Abbreviated paper

The reporting of adverse events in Johannesburg Academic Emergency Departments

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ABSTRACT

Introduction: Adverse events (AEs) are a common occurrence in healthcare systems; however, the frequency of AEs occurring in South Africa and especially Emergency Departments (ED) is unknown. The aims of this study were to describe the frequency of AEs experienced by Healthcare providers (HCP) and the frequency of formal reporting thereafter over a 12-month period.

Methods: A cross-sectional descriptive study was performed amongst HCPs at Helen Joseph Hospital and Chris Hani Baragwanath Academic Hospital EDs. The questionnaire incorporated ED relevant AEs using the South African National Procedural Manual for Patient Safety Incident Reporting and Learning.

Results: The questionnaires from 51 doctors and 49 nurses were analysed. All HCPs experienced >10 AEs over 1 year. Nurses were 21 times more likely than doctors to report >10 AEs (p < 0.001). Twenty-four percent of AEs experienced were deemed to be minor, very minor or not adverse.

Conclusion: There are low levels of formal AE reporting, especially amongst doctors, within Johannesburg Academic EM Departments despite large numbers of AEs experienced. There are multiple barriers, which influence these reporting practices. Improved reporting systems are needed to affect a change in the current environment.

African relevance

• Adverse events are common within global healthcare systems.
• Low- and middle-income countries may be at higher risk for adverse event, given fewer resources and a larger healthcare burden.
• Healthcare professionals’ perceptions of adverse events and ease of reporting systems affects adverse event reporting practices.

Introduction

In 1999 the landmark study To err is human described the unacceptable rates of Adverse Events (AEs) occurring within the American healthcare system and the need for wide scale system changes [1]. Though American healthcare has seen an increase in the incidence of AEs over the past forty years, this may be the result of improved AE detection and better documentation, rather than poorer patient safety [2].

The South African National Procedural Manual for Patient Safety Incident Reporting and Learning (PSIL manual) defines an AE as "@harm to a patient that is related to medical management" [3]. Kohn et al. emphasized that basic patient safety in healthcare was lacking and that systems should be designed to make “it hard for people to do the wrong thing and easy for people to do the right thing” [1].

Aside from reported drug AEs, there is no data regarding the incidence of AEs occurring within South African Healthcare [3]. Reporting systems and AE reporting within the smaller private healthcare sector may be more structured; however, limited data is available for public scrutiny. This study serves to highlight the frequency and reporting of AEs occurring within two state sector Johannesburg EDs.

Material and methods

This was a cross-sectional descriptive study approved by the Human Research and Ethics Committee of the University of the Witwatersrand (M171119). Data was collected during the month of May 2018 in the Johannesburg Academic EDs of Chris Hani Baragwanath Academic Hospital (CHBAH) and Helen Joseph Hospital (HJH). The AE questionnaire (Appendix B) which was previously used in Australian Hospitals, was adjusted for the South African ED setting (Appendix C) to incorporate ED relevant AEs using the PSIL manual [3,4].

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Study participants were HCPs working within CHBAH and HJH EDs, including qualified and registered medical doctors as well as nurses. Exclusion criteria were medical and nursing students and/or unregistered medical or nursing practitioners. All eligible and willing HCPs completed the questionnaire. Consent was inferred by their choosing to complete the questionnaire. No identifying information was captured and completed questionnaires were anonymously placed in a sealed and secured box.

Study data was collected and managed using REDCap (Vanderbilt University, USA) electronic data capture tools hosted at Witwatersrand University. Raw data was thereafter exported and analysed in Excel 2016 (Microsoft, USA) and statistical analysis performed using SPSS Statistics 25 (IBM, USA).

Adverse events were grouped (Table 1) according to the PSIL manual and group results were pooled together with a denominator of completed responses.

To compare AEs experienced, the AEs of each participant were summed using the mean of each group (1–5, 6–10, 11–20 and >20). The total value was then split into the categories of AEs experienced (≤10, >10). The AEs reported were then divided into the same groups of ≤10 and >10 and cross-tabulated. Thereafter Pearson Chi² test was applied.

Adverse events experienced were graded in the questionnaire using a Likert scale ranging from ‘extremely major’ to ‘not adverse’. The categories of ‘minor’, ‘very minor’ and ‘not adverse’ were then grouped together and expressed as a percentage over the total number of replies.

Results

One hundred HCPs participated of which 51 were doctors and 49 nurses with 57 females and 43 males. There was 10% data missing due to partially completed questionnaires and results were adjusted accordingly.

There is large number of AEs experienced in all AE groups, however a clearer pattern emerged when >10 AEs experienced was analysed (Fig. 1).

A portion of the questionnaire determined perceptions of AEs towards the AEs they experienced and at least 24% across all AEs categories was deemed to be ‘minor’, ‘very minor’ or ‘not adverse’. Despite large numbers of AEs experienced, many doctors had not reported a single AE in the past 12 months.

All HCPs experienced >10 AEs in a year period, however it was statistically significant that nurses reported >10 AEs when compared to doctors (Chi² coeff: 16.845, df = 1, p < 0.001). A nurse was 21 times more likely than a doctor to report >10 AEs (p < 0.001) (Fig. 2).

Discussion

Errors in the ED are multifactorial and occur at different phases of the patient’s ED visit from triage, examination and intervention to admission, discharge and/or handover [5,6]. Reasons for increased risk of AEs in the ED setting include patient factors (complex case presentations, severity of illness and increased patient load) and factors related to Healthcare Providers (HCP) (limited time per patient, lack of sleep, recurrent interruptions and different levels of experience) [5,6].

Low Middle-Income Countries (LMICs), with fewer resources and higher patient to doctor ratios, would expect higher rates of AEs [7]. During 2008, Free State government hospitals reported nearly 400 incidents shortly after introduction of the Advanced Incident Management System (AIMS), of which 29.5% were deemed serious, however the proportion which originated from the ED is unknown [7]. Due to the sudden awareness of AEs being experienced, investigators feared lack of further buy-in from clinicians, hospital managers and government leadership and no further data was published [7].

Within two Johannesburg (JHB) state EDs, we demonstrated numerous AEs experienced by HCPs in a 12-month period. The top three AEs experienced in these two EDs, namely resource-related AEs (lack of admission beds and HCP shortages), together with ‘medicine’ and ‘medical equipment’, play a pivotal role in the quality of healthcare delivered.

All HCPs working in the JHB state ED experienced >10 AEs, however 57% of doctors reported no AEs. Similarly, 40% of registrars and consultants from South Australian hospitals in a variety of clinical areas, including ED, had never reported a single AE [4]. Harper et al. proposed that doctors report fewer AEs, believing they’re an administrative process falling under the responsibility of the attending nurse [8]. Some doctors at times may be unwilling to admit to mistakes outside of the theoretical situation, as reporting an AE possibly signifies weakness [9]. Conversely many doctors may have limited AE education while training, affecting their ability to identify and report an AE as a qualified HCP [10]. HCPs working in state hospitals may also experience more AEs as a result of “whole system challenges” [3].

There may be numerous unreported AEs in JHB EDs as a quarter of AEs experienced were deemed as ‘minor’, ‘very minor’ or ‘not adverse’. When a HCP defines an AE as harmless, they ‘justify avoiding disclosure’ [11]. Chamberlain et al. [11] elaborates that AEs are poor at predicting outcomes of medical events and that a time interval may be necessary to ascertain whether an event was harmful or not.

Voluntary reporting of AEs is associated with reduced reporting practices in comparison to incentivised or protocolised reporting and will be further reduced if HCPs are unaware of the reporting process [9].

During 2018 the Gauteng Department of Health released statistics via the media that 20,417 patients had experienced severe AEs over 2016, 2017 and 2018, which included 4320 at CHBAH and 1044 at HJH [12]. This AE data was for the entire hospital over 3 years and not the ED alone. Unfortunately, no further breakdown of the data was released. In this JHB ED study, over 1 year at CHBAH and HJH, at least 10,000 AEs have been experienced by 100 HCPs in the ED alone. The large discrepancy between perceived AEs and AE data released officially emphasises the need for improved incident detection and AE reporting, which ultimately will affect standards of patient care.

This was a small study of 100 participants, all of whom were HCPs at two Johannesburg state academic hospitals. Questionnaires were self-administered. There is limited data from the current AE reporting systems at the two JHB state EDs and so we could not compare perceived and actual data.

Conclusion

There is a high frequency of perceived AEs occurring within two Johannesburg state Academic EDs. Reporting of AEs with the current voluntary, paper-based AE reporting process is low, with doctors

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Table 1: Groups of adverse events.

| Clinical procedures and administration | Patient didn’t receive necessary treatment |
|----------------------------------------|-------------------------------------------|
| Clinical process                       | Procedure performed without written/verbal consent |
| Resources                              | Pressure sores acquired in the ED |
|                                        | Maternal death |
| Medication                             | Medicine not available |
|                                        | Incorrect drug given |
|                                        | Incorrect drug dose given |
| Medical devices                        | Missing equipment |
|                                        | Equipment fault resulting in patient harm |
| Blood products                         | Acute blood transfusion reaction |
| Patient accidents                      | Patient injury due to fall in the ED |
| Behavior                               | HCP physically/verbally assaulted by a patient |
|                                        | HCP physically/verbally assaulted by another staff member |
|                                        | Absconded patient |
reporting significantly less than nurses. There is also a perception that many of these events are too minor or near misses and therefore the need to report voluntarily is absent.

Healthcare professional education regarding AEs, as well as an interactive, user-friendly and accessible reporting system such as AIMS would help promote improved reporting practices. This system may need to be protocolised or reward based to encourage its use.

There is also a need for a national AE database incorporating state and private hospitals to further assess AEs occurring within the whole South African healthcare system.

It is expected that AE reporting may rapidly increase; however, the South African Healthcare fraternity must see this as a need to improve the health system rather than as an indicator of its failures.

Dissemination of results

Results from this study was shared with ED staff members at the data collection sites through an informal presentation.

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CRediT authorship contribution statement

Authors contributed as follow to the conception or design of the work; the acquisition, analysis, or interpretation of data for the work; and drafting the work or revising it critically for important intellectual content: MZ, DH and ZM each contributed 33%. All authors approved the version to be published and agreed to be accountable for all aspects.
of the work.

Authors’ contribution

Authors contributed as follow to the conception or design of the work; the acquisition, analysis, or interpretation of data for the work; and drafting the work or revising it critically for important intellectual content: MZ contributed 60%; DH 30%; and ZM contributed 10%. All authors approved the version to be published and agreed to be accountable for all aspects of the work.

Declaration of competing interest

The authors declared no conflicts of interest.

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