses at HPRC and CPLR respectively. Sample size was determined using Yamane's formula: $n = N/1 + N(e)^2$, where signification is; n: sample size, N: population size, e: 95% accuracy level (=0.05). The participants during our study were at 234 nurses in those two hospitals. Data collection has been done using Kobo Collect v2024.1.3. for digital questionnaires and survey forms covering demographic data, socio-economic data, and health system settings. Data analysis was done using STATA 17.0 software.

4. Findings

The findings showed that, a total of 234 nurses were registered; among them, HPRC recovered 149 nurses representing 63.68%, and CPLR recovered 85 nurses, or 36.32% of the total. Concerning age distribution based on the age, the results showed: a domination at 48.29% of nurses with 35 - 44 years old, 29.91% with 45 - 54 years old, 21.37% of nurses with 25 - 34 years, and only 0.43% of nurses aged of ≥55 old; in addition, our findings show that 63.50% of interviewed were female gender, and 36.50 were male gender; also many nurses of staff in all institutions have a secondary school level (A2), or 44.44%, it follows Bachelor/license level (A0), or 29.49%; and then all services in which must be affected nurses of each level were assessed during our consultancy, as well as: operating theaters, surgery, internal medicine, pediatric, resuscitation, emergency, Gyneco-obstetric (**Table 1**).

Odds ratio analysis revealed that the main difficulties encountered variable is the only significant one in the model (OR = 2357.58, p = 0.017), indicating that these difficulties exponentially increase the adoption of nursing theories. Low level of satisfaction, practice and other contextual variables has been revealed without statistical significance (p > 0.05).

Table 1. Distribution of sociodemographic characteristics (N = 234).

Variables	Frequency (%)
Gender	
Male	62 (26.50)
Female	172 (63.50)
Age Group (Years)	50 (21.37)
25 - 34	113 (48.29)
35 - 44	70 (29.91)
45 - 54	1 (0.43)
≥55	0
Education level	
A3 (underground train)	55 (23.50)
A2 (Secondary school)	104 (44.44)
Bachelor or License	69 (29.49)
Maters	5 (2.14)
PhD. Or Doctorate	1(0.43)
Department	
Operating theaters	17 (7.26)
Surgery	28 (11.79)
Internal Medicine	36 (15.38)
Pediatric	30 (12.82)
Resuscitation	26 (11.11)
Emergency	40 (17.09)
Gyneco-Obstetric	57 (24.36)

Table 2 shows that HPRC count many nurses as CPLR, or 63.68 (p = 0.075); according to age, our findings show that a big number of interviewed had 35 - 44 years, or 48.29% (p = 0.093), it follows those with 45 - 54 years, or 29.91% (p = 0.042); according to possession level of training in cardiac resuscitation, many interviewed of staff have not received any training in cardiac resuscitation, highlighting a potential need to strengthen skills in this area, or 85.90% (p = 0.092) while 14.10 (p = 0.064) had been trained on the same phenomenon; concerning Knowledge and using of nursing theories during nursing care in cardiac resuscitation, 217 interviewed implemented Virginia Henderson's theory fluently, or 92.73% (p = 0.072), at the second level comes Dorothea Orem nursing theory, or 4.27% (p = 0.057) and then Florence Nightingale's theory, or 3% (p = 0.031).

Table 2. Distribution of nurses related to cardiac arrest management and the place of nursing theory.

Explanatory variables	Number	%	Cum [OR95%]	Z (≤ 0.05)
Socio-demographical v.				
Number				
HPRC	149	63.68	2.63 [0.6667 - 1.7533]	0.075
CPLR	85	36.32	3.36 [0.3632 - 0.6368]	0.057
Age				
25 - 34 years	50	21.37	1.21 [0.2137 - 0.7863]	0.027
35 - 44 years	113	48.29	2.98 [0.4829 - 1.5171]	0.093
45 - 54 years	70	29.91	1.99 [0.2991 - 0.7009]	0.042
≥55 years	1	0.43	0.30 [0.0043 - 0.9957]	0.004
Possession level of training in cardiac resuscitation				
Yes	33	14.1	1.41 [0.4110 - 1.8590]	0.064
None	201	85.9	5.89 [2.8590 - 6.0922	0.092
Knowledge and using of nursing theories during nursing care				
Dorothea Orem	10	4.27	1.16 [0.3880 - 1.6111]	0.057
Virginia Henderson	217	92.73	2.47 [1.0726 - 2.7739]	0.072
Florence Nightingale	7	3	0.13 [0.0303 - 0.9700]	0.031
Binner	0	0	0	0

5. Discussions

Nursing theories such as those of Benner and Henderson, are essential frameworks for structuring and guiding clinical practice in the management of cardiac arrest. Those theories enable systematic approaches to assessing, intervening and managing patients on an ongoing basis, helping to improve clinical outcomes and reduce mortality [12] [13]. Benner's theory of competency development argues that clinical experience enables nurses to guess through five stages of competence as well as; novice, advanced beginner, competent, proficient and expert. A study by Wang *et al.* (2021) [14] showed that nurses are the expert level detect signs of clinical deterioration earlier, anticipate patients' needs and initiate critical interventions more effectively thereby increasing patients' chances of survival. Training programs based on nursing theories, such as those evaluated by Lee *et al.* (2022) [15] [16], have demonstrated a significant improvement in cardiopulmonary resuscitation (CPR) skills, particularly in rapid decision-making, team coordination, and application of resuscitation protocols [17].

Henderson's patient-centered theory defines the nurse's role as that of helping the patient perform activities essential to the health that can't be achieved alone. In the context of cardiac arrest, that theory emphasizes the importance of imme-

diate supportive care and continuous monitoring. A study of Phelan and McCarthy (2018) [18] [19] demonstrated that its application in intensive care units (ICU) improves not only physiological care, but also emotional and psychological support for families. This contributes to a more healing-friendly environment. Martinez and Rivera (2021) [20] [21] also found that this approach reduces post-cardiac arrest complications and the length of ICU hospitalizations [22].

In community settings, the integration of these theories into training programs has also shown convincing results. According to Jones and Thomas (2019) [23] [24], training based on Benner's theory enables participants to rapidly develop practical CPR skills, reducing response times and increasing survival rates from out-of-hospital cardiac arrest. Similarly, Dupont and Lefevre (2023) [25] [26] revealed that Henderson approach improves post-cardiac arrest management by helping caregivers address patients' holistic needs [27].

In fact, integrating Benner and Henderson's theories into cardiac arrest optimizes nurses' skills, strengthens clinical decision-making, and ensures high-quality care, whether in hospital or community settings [28] [29]. Their application contributes to standardizing practices, coordinating interventions and providing more patient-centered care, all of which are crucial to responding effectively to health emergencies [30] [31].

6. Study Limitations

This study highlights the importance of nursing theories as practical frameworks in order to improving clinical outcomes and to enhancing healthcare professionals' skills in managing cardiac arrest which has put out in short time of one month; from July 15 to August 14, 2024.

7. Conclusions & Requirements

The integration of nursing theories in the management of cardiac arrest, such as that of Florence Nightingale, Dorothea Orem, Benner and Virginia Henderson improves clinical practice in nursing care and contributes team responsiveness and patients' outcomes. Systematic application of these theories has demonstrated improved emergency preparedness and quality of care.

The requirements are aimed at strengthening training, standardizing practices and improving resource management. It is recommended to introduce continuous training programs in cardiopulmonary resuscitation (CPR), including practical simulations; to implement standardized protocols, to ensure adequate staffing and critical equipment. Promoting inter-professional collaboration and ongoing evaluation of practices are also essential to optimize interventions.

In terms of training, it is recommended that nursing theories be integrated into educational programs, and that practical workshops based on clinical scenarios be organized. For researchers, longitudinal; they have to implement studies on the impact of nursing theories on patients' survival and quality of life, as well as comparisons between different theoretical models, are recommended.

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Conflicts of Interest

There are no conflicts of interest regarding the publication of this paper.

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