African Journal of Emergency Medicine 8 (2018) 64–68

Contents lists available at ScienceDirect

African Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/afjem

ORIGINAL ARTICLE

A qualitative study exploring nurses' attitudes, confidence, and perceived barriers to implementing a traumatic brain injury nursing chart in Uganda

Leslie Wynveen[a,*], Miriam Gamble[b], Josephine Nabulime[c], Tonny Luggya[d], Joseph K. Kalanzi[e], Hani Mowafi[b]

[a] Yale University School of Nursing, 400 West Campus Drive, Orange, CT 06477, United States
[b] Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510, United States
[c] Mulago National Referral Hospital, Kampala, Uganda
[d] Makerere University, Department of Anesthesia and Critical Care, Kampala, Uganda
[e] Makerere University College of Health Sciences – Mulago Hospital Complex, Mulago Hill, P.O. Box 7051, Kampala, Uganda

ARTICLE INFO

Keywords:
Traumatic brain injury
Uganda
Nursing
Nursing chart
Barriers
Emergency

ABSTRACT

Introduction: In Africa, traumatic brain injuries frequently result from road traffic injuries and assaults. Despite limited resources and the high costs of life-saving neurosurgical interventions, secondary brain injury prevention has the potential for improving outcomes. However, nurses and other medical personnel infrequently monitor vital signs, blood sugar, and pulse oximetry and only sporadically re-assess neurological status.

Methods: In one-on-one, semi-structured interviews, 27 nurses from Mulago Hospital's emergency centre, a tertiary care trauma hospital in Kampala, Uganda, provided feedback regarding a traumatic brain injury-focused education session and use of a nursing chart for detecting secondary brain injury. The interviews explored the nurses' confidence and perceived barriers to long-term chart implementation and traumatic brain injury care, as well as their ideas for improving this intervention. Interviews were audio recorded, transcribed, and coded using ATLAS.ti: Qualitative Data Analysis and Research Software (Cleverbridge, Inc., Chicago, USA) and Microsoft Word and Excel (Microsoft Office, Redmond, USA) for thematic content analysis.

Results: Key findings identified in the interviews included the nurses' attitudes toward the chart and their feelings of increased confidence in assessing and caring for these patients. The main barriers to continuous implementation included inadequate staffing and resources.

Conclusion: Nurses were receptive to the education session and nursing chart, and felt that it increased their confidence and improved their ability to care for traumatic brain injured patients. However, lack of supplies, overwhelming numbers of patients, and inadequate staffing interfered with consistent monitoring of patients. The nurses offered various suggestions for improving traumatic brain injury care that should be further investigated. More research is needed to assess the applicability of a standardised traumatic brain injury nursing education and chart in a broader context.

African relevance

- The barriers to using a structured chart for monitoring secondary brain injury in Uganda can be applied to other African contexts.
- A nursing perspective to implementing an intervention into patient care should be encouraged.
- This article presents ideas for overcoming barriers to patient care in the Emergency Centre.

Introduction

In Uganda, traumatic brain injury (TBI) contributes to more than 60% of mortality seen in emergency centres (EC) [1,2]. These TBIs are often caused by assaults or road traffic injuries (RTI) involving motorcycle taxis, or boda-bodas, which serve as a common form of transportation in Uganda [3–5]. The World Health Organization's (WHO) 2015 Global Status Report on Road Safety estimates that 27.4 RTIs occur per 100,000 individuals in Uganda [4]. In efforts to reduce TBI, laws stipulating that motorcycle riders and passengers wear helmets

Peer review under responsibility of African Federation for Emergency Medicine.
* Corresponding author.
E-mail address: leslie.wynveen@yale.edu (L. Wynveen).

https://doi.org/10.1016/j.afjem.2018.01.002
Received 12 July 2017; Received in revised form 23 December 2017; Accepted 21 January 2018
Available online 18 March 2018

have been introduced, but have been ineffective due to poor enforcement and compliance [3–5].

Despite a high prevalence of TBI, in 2015 Uganda had only six neurosurgeons serving a population of over 33 million [6]. This shortage of neurosurgeons severely limits patient access to surgical intervention and care. In such settings, emergency centre nurses are prime candidates to take the lead in improving care and reducing secondary brain injury. These nurses provide a substantial portion of direct patient care. They triage patients, monitor vital signs and patient progress, and provide treatment [7].

Without proper care, patients with TBI are at risk of secondary brain injury [8]. Secondary injuries disrupt the brain's ability to auto-regulate the body's vital mechanisms (i.e. blood pressure, temperature, heart rate) [8,9]. Frequent assessment of vital signs allows for early detection and treatment of secondary injury, which may improve outcomes.

This study is a qualitative follow-up study evaluating TBI nursing education (Appendix 1) and a TBI nursing chart (Appendix 2) introduced during a research study in the EC at Mulago National Referral Hospital [10]. The concurrent research study focused on determining the impact of increased monitoring on the mortality of moderate to severe TBI patients. This study seeks to determine the nurses' attitudes, confidence, and perceived barriers in relation to the TBI education and nursing chart implementation.

Methods

The study involved interviews of emergency centre (EC) nurses and was conducted from June 2016 through July 2016 at Mulago Hospital in Kampala, Uganda. This tertiary hospital is comprised of 1500 beds and cares for approximately 140,000 patients a year [3,11,12]. Patients arriving to the hospital with TBI are triaged and admitted to the EC. Their care begins in the EC where clinical officers and nurses perform an initial assessment and begin treatment. Patients are then taken to surgery, admitted to the surgical side of the EC for monitoring, or transferred to a specialised unit (i.e. orthopaedics, neurosurgery).

The Institutional Review Boards from Mulago Hospital and Makerere University College of Health Sciences approved the study. Yale University reviewed the research and issued an Institutional Review Board exemption. Informed, written consent was obtained from all participants. No incentives were provided.

During the study there were 33 nurses working in the EC who rotated between eight-hour day, evening, and night shifts. The number of nurses on each shift varied and ranged from one to four nurses. Participants were selected through convenience sampling. Exclusion criteria included a lack of clinical bedside work, inability to obtain proper consent, refusal to participate in interviews, and a lack of exposure to the TBI education and chart. The initial study sample included 31 nurses, however, four nurses were ultimately excluded. The final sample size included 27 nurses.

The nursing education consisted of a PowerPoint presentation that discussed recognising, treating, and recording secondary brain injury, an organised chart for monitoring vital signs, and a reference card. MG and LW presented these informal education sessions. After the nurses had been provided with opportunities to attend the education session, the researchers verbally invited the nurses to participate in semi-structured interviews. The nurses were informed of their right to refuse participation without consequence and their right to end the interview at any time. The interviews included twelve questions and were conducted in English (Appendix 3). Prior to beginning interviews the questions were vetted for clarity and appropriateness by a colleague outside the research team. Two interview questions requested demographic information regarding years of nursing experience and education. The remaining ten questions focused on TBI in Kampala, the TBI education, and the chart. At the end of the interviews the nurses were given an opportunity to share additional thoughts regarding the education session and nursing chart. Each interview was audio recorded and uploaded to SecureBox (Box, Inc., Redwood City, USA), a password protected file system. The length of the interviews varied depending on the nurses' contributions to the discussion (ten to 40 min).

Throughout the course of the interview process, LW conducted and transcribed the recorded interviews. The authors engaged in planned, informal discussions throughout the interview process to review emerging themes obtained during the interviews. Prior to coding, LW and MG proofread the transcripts and checked for accuracy by re-listening to the audio recordings. Thematic content analysis was selected to help understand the nurses' overall responses and salient themes [13]. An iterative process was used to code and analyse the interviews using a combination of Atlas.ti: Qualitative Data Analysis and Research Software (Cleverbridge, Inc., Chicago, USA) and Microsoft Word and Excel (Microsoft Office, Redmond, USA). LW and MG individually coded the transcripts to ensure inter-coder reliability. The codes were organised and narrowed to conceptualise the nurses' attitudes toward using the chart, their confidence attained through the education session and use of the chart, and their perception of barriers to continued implementation of the chart. Disagreements on interpretation of data were discussed and clarified among the research team.

Results

The 27 nurses included in the sample had varying education levels (Table 1). The participants' years of experience ranged from nursing interns (fifth year of nursing school) to 30 years of clinical practice. Eleven percent of participants were male.

Perception of traumatic brain injury in Kampala

All of the nurses acknowledged the problem of TBI and agreed that it needed to be addressed. Most cited boda-boda, RTI, and assault as the main causes of TBI in Kampala. Lack of helmet use, uneducated and reckless drivers, and poor law enforcement were identified as major factors contributing to these injuries. "There is a lot of reckless driving and, uh, these motorists don't want to take the precautions because if you walk around the streets of Kampala you'll see very, very many of them without helmets" (Nurse 20). Several nurses also recognised the long-term effects of TBI and poor prognosis.

Attitude toward practice change and chart implementation

The nurses were asked to describe their process of recording vital signs prior to implementing the TBI nursing chart. This provided an understanding of the nurses' attitudes toward chart implementation. Practices varied and there was no consensus on how vital signs were recorded or how patients were monitored. Nurse 15 stated, "You [find] that [you are] using a fluid balance chart to put the vitals." Nurse 18 detailed her process of recording vital signs, "I would just write in the file- make a table, mostly behind their file- the patient's file. Just make a table, vitals, BP [blood pressure], temperature, stuff like that. And then you put the different times it's taken… Though sometimes if you be lazy, you just write in the file." Throughout the interviews the nurses

Table 1
Nursing education level and the number of nurses holding each degree at the Mulago National Referral Hospital in Kampala, Uganda.

Educational Level	Number of Nurses with Degree (n)
Bachelor of Science in Nursing	2
Diploma	16
Certificate	4
Intern (obtaining Bachelor of Science in Nursing)	4
Degree Not Stated	1

acknowledged that they had not been monitoring patients frequently and that care was substandard. “So, we weren’t completely monitoring the patient” nurse 27 commented, “We were partially doing it.”

The education session was well received and nurses felt it increased their knowledge of how to properly assess and manage TBI patients. Nurse 2 commented,

> … it was helpful. I liked it. [Be]cause when at least– when you get to examine those patients and do their vitals… you can find that you get to know which treatment to use or an abnormality– immediately you alert the doctor. But when – the patient has no vitals you find, even the doctor end[s] up [with] what?

The nurses felt that the chart improved monitoring and was useful for tracking patient progress and guiding management: “It helps me to understand how my patient is progressing” (Nurse 27). Although not routinely practiced, many of the nurses acknowledged that assessing, recording, and initiating treatment are considered nursing “duties” and an expectation of care. Overall, there seemed to be a lack of motivation to implement routine assessment of vital signs. Nurse 13 lamented, “People are demoralised.” The nurse further explained frustration with the lack of consistent care, “…you’ve done your part but the next shift – people don’t do their part.” Another nurse (Nurse 17) shared: “Some people don’t see the value of taking [patient’s vitals]” and that “Monitoring patients has not been in our culture in this hospital.”

Confidence and utilisation of the nursing chart

The EC nurses felt that the TBI education increased their confidence to assess and care for TBI patients. Nurse 26 described her fear of caring for TBI patients: “First, I used to fear these patients. I used to fear working on them alone. But now, I can do it freely….”

Several nurses discussed how the TBI education and chart enhanced their autonomy. They described various interventions that they could initiate before calling the physician. “[Be]cause if the temperature is high and the patient is not on paracetamol. I can reduce the clothes. I can give something to drink which is cold; something like that” (Nurse 28). Another nurse stated, “At least you’re not going to look at the patient and say ‘Oh! I can’t manage that one.’ No. At least I know I can take vitals” (Nurse 19).

In addition to building confidence, the TBI education and chart served as a guide to proper management of TBI patients.

> When we are managing patients, without the knowledge of this TBI skill management, we used to tend to- to leave out some important points… but due to this here follow-up monitoring criteria, it has helped us to keep identifying the key factors which help in the management of the patient (Nurse 25).

While use of the TBI chart was felt to be beneficial, not all nurses were willing to adopt its use “… the reason why some nurses don’t do it- I don’t know whether they are overwhelmed or they have already not adapted it” (Nurse 25). Some thought the chart was too detailed and time intensive. They discussed their struggle to meet the goals of the chart (i.e. assessing vital signs every two hours), “speaking from really the experience, because we have failed to keep up to two hourly… Not because we don’t want but the circumstances around us” (Nurse 27).

Perceived barriers

The nurses described many barriers to the long-term sustainability of the TBI chart. Almost all of the nurses identified workload and the lack of available staffing as major barriers “…the overwhelming numbers of patients is one thing that really hinders us from looking after them very well” (Nurse 24). They described the challenge of monitoring the TBI patients every two hours in addition to caring for all of the other trauma patients, “The patients are too many… Sometimes, you can miss out [on] things” (Nurse 11). In reference to the chart, nurse 16 stated, “It might not be possible depending on the demand for the various interventions that I have to do on my patients”. Monitoring equipment was not always available, making it difficult for the nurses to consistently assess their patients.

Lack of medications and supplies affected the nurses’ abilities to provide care. Nurse 10 told a story of needing to convince a hospital worker to bring oxygen to the unit for a patient, because the hospital was out of oxygen. “And you feel you want to do something, but there is nothing you are supposed- you are- you are going to use on that patient.” One nurse appealed for more emergency care supplies, “It looks bad when a patient comes, maybe sometimes with even no attendants, no money at hand and you find there are no drugs to use. Whatever you’d need at the moment is not available” (Nurse 29). Inability to access computed tomography (CT), lack of attendants, and inadequate patient finances led to significant delays in patient care. CT in particular was noted to be a rate-limiting step, preventing the progress of care.

Some nurses expressed disappointment with the lack of administrative support and found that it impeded their ability to obtain appropriate supplies. “… sometimes when you ask them [administration] these things, ok- No one actually bothers to help you immediately there” (Nurse 10). The fact that the chart was a part of a research study was in itself a barrier to its use. Many of the nurses expressed an expectation of monetary compensation for using the chart in the initial research study.

Recommendations for future practice

One of the nurses’ most frequent recommendations was increased staffing. “Being that one of the barriers is [patient] overload, let them have- let’s have more staff” (Nurse 13). Some nurses suggested separating TBI patients from surgical and orthopaedic cases. Nurse 8 was interested in specialising in TBI care, “So, if only I would be allowed to specialise in TBI patients … It would give me more time to concentrate on these patients.” Other nurses suggested that wall monitors may prevent equipment from getting lost or damaged or that each nurse should have their own personal equipment. The nurses felt optimistic that if they worked as a team and had proper instruction and support from administration and their supervisors, they could successfully implement the chart. “A change can be brought as a team. I can’t do it myself, alone” (Nurse 3). Primary prevention and community engagement were also felt to be important in addressing TBI.

Discussion

By 2030, road traffic injuries will become the seventh leading cause of death worldwide [14]. Detection and treatment of secondary brain injury will become even more imperative. While the traumatic brain injury (TBI) education provided the emergency centre (EC) nurses with a basic foundation of knowledge, further education is needed to ensure proper management of TBI patients. Education plays a pivotal role in introducing new interventions, however, translation into practice remains difficult. Guidance may be needed to apply these skills within a busy, low-resource environment. Wolf and colleagues acknowledge the difference in education and training among nurses and provide suggestions for creating a framework for educational development [7]. One suggestion is that continuing education should enhance the application of skill. While the TBI education provided information that could be applied to the skills required to complete the chart, it may be beneficial to include case-based discussions or hands-on training in the future.

There is currently a lack of standardised care for TBI patients in Mulago’s EC. The TBI chart served as a guide to remind the nurses of vital signs, monitoring parameters, and appropriate interventions. Their responses ranged from overt acceptance of the chart to sceptical commitment. Assessment of vital signs is a challenge with the number of patients that filter through the unit. It is understandable that in this environment a detailed chart and frequent monitoring intervals may be

overwhelming.

Although the EC nurses acknowledged that TBI was an issue in Kampala and that interventions were needed to reduce mortality, the overwhelming number of patients and inadequate staffing prevent them from providing optimal care and completing assessments using the TBI chart. The WHO specifies a standard of 2.28 healthcare workers per 1000 patients [15]. Uganda's estimated ratio of healthcare workers per 1000 patients is approximately 0.73 healthcare workers lower than this standard. There are not enough healthcare workers in Uganda to meet the needs of the patient population requiring workers to care for more patients than is safe. Stress from the patient workload and the inability to complete work during a shift may also contribute to a negative perception of the work environment [16]. In addition, nurses overburdened with patient loads may also experience an increased risk of distraction and be more liable to make mistakes [17].

Environmental barriers such as a lack of equipment and supplies prevented the nurses from regularly using the nursing charts and caused delays in patient care. Ramesh and colleagues found that physicians in Rwanda faced similar experiences of inadequate resources for proper TBI treatment, which resulted in limited protocol implementation [18]. Access to computed tomography is particularly important to the EC's management of TBI patients, as care does not progress without it.

Nurses were empowered to initiate treatment but recognised their limitations and the need for teamwork. They welcomed the involvement of all staff in TBI patient care but were frustrated by the perceived lack of administrative support. Adequate support may provide an improved patient care environment. Research on nursing job satisfaction and performance found that nurses in Uganda experience moderate levels of occupational stress that ultimately impacts their job performance [19]. The WHO outlines the importance of developing trust, not only between healthcare workers and patients, but also between administration and healthcare workers [20]. In the process of developing and implementing interventions to reduce the burden of secondary brain injury, hospital administration should incorporate nursing feedback. As demonstrated in this study, nurses have ideas and concerns that stem from direct patient care and clinical experience. Their involvement and perspective would enhance collaboration and communication among the healthcare team, while creating feasible interventions.

This study contains some limitations. Time constraints prevented interviews with nurses who were on leave or ill during the study. As this was a single-centre study, the results may not be generalisable to nurses working in ECs outside of Mulago Hospital, especially regarding the barriers of staffing and supplies. Interpretation bias from both the participants and the research team may be present due to cultural and language barriers. Steps taken to reduce bias included listening to the recordings twice and having two individuals code the transcripts.

Conclusion

Secondary brain injury education and the use of a TBI chart were well received by most nurses in the Mulago emergency centre. The lack of supplies, overwhelming number of patients, and inadequate staffing interfered with consistent monitoring of patients. These barriers must be addressed before the benefits of frequent monitoring can be assessed. Conducting similar studies in other hospitals in Uganda and elsewhere in Sub-Saharan Africa would provide a better understanding of the acceptability and feasibility of a standardised TBI nursing chart in a broader context.

Acknowledgements

We would like to thank the nurses and staff of Mulago Hospital, Makerere University College of Health Sciences, and Christine Ngaruiya for her preliminary assistance and support.

Conflicts of interest

The authors declare no conflict of interest.

Dissemination of results

Results from this study were disseminated to the head of Mulago's emergency medicine training program and to one of the emergency centre's lead nurses as part of emergency medicine development work at Mulago. The results were also presented at the 2016 African Conference of Emergency Medicine in Cairo, Egypt.

Author contributions

LW, MG, and HM participated in the conception and design on the work. LW created and conducted the interviews. JN, TL, and JK assisted in the organization of the project. MG and LW analysed and interpreted the data. LW drafted the manuscript and MG, JN, TL, JK, and HM provided revisions. LW, MG, JN, TL, JK, and HM approved the final manuscript and agreed to be accountable for all aspects of the work.

Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.afjem.2018.01.002.

References

[1] Hsia RY, Ozgediz D, Mutto M, et al. Epidemiology of injuries presenting to the national hospital in Kampala, Uganda: implications for research and policy. Int J Emerg Med 2010;3:165–72. http://dx.doi.org/10.1007/s12245-010-0200-1.
[2] Jayaraman S, Ozgediz D, Miyamoto J, et al. Disparities in injury mortality between Uganda and the United States: comparative analysis of a neglected disease. World J Surg 2011;35:505–11. http://dx.doi.org/10.1007/s00268-010-0871-z.
[3] Kamulegeya LH, Kizito M, Nassali R, Bagayana S, Elobu AE. The scourge of head injury among commercial motorcycle riders in Kampala; a preventable clinical and public health menace. Afr Health Sci 2015;15(3):1016–22. http://dx.doi.org/10.4314/ahs.v15i3.41.
[4] Global status report on road safety 2015. World Health Organization Web site. http://www.who.int/violence_injury_prevention/road_safety_status/2015/en/; Published 2015 [accessed October 2, 2016].
[5] Tran TM, Fuller AT, Kiryabwire J, et al. Distribution and characteristics of severe traumatic brain injury at Mulago National Referral Hospital in Uganda. World Neurosurg 2015;83(3):269–77. http://dx.doi.org/10.1016/j.wneu.2014.12028.
[6] Fuller A, Tran T, Muhumuza M, Haglund MM. Building neurosurgical capacity in low and middle income countries. eNeurosurgicalSci 2015;3:1–6. http://dx.doi.org/10.1016/j.ensci.2015.10.003.
[7] Wolf L, Brysiewicz P, LoBue N, et al. Developing a framework for emergency nursing practice in Africa. Afr J Emerg Med 2012;2(4):174–81. http://dx.doi.org/10.1016/j.afjem.2012.09.001.
[8] Rosenfeld JV, Maas AI, Bragge P, Morganti-Kossmann MC, Manley GT, Gruen RL. Early management of severe traumatic brain injury. Lancet 2012;380(9847):1088–98. http://dx.doi.org/10.1016/S0140-6736(12)60864-2.
[9] Kinoshita K. Traumatic brain injury: pathophysiology for neurocritical care. J Intensive Care 2016;4(29). http://dx.doi.org/10.1186/s40560-016-0138-3.
[10] Gamble M, Luggya T, Nabulime, J, Mowafi, H. Impact of focused nursing education and traumatic brain injury specific nursing chart on outcomes in moderate to severe traumatic brain injury in a low resource setting. Unpublished results.
[11] Jayaraman S, Mabweijano J, Mijumbi C, et al. The care of injured patients admitted to Mulago National Referral Hospital in Kampala, Uganda. Emerg Med (Los Angel) 2015;5(270). http://dx.doi.org/10.4172/2165-7548.1000270.
[12] Kizza IB, Tugumisirize J, Tweheyo R, et al. Makerere University College of Health Sciences' role in addressing challenges in health service provision at Mulago National Referral Hospital. BMC Int Health Hum Rights 2011;11(Suppl 1):S7. http://dx.doi.org/10.1186/1472-698X-11-S1-S7.
[13] Green J, Thorogood N. Qualitative methods for health research. 3rd ed. Los Angeles, CA: Sage; 2014. p. 209–18.
[14] Road traffic injuries: Fact sheet. World Health Organization Web site. http://www.who.int/mediacentre/factsheets/fs358/en/; Published 2016 [accessed February 13, 2017].
[15] Health sector development plan 2015/16–2019/20. Ministry of Health. http://library.health.go.ug/publications/health-workforce-human-resource-management/performance-management/health-sector; Published 2015 [accessed February 1, 2017].
[16] Sochalski J. Is more better? The relationship between nurse staffing and the quality of nursing care in hospitals. Med Care 2004;42(2 Suppl):II 67–73. http://dx.doi.org/10.1097/01.mlr.0000109127.76128.aa.

[17] Jha AK, Prasopa-Plaizier N, Larizgoitia I, Bates DW. Patient safety research: an overview of the global evidence. BMJ Qual Saf Health Care 2010;19(1):42–7. http://dx.doi.org/10.1136/qshc.2008.029165.
[18] Ramesh A, Fezeu F, Fidele B, et al. Challenges and solutions for traumatic brain injury management in a resource-limited environment: example of a public referral hospital in Rwanda. Cureus 2014;6(5):e179. http://dx.doi.org/10.7759/cureus.179.
[19] Nabirye R, Brown KC, Pryor ER, Maples EH. Occupational stress, job satisfaction and performance among hospital nurses in Kampala, Uganda. J Nurs Manag 2011;19(6):760–8. http://dx.doi.org/10.1111/j.1365-2834.2011.01240.x.
[20] World Health Organization. Formulating national health workforce strategies in WHO Working Together for Health: The World Health Report; 2006: 120–132. http://www.who.int/whr/2006/06_chap6_en.pdf?ua=1 [accessed February 1, 2017].