

Assessment of factors affecting incident reporting among nurses working at a tertiary hospital in Rwanda

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ABSTRACT

INTRODUCTION: Optimal reporting of incidents occurring in healthcare is important for improving patients', visitors' and workers' safety. There are unsatisfactory rates of incident reporting worldwide, with some institutional and provider-related barriers. The aim of this study was to assess factors affecting incident reporting among nurses working at the largest teaching hospital in Rwanda.

METHODS: This is a cross-sectional descriptive study conducted among 166 nurses working in main 5 departments of the University Teaching Hospital of Kigali (CHUK) in 2019, using self-administered questionnaire. Data were compiled and analyzed through SPSS 27.0; statistical tests run through GraphPad Prism 9.5.

RESULTS: Most respondents (58.3%) were middle aged, female (83.1%), advanced-diploma holders (72.3%), and with a 3–4-year working experience. Institutional-related barriers to incident reporting were predominated by the complexity of work (64.6%), shortage of staff (55.8%), and inadequacy of incident reporting system (43.3%). Fear of being punished (77.5%) and lack of knowledge on what should be reported (67.2%) were the most frequent professional-associated barriers. There was statistically significant association of lower level of education versus complexity of work ($P=0.0474$, $OR=2.056$, $95\% CI=1.017 - 4.148$), younger age versus lack of knowledge on what to report ($P=0.0390$), lower level of education versus the fear of being punished ($P=0.0030$, $OR=3.417$, $95\% CI=1.566 - 7.493$), lower level of education versus lack of knowledge on what to report ($P<0.0001$, $OR=4.271$, $95\% CI=2.066 - 8.608$), and shorter professional's working experience versus lack of knowledge on what to report ($P=0.016$).

CONCLUSION: Identified barriers should be addressed according to their levels, to optimize incident reporting and thus safety in healthcare facility. User-friendly incident reporting system should be designed, and efficient human resource management ensured. Moreover, principles of incident reporting should be incorporated in the induction, orientation and continuing professional development programs of healthcare staff.

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Received: August 19, 2024

Accepted: September 20, 2024

Published: September 24, 2024

Cite this article as:
Nzayinambaho et al. Assessment
of factors affecting incident
reporting among nurses working
at a tertiary hospital in Rwanda.
Rw. Public Health Bul. 2024,
5 (3): 36-43. [https://dx.doi.
org/10.4314/rphb.v5i3.2](https://dx.doi.org/10.4314/rphb.v5i3.2)

Potential Conflicts of Interest: No potential conflicts of interest disclosed by all authors. **Academic Integrity:** All authors confirm their substantial academic contributions to development of this manuscript as defined by the International Committee of Medical Journal Editors. **Originality:** All authors confirm this manuscript as an original piece of work, and confirm that has not been published elsewhere. **Review:** All authors allow this manuscript to be peer-reviewed by independent reviewers in a double-blind review process. © **Copyright:** The Author(s). This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY-NC-ND), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. **Publisher:** Rwanda Health Communication Centre, KG 302st., Kigali-Rwanda. Print ISSN: 2663 - 4651; Online ISSN: 2663 - 4653. **Website:** <https://rbc.gov.rw/publichealthbulletin/>

INTRODUCTION

Developing a patient safety culture in a healthcare facility is among the priority recommendations by the international health community, and incident reporting has been considered as a cornerstone for improving patient safety [1]. In fact, it has been reported that the existence of non-punitive approach for incident reporting were among the major predictors of positive patient safety culture in health organizations [2]. The World Health Organization (WHO) estimates that a serious adverse event or critical incident occur in up to 40% of patients in primary and outpatient health care, 80% of which are preventable, and that 15% of all health care spending is wasted due to poor quality care [3].

Incident reporting is a mechanism which enables health professionals to disclose unintended injury and near misses caused by a healthcare system or a health professional [1]. An inclusive and systematic approach to incident reporting would help learning from errors and adverse events within the same setup [4]. It is in this context that incident reporting form is used in healthcare facilities to enable the documentation, root-cause analysis, mitigation, and future prevention or recurrence of such incidents.

Despite the significant contribution of incident reporting to patient safety, the magnitude of underreporting remains high in different countries across the globe. For instance, incident underreporting occurs at a rate of >50% in the United States of America (USA), and among >40% of consultants and registrars in the United Kingdom (UK) [4]. Factors to incident reporting are either organization-associated, or healthcare professional-related [5].

Several factors were found to be associated with non-reporting or underreporting of incidents. Participants of a qualitative study in Korea suggested ninety-six barriers to incident reporting in their hospitals [5]. Some of the most frequently reported barriers include poorly designed incident reporting systems, and lack of adequate patient safety leadership [5]. A similar study among Iranian nurses revealed that fear of legal action and job threats, fear of economic losses, and fear of dignity were barriers associated with nurses' perceptions on incident reporting [6].

Healthcare professionals' awareness on incident

reporting system seems to vary across reports. Accordingly, a report from the USA showed that 41% were not familiar with the safety process at their institution, with only 33% knowing how to report an adverse event or a near miss [7]. Also, a survey performed in Denmark showed that barriers to incident reporting included triviality of the case, lack of knowledge on what to report, existing culture on incident reporting, and high workload [8]. Other studies also reported a high likelihood to report incidence by nurses versus doctors [5]. A recent report showed that barriers to report incident among government pharmacists working in Malaysia included non-precision on who to report an incident to (45.5% of respondents) and lack of time to make the report (44.7% of respondents) [9]. Also, it was recently reported that organizational trust and perceived benefit (rather than perceived risk) affect professionals' willingness to report their own incidents [10].

Among the interventions so far implemented to improve incident reporting are training on incident reporting, reducing fear of reporting, reducing reporting burden, and improving feedback system [5]. According to the Ethiopian hospital reform implementation guideline, an incident officer should be assigned to each hospital to receive and investigate all incident reports [5]. A recent report from India highlighted the belief that nurses are key professionals to participate in incident reporting and showed that nurses need training to get confidence to do so [11].

Although quite a several reports are available regarding incident reporting in the Western Countries, very limited information exists in Africa. A previous report, which investigated the reporting on only occupational hazards in two teaching hospitals in Rwanda, indicated a poor knowledge of occupational hazards in nearly 51% of respondents, while only 29% of respondents assumed to have ever reported occupational hazards in their professional carrier [12]. To the best of our knowledge, there is no published report on the trend of incident reporting in Rwandan healthcare facilities. Therefore, this study aimed at assessing incident reporting behaviors and associated factors among nurses working at the largest public teaching hospital in Rwanda, to contribute to the design of appropriate incident reporting mechanism.

METHODS

Study Design

This is a descriptive cross-sectional study carried out on factors affecting incident reporting among nurses at the University Teaching Hospital of Kigali (CHUK) in 2019. The target population as determined by the office of human resource management at CHUK in 2019 was 285 nurses (50 from internal medicine, 91 nurses from surgical ward, 71 from pediatric ward, 30 from intensive care unit, and 43 from accidents and emergency medicine). Nurses were chosen as a target group as they constitute the largest homogeneous professional group at CHUK. The sample size was computed using OpenEpi 3.01 online software (West Hollywood, CA 90069-4109, USA) [13], considering the target population of 285, assuming anticipated frequency of 50%, confidence limits as $\pm 5\%$ and design effect of 1.0 for random sample. Accordingly, the calculated sample size $n=164$ individuals. The stratified sampling technique was used to obtain the sample size in each department.

Data Collection, Management and Analysis

Data were collected using pre-tested self-administered questionnaire. The questionnaire comprised of close-ended questions, and included variables grouped socio-demographic characteristics, organizational factors influencing incident reporting among nurses, and nurses' factors influencing incident reporting among nurses working in CHUK. Potential participants were approached after morning staff meeting for introduction of the study and explanation of the purpose of the study. Those who agreed to participate were taken through the informed consent process. A questionnaire was administered face to face in English; respondents were given one day to return the questionnaire. Data entry was done using Microsoft Excel sheets; thereafter, data were exported to and analyzed using Statistical Product and Service Solutions (SPSS) version 27.0 (IBM Corporation, New York 10504-1722, USA). Statistical test values such as P values, odds ratio (OR) and its 95% confidence interval (IC) were computed on Fisher's exact test and Chi-square test for the trend, as appropriate, using GraphPad Prism software version 9.5 (GraphPad Software, Inc., CA 92037 USA). For all analyses, a P value < 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval for this study was obtained from the CHUK Research Ethics Committee (reference n° EC/CHUK/661/2019) prior to collecting the data. The questionnaire was administered to study participants who voluntarily gave a written consent; the questionnaire exhibits a unique and anonymous identifier number for each participant. Confidentiality was kept throughout the study and results dissemination. This study was conducted in accordance with the Declaration of Helsinki.

RESULTS

Socio-demographic characteristics of the respondents

A total number of 166 nurses working at CHUK consented to participate in this study. All the 166 nurses returned the questionnaires duly filled in, yielding a response rate of 100%. Most respondents (58.3%) were aged 36 – 50 years, were female (83.1%), had an advanced diploma (72.3%), and had a working experience of 3 – 4 years (71.6%), as shown in Table 1.

Table 1: Socio-demographic characteristics of study participants

Characteristics	Frequency (n=166)	%
<i>Age (years)</i>		
21 – 35	62	37.5
36 – 50	97	58.3
51 – 65	7	4.2
>65	0	0.0
<i>Sex</i>		
M	28	16.9
F	138	83.1
<i>Educational level</i>		
Advanced Diploma	120	72.3
Bachelors' Degree	46	27.7
Masters' Degree	0	0.0
<i>Working experience (years)</i>		
1 – 2	35	21.2
3 – 4	119	71.6
5 – 6	11	6.4
>6	1	0.5

Institutional factors affecting incident reporting

In the present study, the identified organization-related barriers to incident reporting at CHUK are the complexity of work (reported by 64.6% of respondents), shortage of staff (55.8%), inadequacy of incident reporting system (43.3%), lack of documented procedures on reporting medical errors (13.2%) and lack of time to fill in the incident reporting form (10.6%), as shown in Table 2.

Table 2: Institutional barriers affecting incident reporting at CHUK

Barriers	Frequency (n=166)	(%)
Complexity of work	107	64.6
Shortage of staff	93	55.8
Inadequacy of incident reporting system	72	43.3
Lack of procedures on reporting medical errors	22	13.2
Lack of time to fill in the incident reporting form	18	10.6

Nurses' factors affecting incident reporting

This study revealed that fear of being punished and lack of knowledge on what should be reported are the most frequent professional-associated barriers to report incidents at CHUK, documented in 77.5% and 67.2% of respondents, respectively (Table 3).

Table 3: Nurses' barriers affecting incident reporting at CHUK

Factor	Frequency (n=166)	%
Fear of being punished	129	77.5
Lack of knowledge on what to report	112	67.2
Fear of being blamed	49	29.7
Difficulty in filling the form	30	17.8
Reporting errors is not anonymous	12	7.5
Reporting errors is not my responsibilities	1	0.4
Reporting errors is not a priority	0	0.0

Comparison of respondents' socio-demographic characteristics versus barriers to incident reporting

Among the institutional barriers to incident

reporting, only the complexity of work was significantly associated with a sociodemographic characteristic (level of education), whereby those with lower qualification tend to claim that the complexity of work hinders them to report incidents ($P=0.0474$, $OR=2.056$, $95\% CI=1.017 - 4.148$), as shown in Table 4. On the other hand, individual professional's barriers to report incidents correlated with individual age, whereby younger age was significantly associated with lack of knowledge on what to report ($P=0.0390$), level of education, whereby lower qualification was significantly correlated with fear of being punished ($P=0.0030$, $OR=3.417$, $95\% CI=1.566 - 7.493$) and with lack of knowledge on what to report ($P<0.0001$, $OR=4.271$, $95\% CI=2.066 - 8.608$). Also, shorter professional's working experience significantly correlated with lack of knowledge on what to report ($P=0.0158$). There was no statistically significant association of respondent's sex with any of the barriers to incident reporting.

DISCUSSION

In this study, we have outlined institutional and individual healthcare nurse's barriers to report incidents at CHUK. All the 166 nurses who consented to fill the questionnaires returned did so, implying a response rate of 100%. According to Baruch [14], a response rate of 100% is considered excellent to draw conclusions.

Most respondents (58.3%) were middle aged (36 – 50 years), which would also imply a relatively longer working experience in healthcare system. Accordingly, it was seen in this study that a higher age and a higher working experience were somehow associated with barriers to report incidences. This may be explained by the time it takes to have long working experienced and advanced qualifications, which make nurses qualify to be employed in a teaching hospital. However, a study conducted on incident reporting behaviors and associated factors among nurses in Northwest Ethiopian university hospital showed that the most represented age group was 20 – 29 years (48.1% of cases) [15], younger than in CHUK. In our study, female nurses comprised the majority (83.1%) of the respondents, which reflects the general high female representation among nurses working at CHUK.

In the present study, most respondents (72.3%) had advanced diploma in nursing, which is the

Table 4: Comparison of respondents' socio-demographic characteristics versus barriers to incident reporting at CHUK

Characteristics	Frequency (n=166)		Complexity of work (n=107)		Institutional factors (n=93)		Inadequacy of incident reporting system (n=72)		Fear of being punished (n=129)		Individual professional's factors (Lack of knowledge on what to report (n=112))					
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No				
<i>Age (years)^a</i>																
21 – 35	62	44	18	0.9424	38	24	0.3676	25	37	0.4188	51	11	0.2718	49	13	0.0390
36 – 50	97	68	29		51	46		43	54		73	24		58	39	
> 50	7	5	2		4	3		4	3		5	2		5	2	
<i>Sex^b</i>																
M	28	18	10	>0.999	16	12	>0.999	12	16	>0.999	20	8	0.4548	19	9	>0.999
F	138	89	49		77	61		60	78		109	29		93	45	
<i>Educational level^b</i>																
Advanced Diploma	120	83	37	0.0474	69	51	>0.999	56	64	0.2206	101	19	0.0030	92	28	<0.0001
Bachelors' Degree	46	24	22		26	20		16	30		28	18		20	26	
<i>Working experience (years)^a</i>																
1 – 2	35	26	9	0.3432	23	12	0.1024	18	17	0.3566	29	6		27	8	0.0158
3 – 4	119	75	44		63	56		49	70		94	25	0.0628	81	38	
≥ 5	12	6	6		7	5		5	7		6	6		4	8	

^aChi-square test for the trend was used to compute the P values

^bFisher's exact test was used to compute the P values and odds ratio with its 95% confidence interval (the latter two statistics are not shown in the table but described in the texts when significant).

basic qualification required for a nurse working in a teaching hospital in Rwanda. This is lower than 53.6% of advanced diploma holders observed in a study on barriers of reporting errors among nurses in a tertiary hospital in Saudi Arabia [16], which might be attributed to different hiring policies. Furthermore, most respondents (71.6%) had a 3–4-year working experience at CHUK. We found that a longer working experience was associated with less incident-reporting barrier such as lack of knowledge on what to report. The trend of the working experience in our study is in line with the study carried out on barriers to reporting medication administration errors among nurses in Saudi Arabia, where most nurses (57.7%) had a working experience of more than 3 years [17].

Our study showed that the most frequently mentioned institutional barriers to incident reporting are the complexity of work (64.6%), shortage of staff (55.8%) and inadequacy of incident reporting system (43.3%). These barriers are somewhat similar to those reported in previous studies done on health professionals' experiences of medication errors in Saudi Arabia which revealed that work overload as results of shortage of staff was among the major barriers to effective incident reporting [18, 19]. Moreover, inadequacy of incident reporting system was reported by respondents in previous studies on factors affecting incident reporting by registered nurses [19, 20]. The difficulty in filling the incident reporting form was also reported by 58.2% of nurses in South Australian hospitals [21], and the relative lower rate of this barrier (17.8%) in our study may reflect the fact that a big proportion of our respondents have never filled in the incident report form.

Concerning individual professional's barriers to incident reporting, most participants reported fear of being punished as barrier to incident reporting while fear of being blamed was reported by almost a third of respondents. Similarly, a study conducted on barriers to reporting medication administration errors among nurses in Saudi Arabia showed that most nurses (61.7%) fear consequences from reporting medication errors [22]. Previous research showed that fear of being punished was a major barrier of reporting incidents not only among nurses, but also others. This might be explained by other studies showing that junior staff were blamed most of the time for incidents [23], leading to a fear of being blamed for reported incidents previously highlighted as a major barrier

by different healthcare providers [24–27].

Most participants (67.2%) reported lack of knowledge on what should be reported as a barrier to effective incident reporting. This finding is similar to a previous report, which indicated that a lack of understanding what constitutes a patient safety incident is a major barrier to incident reporting [7]. In our study, being less experienced, younger and of lower qualification were associated with this barrier. This sparks the necessity of continual professional development program, with inclusion of incident reporting in the training offered from the induction and orientation of the new staff and trainees at the hospital.

This study had some limitations. The convenience sampling was adopted in each stratum (department), and the population representation of nurses working in the study site was limited to the respondents in this study. Also, there is a possibility of recall bias in this study, since the participants self-reported their experience with incident reporting in the past. To mitigate these limitations, future studies should consider expanding the sampling method to include random or stratified random sampling to represent the entire nursing staff at CHUK. A larger, diverse sample will provide a more comprehensive understanding of incident reporting factors and reduce bias. Researchers should also reduce recall bias by using objective measures like actual incident reports and real-time data collection, along with interviews with nurse supervisors. Triangulating data collection methods, including interviews, focus group discussions, and direct observations, can offer a more accurate picture of incident reporting behavior.

CONCLUSION

The current study on factors affecting incident reporting among nurses at CHUK showed that the most predominant institutional related factors were staff shortage and complexity of work. The most reported nurses' factors affecting incident reporting were lack of knowledge on what should be reported and fear of being punished. CHUK in collaboration with partners should develop a user-friendly incident reporting system for healthcare facilities, which should be accessible on mobile devices and computers. CHUK leadership is recommended to enhance regular education and training programs for healthcare staff, emphasizing the importance of reporting for

patient safety. Addressing the fear of punishment by implementing a non-punitive culture, promoting open, blame-free reporting could also help optimize incidence reporting practices. In addition, strengthening human resource management to optimize staffing levels and manage workloads effectively is also recommended. We also recommend CHUK leadership to introduce continuous quality improvement initiatives to address incident reporting barriers, followed by periodic assessments to evaluate their impact on care quality and patient safety standards, as well as regular performance appraisals of the incident reporting process, using key indicators like incident reporting numbers, response times, and actions taken.

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