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Use of pain assessment tools and associated factors among nurses caring for hospitalized children in District Hospital in Rwanda

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ABSTRACT

INTRODUCTION: The majority of children will experience pain in their childhood. Nurses play a crucial role in caring for children in pain. Pain assessment tools aid nurses in providing effective care for these children. This study aimed to assess the use of pain assessment tools and associated factors among nurses caring for hospitalized children at a selected district hospital in Rwanda.
METHOD: This descriptive cross-sectional study occurred at Kabgayi District Hospital in Southern Province, Rwanda. 153 nurses caring for children below 15 years were sampled. Pretested and validated questionnaires, in addition to patients' files, were used as data collection tools. Descriptive and inferential statistics were used to analyze the data.
RESULTS: At Kabgayi District Hospital, the majority (60.4%) of nurses used pain assessment tools, mostly the verbal pain rating scale. More than eighty percent (83.8%) cited inadequate resources hindering tool utilization. A high workload for nurses made performing appropriate pain assessment procedures difficult. The use of pain assessment tools was associated with the nurses' working shifts (p=0.022). Day-shift nurses implemented tools more than their night-shift counterparts.
CONCLUSION: The findings indicate that there are still barriers to the use of pain assessment tools among nurses caring for hospitalized children at Kabgayi District Hospital. Reducing a high workload for nurses will improve the effective use of pain assessment tools. Training for nurses in the form of continuing professional development (CPD) using other appropriate types of pain assessment tools, such as Face, Legs, Activity, Cry, Consolability (FLACC), and Wong-Baker Faces pain rating scale, should be enhanced.

Keywords: Keywords: Child Pain, Hospitalized children, Nurses, Pain Assessment Tool

INTRODUCTION

Most children will experience pain in their childhood, varying from mild to severe, and acute to chronic pain [1]. Pain is perceived emotionally and arises from brain signals when an individual experiences pain that is often physical in nature [1]. Furthermore, infants cannot communicate

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pain sensations as they do not possess the words to describe the pain they are experiencing [2]. In addition, older children are sometimes unwilling to communicate about the pain as they might be afraid of the aftermath [3]. Several factors are explicated in processing these nociceptive signals and, therefore, can help alter a child's pain or the associated fear [4].

Pain in children is still commonly left untreated or unmanaged by healthcare providers. Thus, children continue to experience unnecessary pain. A quality assessment conducted by the Ministry of Health in Rwanda found that, in emergency medical services, only 55% of the patients who endured pain received some level of care [5]. Pain can also be classified as a behavior due to how children behave in response to the pain's influence [4]. As a result of behaviors in response to pain, children's pain often worsens. Pain management in children is difficult and challenging for nurses, and using tools to manage pain among nurses is often inadequate [6].

Nurses often lack the appropriate pain skills and the tools to manage pain necessary to provide quality patient care. It is inappropriate for children to suffer from poor pain management by the health care team, including nurses. It is also unacceptable for nurses to continuously exhibit inadequate knowledge of pediatric pain as it is part of their professional work [1].

Globally, the use of pain assessment tools among nurses is still inadequate. For example, only 36% of the nurses used pain assessment tools in a study conducted in Brazil [2]. This is equally similar in Africa, where inadequate pain management was caused by poor pain assessment related to insufficient knowledge of pain assessment tools [4].

In Rwanda, faces-related pain scales, such as Face, Legs, Activity, Cry, Consolability (FLACC) and Wrong Baker Faces were the most used pain assessment tools in three [4] hospitals from the Southern province in Rwanda [5]. However, there was no consistency in the usage of pain management tools, as some nurses reported that there was no protocol to follow in performing pain management [5]. In recent years, Rwanda's Ministry of Health has put effort into pain assessment by rolling out several Continuing Professional Development (CPD) sessions on pain assessment to healthcare professionals [1]. This study assessed the usage of pain assessment tools by nurses and identified the factors influencing their effective use with hospitalized children in a selected district hospital in Rwanda.

METHODS

Design and setting: This study employed a quantitative approach, using a descriptive cross-sectional study design. It was conducted in Kabgayi District Hospital in Rwanda's Southern Province of Muhanga district. The Kabgayi district hospital has a 134-bed capacity in total, and the average number of pediatric patients is 300 per month. The study was conducted among nurses caring for children under 15 years of age [7].

Participants and sampling: The participants were nurses caring for hospitalized children under 15 years of age in several wards, including pediatric, surgical, emergency department, neonatology, outpatient department, and theater.

Kabgayi District Hospital has 153 nurses as of now. The sample size of 111 nurses was selected using the Yamane formula [8]. A confidence interval of 95% was used in the calculation of the sample size in the Yamane formula.

Instruments: An existing, standardized, validated, and well-developed questionnaire was adopted from Meng'anyi [9] in her study about nurses' interventions in clinical alarm management. This tool was adopted because it helps to collect information from nurses in their daily activities at the hospital. It was adapted to fit this study by modifying some aspects of the questionnaire, such as questions, titles, and the context of the questions. In addition, the questionnaire was given to nurses to record information.

Furthermore, patients' files were reviewed and evaluated to determine the use of pain assessment tools. Accurate documentation of the pain assessment procedures was also recorded.

The tool's validity was ensured by collecting the data relevant to the research, and the reliability was controlled by monitoring the questionnaire.

Data collection: The self-reported standardized questionnaire was distributed to the nurses. The questionnaire was originally in English and was verified and translated into French. Translation experts also did back translation of the French version to English. The completed questionnaire took approximately 30 minutes to fill out for

each nurse. Before handing the questionnaires to participants, a meeting was held with nurses caring for pediatric patients to explain the study's purpose and respond to any questions they would have. Furthermore, 100 recorded patient files in the medical record department from Kabgayi District Hospital were also evaluated. The data collection activity was performed from June 2021 to August 2021.

Ethical considerations: Ethical approval from the College of Medicine and Health Sciences (CMHS) was obtained through its Institutional review board (UR-CMHS/IRB) with clearance reference number: CMHS/IRB/197/2021. Also, the researchers sought and obtained permission to conduct the study from the management of Kabgayi District Hospital. Furthermore, the aim of the study was clearly explained to nurses before carrying out the study, the principles of anonymity, participants' privacy and confidentiality were observed, and informed consent was obtained from nurse participants. Withdrawal from the study participation was rendered voluntary at any time.

Data analysis: The collected data from the nurses and patient files were entered into SPSS Statistics version 26 in preparation for analysis. Descriptive and inferential statistics were used to analyze the data. Variables such as working shift, unit, and educational level were summarized using descriptive statistics. Furthermore, data were presented in the form of frequency distributions, percentage of the respondents, and mean for numerical variables. Categorical data such as gender, age, and years of experience were generated. In addition, the patient files were also analyzed using descriptive statistics. From the patient files, variables such as frequency of pain assessment usage, availability of the description of the usage of pain assessment tools, and safety of pain assessment tools were analyzed. To determine which factors were associated with the use of pain assessment tools, non-parametric statistic (Chi-square test) was used.

RESULTS

This study aimed to assess the use of pain assessment tools among nurses caring for children admitted at Kabgayi District Hospital. Table 1 shows that most of the respondents were females (77%). Most of the respondents had an Advanced Diploma in Nursing (A1). In addition, many respondents were aged between 25-44 years of age, with a mean age of 35 years and a standard deviation of 8 years (M=35, SD=8).

Table 1. Demographic Characteristics of Participants

Variables	Percentage (%)
Age	
Below 24	9
25 – 34	34.2
35 – 44	33.3
45 – 54	18.9
55 and above	4.5
Gender	
Male	30.6
Female	69.4
Marital status	
Single	23.4
Married	73.9
Widow	1.8
Divorced	0.9
Educational level	
A2 Certificate	9.9
A1 Advanced Diploma	72.1
A0 bachelor's degree	18
Master's	0
Work experience	
< 5 years	25.2
5 – 9 years	28.8
>10 years	45.9
Unit	
Pediatrics	13.5
Emergency	36.9
Neonatology	8.1
Surgical	24.3
Theater	5.4
OPD	11.7
Working shift	
Days only	26.1
Nights only	0
Mixes days and nights	73.9

Table 2: The definition of nursing degrees in Rwanda

Degree	Definition
A0	Bachelor's degree
A1	University degree (3 years) – Advanced Diploma
A2	Secondary school

Table 3: Results from patients' files

Variables	%
Use of pain assessment tool in the patient file	
Yes	67
No	33
Number of tools used according to the patients' files	
One tool	23
Two tools	26
Three tools	18
Types of tools used from the patients' files.	
Verbal pain rating scale	49.5
Face Legs Activity Cry Consolability	19
Use of pain assessment tools per shift	
1-3 tools	25.2
4-6 tools	19.8
7-9 tools	22.5
10 and above	32.4
Use of pain assessment tools considering child's age	
Yes	
56%	
No	
11%	
The goal of the tool is patient oriented.	
Yes	
67%	
No	33
Accurate documentation in the patients' file	
Yes	48
No	19
Not applicable	33

Furthermore, a good proportion of the nurses (45.9%) had more than 10 years of working experience in pediatrics. The working shift was added as a parameter because it helped explain if the working hours contribute to using pain assessment tools at Kabgayi District Hospital. Most of the respondents (73.9%) worked both days and nights. Figure 1 shows that 60.4% of respondents reported using pain assessment tools in their everyday ward work, while only 1.8% never used them. In addition, 37.8% of the respondents said that they sometimes used pain assessment tools in their work at Kabgayi District Hospital.

Table 4: Barriers influencing the effective use of pediatric pain assessment tools

Variables	(%)
High workload for nurses (patients per shift)	
10 or more patients	32.8%
1 – 3 patients	25.2%
4 – 6 patients	19.8%
7- 9 patients	22.5%
Facility infrastructure to support the use of pain assessment tools.	
They are adequate	36.9
They are inadequate	53.2
They do not support at all	9.9
Missing resources to facilitate the use of pain assessment tools.	
Yes	83.8
No	16.2
How would you classify your workplace?	
Negligent	7.2
Disorganized	6.3
Stressful	58.6
Conducive	29.8
Training about the use of pain assessment tools	
Yes	23.4
No	75.7

Figure 2 shows the most common rating scale used

Table 5: Results of associations between demographic variables and the use of pain assessment tools

Demographic attributes	Use of assessment tools		P-value
Use pain assessment tool (N=67)			
Age	Below 24	2.4% (N=1)	0.113
	25-34	31% (N=13)	
	35-44	42.9% (N=18)	
	45-54	16.7% (N=7)	
	55 and above	7.1% (N=3)	
Gender	Male	28.6% (N=12)	0.921
	Female	71.4% (N=30)	
Educational level	A2 Certificate	21.4% (N=9)	0.933
	A1 Advanced Diploma	52.4% (N=22)	
	A0 bachelor's degree	26.2% (N=11)	
	Masters	0% (N=0)	
Work experience	< 5 years	21.4% (N=9)	0.632
	5-9 years	15% (N=15)	
	10-14 years	4.8% (N=2)	
	15-19 years	23.8% (N=10)	
	20 and above	14.3% (N=6)	
Working shift	Days only	14.3% (N=6)	**0.022**
	Nights only	0% (N=0)	
	Mixes days and nights	85.7% (N=36)	

by nurses was the verbal pain rating scale (49.5%). Other popular choices for the respondents were the FLACC tool (19.8%), the Wong-Baker Faces pain rating scale (13.5%), the numeric rating scales (NRS) pain assessment tool (12.6%) and the Neonatal Infant Pain Scale (NIPS) (2.7%).

The most notable information from Table 3 is that 67% of patient files had pain assessment tools attached. This 67% included 23% of the patients' files with one pain assessment tool present, 26% had two pain assessment tools, and 18% had at least three assessment tools present and used. The files showed that the use of pain assessment tools considers the child's age and patient needs, but there is still a need for improvement, 33% of the tools' usage did not consider the child's age.

Among these tools, the verbal pain rating scale was the most (49.5%) used tool in the patient files. Notably, the data also indicated that most (72%) of the nurses did not use pain assessment tools during the night shifts.

Table 4 explains a high workload for the nurses; 32.4% reported that they care for 10 or more patients per shift, indicating a high nurse-to-patient ratio.

The remaining data explains the factors and barriers that influence the use of pain assessment tools. Most of the respondents (75.7%) reported not having enough in-service training on using pain assessment tools.

Only the working shift was statistically significant with the utilization of pain assessment tools among nurses working with children (p=0.022). Nurses who work during the day use pain assessment tools more than those who work during the night.

DISCUSSION

This study demonstrated the utilization of pain assessment tools by the nurses caring for hospitalized children at Kabgayi District Hospital. The usage of pain assessment tools is reportedly

imperative for effective pain management in children hospitalized of all ages in hospitals.
In this study, female nurses were observed to dominate the profession, consistent with reports by the National Institute of Statistics of Rwanda (NISR) indicating how female nurses occupy a large proportion [10]. Most of the nurses possessed the advanced diploma (A1) level of nursing education. In Rwanda, the advanced diploma (A1) is the entry-level into nursing. Surprisingly, the results from this study did not reveal any association between the nurses' level of education and the use of pain assessment tools, indicating that all nurses do not have enough knowledge of pain assessment tools. This also indicates that pain assessment tools could have been taught in nursing schools, but emphasis is not put on how to use them. This is contrary to the study conducted by Kolsoum et al. [4]. Also, the non-significant effect could be explained by the nurses' experience where most of our participating nurses had more than 10 years of experience, as observed by similar studies [6] that reported a mean of work experience of 12 years.

The study revealed that a good proportion of nurses had used pain assessment tools in their everyday work in pediatric wards at Kabgayi Hospital. The verbal pain rating scale was the most commonly used pain assessment tool than other types of pain assessment tools. The highest usage of the verbal pain rating scale is most likely because it is subjective, easy to use by the nurses, and does not require a lot of resources. Besides, pain itself is subjective and can only be expressed by the affected, hence the popular use of a verbal rating scale. There is also a need to use the correct pediatric pain assessment tool for each age group of children and the needs of patients.
The usage of the verbal pain rating scale is supported by the study conducted by Daniel et al. [11], which indicated that this type of tool is the most common in self-report pain.

The patient files showed a good proportion of pain assessment tools usage among the nurses. Furthermore, the patient files showed that pain assessments were done daily when in use, although the documentation post-usage of the pain assessment tools was inadequate. Therefore, this indicated a need for nurses to improve the assessment tool documentation. The consequence of not documenting the usage of pain assessment includes unawareness of the current patient's pain status. As a result, nurses might not perform a follow-up or reassessment on a patient [12].

This study revealed that the nurse workload mainly influenced the effective use of pain assessment tools, making it difficult to perform adequate pain assessment procedures. Nurses also reported a lack of resources, hospital support, and training on assessment tool usage to be among the barriers to the effective use of pain assessment tools because they expect training about using them.

These results are congruent with findings from a previous study conducted by Limungi et al. [13], which revealed that the utilization of the pain rating scale was influenced by staff training on these tools and the missing protocols on the usage of the pain rating scale. In the same vein, the findings from the current study indicated that the lack of training, missing resources, and support on the use of pain assessment tools were among the factors influencing the use of these tools among nurses at Kabgayi District Hospital.
As the variables associations showed that the working shift is a significant factor in the use of pain assessment tools, the majority of the nurses reported that they care for seven or more patients per shift. This substantial number of patients nurses care for per shift might explain the number of non-usages of pain assessment tools and the factors that influence the use of these tools. Furthermore, 32.4% of the nurses reported caring for 10 or more patients per shift; this is a substantial ratio as it shows a high workload experienced by the nurses. These findings are supported by the study by Ogidan et al. [14], who reported that the nursing workload was a barrier to nurses' use of pain assessment tools.

The lack of pain expression from the children adds complexity to nurses' pain assessment and management. The unwillingness of the parents to allow pain assessment tools usage is also among the barriers. This might be explained by Rwanda's culture, which might hinder the usage of certain types of pain assessment tools. This is supported by the study conducted in Wisconsin [15], where the unwillingness of the patients to allow the pain assessment tools usage on the children was reported. The expression of pain is also influenced by Rwanda's culture, with Rwandans tending to

be quiet and patient and not loud enough to fully express their pain. This is a barrier to the use of pain assessment tools in children because nurses struggle to assess the pain without having enough expression from the children.

The results of this study found that the nurses' working shift was associated with the use of pain assessment tools among nurses. Nurses who work during the day reported using pain assessment tools more than those who cover night shifts. This is congruent with the findings reported in a previous study [11] on the use of pain assessment scales, such as verbal pain rating scales, where the results indicated that some nurses covering particular shifts do not follow the pain management protocols. For example, according to the patient files, the availability of the description of the use of pain assessment tools was reported to be 58%, but the nurses did not often follow the protocol, especially during the night shift. This may probably be explained by the fact that there is a higher nurse-to-patient ratio on the night shift, and thus, night shift nurses do not have sufficient time to perform pain assessments. This is because, according to patients' files, night shifts are covered by few nurses compared to day shifts. In general, night shifts were covered by 1-3 nurses (76% of the time) in pediatric service. However, the day shift was covered by more than 4 nurses (63% of the time).

Bivariate analysis revealed that there is a statistical association between the use of pain assessment tools by nurses among hospitalized children at Kabgayi district hospital and the nurses' working shifts. This association may be because nurses who work during the night are few and have a high workload, and as a result, they do not use pain assessment tools often compared to the ones who work during the day [16].

CONCLUSION

The findings indicate that there are still barriers to the use of pain assessment tools among nurses caring for hospitalized children at Kabgayi District Hospital. Reducing a high workload for nurses will improve the effective use of pain assessment tools. Training for nurses in continuing professional development (CPD) using other appropriate types of pain assessment tools such as FLACC and Wong-Baker Faces pain rating scale should be enhanced. Nurses working shifts were associated with the use of pain assessment tools. This showed that nurses who work during the day tend to use these tools compared to the ones who work during the night. In addition, there is a need to use the correct pediatric pain assessment tool for each age group and patient needs.

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