Title: Effects of Adverse Events in Health Care on Acute Care Nurses in an Australian Context: A Qualitative Study

Abstract

Adverse events in health care significantly impact health professionals who become the second victims of medical error. This study aimed to understand the effects of adverse events in health care on nurses in acute health care settings in an Australian Context. This qualitative descriptive study used purposeful sampling and recruited 10 acute care nurses. Interviews were conducted from 2011 - 2012 and were recorded, transcribed and returned to participants to verify their accuracy. Data were categorised and analysed to determine four emergent themes and sub-themes. The four themes were: Rescuing patients, Effects on nurses, Professional responsibility and Needs of nurses. Our analysis indicates that nurses need organisational responses to adverse events including the provision of information and collegial support after adverse events occur. This will minimize the psychological trauma associated with these events for second victims and support effective communication and collegial working relationships.

Key Words

Acute care; adverse events; nurses; qualitative research; second victims.

Introduction

Since the Hippocratic Oath outlined the intention to “first, do no harm”, patient safety has been one of the most important areas of concern for health professionals. More recently it has been the subject of intense media scrutiny and criticism (Anonymous, 2013; Bonifield & Cohen, 2012). Research shows adverse health care events occur in more than 10% of hospital admissions (Leape, 2009). An adverse event is defined as “an unintended injury or complication which results in disability, death or prolonged hospital stay and is caused by health care management” (Wilson et al., 1995).

Literature Review

Adverse events are clearly of concern for patients and the general public and while less apparent these events also have a significant impact on the health professionals involved, who have been identified as the second victims of adverse events (S. Scott et al., 2009; S. D. Scott, Hirschinger, & Cox, 2008; A. Wu & Steckelberg, 2012). Previous Australian research on adverse events in health care (Kable, Gibberd, & Spigelman, 2002, 2008, 2009), has not included second victims of adverse events.

In 2000, Wu recognized that health professionals who were involved in adverse events were adversely affected, and identified them as the second victims of medical error (A. W. Wu, 2000). This work suggests that nurses “often bear silent witness to mistakes and agonise over conflicting loyalties to patient, institution and teams” (A. W. Wu, 2000). Findings from studies among doctors indicate the emotional impact of adverse events in health care across professional groups (Aaraas, Jones, & Gupta, 2004; Sirriyeh, Lawton, Gardner, & Armitage, 2010). Previous qualitative US-based research found that health professionals involved in an unanticipated adverse patient event, may have been traumatized by the event, often felt personally responsible for the patient outcome, felt they had failed the patient, and that they were losing confidence in their clinical skills and

knowledge base (S. Scott et al., 2009). Several studies have identified some significant effects associated with second victims who were involved in adverse events including concerns about professional competence and confidence (S. Scott et al., 2009; Sirriyeh et al., 2010; A. W. Wu, 2000); issues of clinical credibility, respect and professional reputation (Aaraas et al., 2004; S. Scott et al., 2009; S. D. Scott et al., 2008); a culture of blame (Aaraas et al., 2004; Chard, 2010); guilt (Sirriyeh et al., 2010), trauma, shock and inability to concentrate (S. Scott et al., 2009); isolation (S. D. Scott et al., 2008; A. W. Wu, 2000) and silent suffering (S. Scott et al., 2009; S. D. Scott et al., 2008); an expectation from themselves and from colleagues to "move on" (S. Scott et al., 2009); and fear and anxiety about investigations and potential litigation and dealing with disclosure to patients and families (Aaraas et al., 2004; S. Scott et al., 2009). These studies describe well-intentioned staff who are devastated by the outcomes of the adverse event (Chard, 2010; S. Scott et al., 2009) and some never recover; instead changing their professional role, or location or leaving the profession (S. Scott et al., 2009), with many indicating that they preferred talking with trusted peers following these events (Aaraas et al., 2004; S. D. Scott et al., 2008).

Most research about second victims has focused upon doctors and has been conducted in the United States of America. This paper reports findings from a study of the effects of work-place adverse events on nurses in Australian acute health care settings.

Study aim

The aim of this study was to understand the effects of adverse events on nurses in acute health care settings in an Australian context.

Methods

The study used a qualitative descriptive study design which is appropriate for understanding experiences of participants (Neergaard, Olesen, Andersen, & Sondergaard, 2009; Sandelowski, 2000). The study employed a pragmatic approach, purposive sampling, a

semi-structured interview guide, and independent data driven analysis followed by a consensus process to understand participant's descriptions of their experiences.

The study sample consisted of nurses in acute care settings in a major regional area health service were invited to participate in an interview about their experiences associated with adverse events that occurred in the acute care setting during the last 2 years. Potential participants were recruited by clinical nurse consultants and nurse/department managers in acute services areas who provided nursing staff with study information and consent forms for interested acute care nurses. A purposive sampling approach was undertaken to target nurses from a range of acute settings (emergency departments, acute medical and acute surgical units and acute mental health units) who had experienced an adverse event in the last 2 years and who were willing to be interviewed about such experiences. Participation was voluntary and full written consent was obtained from all participants. Consenting participants were invited to attend an interview of approximately 60-90 minutes duration at a time and private location convenient to them.

Data were collected by interviews that were conducted between August 2011 and April 2012, and were guided by the use of a semi-structured interview schedule and recorded using a digital recorder. The semi-structured interview schedule (developed from previous relevant literature and research) (Rassin, Kanti, & Silner, 2005; S. Scott et al., 2009) included an invitation to interviewees to recount a memorable adverse event and describe their feelings and subsequent impact, and their perceptions of the organisational response to the event. Following this, participants were given an opportunity to introduce other topics and experiences that they felt were relevant. The interviews were transcribed verbatim and de-identified in the written transcript using only participant identification numbers. The transcripts were subsequently provided to participants to allow them to verify their accuracy and no participant raised any concerns regarding the accuracy of their interview transcript. This paper reports data from the qualitative interview fieldwork focusing on adverse events and their effects on nurses working in acute care settings.

This study was approved by the Hunter New England Health Human Research Ethics Committee (10/11/17/5.07) and University of Newcastle (Australia) Human Research Ethics Committee (H-2010-1304). Participation was voluntary, and participant confidentiality was maintained by de-identifying data during analysis.

Data analysis was undertaken both throughout and following the fieldwork period. Initially, data were categorized following the semi structured interview schedule. Thematic analysis was then conducted on these data using a structured approach described by Sandelowski (Sandelowski, 2000) and Neergaard *et al* (Neergaard et al., 2009) based on the approach described by Miles and Huberman (Miles & Huberman, 1994). After the initial categorisation of data using categories from the interview schedule, an additional category was identified. Independent coding of data using descriptive labels was conducted to identify important features/similar phrases and patterns in the data by the researchers that described the experiences of the participants. Subsequently, the results of independent coding were discussed and compared by two researchers (AK and BK) to determine commonalities and differences across data; and themes and relationships between them were agreed. These themes were reviewed by another expert researcher (JA) to ensure rigour during the analysis process. Recruitment ceased when data saturation was achieved (ie. no new themes were being identified in the data).

The following strategies were used to ensure trustworthiness during the conduct of this study. Participants were invited to check the accuracy of interview transcripts (member checking), coding of data was initially done independently by two researchers, and subsequently reviewed together to determine themes and their relationships; and then peer review of the themes was provided by another researcher to establish credibility and dependability of the research process (Shenton, 2004).

Findings

Participants

There were 10 nurses who consented to participate in this study: Five worked in emergency department (ED), three worked in acute mental health areas, one in intensive care unit (ICU) and one in a stroke/neurology ward. Eight were female. The participants had a range of 3 - 33 years of experience working in these clinical specialities and 5 - 35 years of experience as clinical nurses.

Adverse Events: Participants were asked to describe a memorable work-related adverse event (AE) that they had experienced during the last two years. Five descriptions were about the participant's direct involvement in an adverse event at the time it occurred and five were about their involvement in responding to an adverse event (involving others) after it had occurred. Each participant described an event and some described more than one as recalling events sometimes prompted them to remember others.

The adverse events described included: a young patient who had used ICE and subsequently suffered a cardiac arrest and died, a patient with Guillain-barre syndrome who died unexpectedly, a toddler that presented deceased, an accidental overdose of a patient with a narcotic medication, a trauma patient with a massive transfusion event, a patient with shortness of breath treated with oxygen who was subsequently found to be a carbon dioxide retainer, a toddler with significant comorbidity that deteriorated postoperatively and subsequently died, a patient on leave from a mental health unit who died by suicide, an unexpected death following discharge and an incorrectly charted medication (potentially toxic dose) that was administered. In addition a participant described their involvement in a coroner's case concerning another adverse event in triage.

Themes

There were four themes identified from the participants' descriptions of experiences of being involved in adverse events: Rescuing Patients; Effects on Nurses; Professional Responsibility; and Needs of Nurses involved in Adverse Events.

Rescuing patients

When participants were invited to describe an adverse event they had been involved in, all participants provided a very detailed description of a memorable event and the predominant focus of the description was on rescuing patients. These events were frequently described as extreme or beyond the nurse's usual experience with the participants employing terms such as "unexpected", "life or death scenario" and "dire situation", alongside descriptions of efforts to respond to patient deterioration and to resuscitate patients.

Rescuing Patients describes the immediate response of nurses when they recognized that an adverse event had occurred, and this theme describes an intensely focused clinical management response to the patient's situation, attempting to prevent deterioration of their condition and reverse the effects of the adverse event where possible. Rescuing patients occurred in the context of significant pressures on clinicians such as urgency, time and staff shortages. There were two sub themes identified that related directly to nurses rescuing patients: Thinking during the event and the context in which they were working.

The nurses described their thinking throughout the event. Participants frequently made statements that indicated they were attempting to determine critical aspects of the patient they were attending and how they should be managed. One participant explained:

> I responded as the resus (resuscitation) nurse with the resus trolley as did a lot of other members of the department. They thought she may have been having a hypoglycaemic attack or something like that. We were searching for a cause for her respiratory arrest at that time and then it was realized that the wrong amount of fentanyl had been administered. So we commenced …our protocols for respiratory arrest and moved her into the 'resus' bay (P4).

This initial response involved uncertainty and some difficult problem solving during the event to determine causes of patient presentations and processes that led to the event occurring. The thinking described by these nurses included trying to establish causes for the problem, sometimes without adequate information.

For example, as one interviewee explained:

> …very non-compliant... In retrospect it was because he was quite sick … typical gastro symptoms… it was found out later, he had ICE 2 days previous and … he ended up having a cardiac arrest and died…. he gave us no indication that there was anything else happening …we started the typical treatment for gastro: gave him anti emetic and IV fluids and nothing seemed to be improving like you give it a certain amount of time and you think, OK, well, you know, there's been no great improvement so then you start looking at other things and before you know it he was having cardiac echos …and he basically had a cardiac arrest and died. It was quite...it was quite a traumatic shift (P1).

In addition, these nurses described working in the context of managing other emergencies during the same shift when the adverse event occurred, dealing with significant time pressures and urgency, staff shortages and allocation issues and managing high risk patients.

One nurse's account of an adverse event included describing information about staff shortages and supervisory responsibilities*:*

> I was… still quite a junior nurse I felt, working short on a morning shift on a Saturday morning where there were no staff. I was the most senior person on the ward. … I allocated myself a patient load which normally on our ward the team leader doesn't have. They're super-numerary so they can assist where needed. I was responsible for doing medications and supervising the AIN and the EEN. The RN who was a new grad … I was buddied up with to be her mentor (P2).

She described the adverse event and then added:

> we also on that morning shift had another patient who had a cardiac arrest and actually went to intensive care after we were doing compressions on him on the ward for quite some time and I felt that I was… that was the first time I'd ever actually seen an arrest in real life as well so that was another huge thing that happened on this one morning, on this one day.

This junior nurse was required to accept the role of team leader (a senior nurse role), and supervise other junior staff including a recent graduate, an enrolled nurse and an assistant in nursing. In addition, because of the restricted scope of practice of some of the staff on the shift, she assumed clinical responsibility for some patients (not usually allocated to the team leader). After accepting these additional responsibilities, this junior nurse had to cope with the adverse event and respond to the first cardiac arrest they had ever witnessed.

Effects on nurses

Effects on Nurses describes the effects on nurses following the adverse event in terms of their concerns for the patient and their family, concerns for their colleagues, and effects on them personally and on their clinical practice. Nurses repeatedly indicated that they were deeply concerned for the patients and families affected by the outcomes of adverse events they experienced, and about their colleagues who were involved. Some of these concerns continued after the event and contributed to ongoing psychological impact for the nurses. Some participants did not think that they had been affected greatly by the adverse event but then went on to describe several feelings and psychological effects after the event occurred. Furthermore, several of them described changes in their clinical practice as a result of being involved in these events. Three subthemes are described below in detail to illustrate the effects on nurses as part of their experience of being involved in an adverse event: Concern for patients, families and colleagues; Feelings and personal effects; and Effect on Clinical practice.

Nurses described their concerns about devastating losses for families, patients in critical states and colleagues involved in events. Participants also described engaging in the provision of support for these family members, sometimes over an extended period of time. Concern about loss and the impact on families is evident in one interviewee's comment*:*

> I do feel you know, for the family and that sort of thing and … how they're going to cope … afterwards and hope that, you know, that everything works out OK for them, especially with trauma and loss of a child (P7).

A commitment to providing support to families affected by adverse events was frequently expressed as these statements demonstrate:

> …ensuring the family have been advised…had access to …support and giving them an opportunity to come in and ventilate - that wasn't easy (P9);
>
> …I've answered every question I can and I've continued to do so until he has no more questions because of the guilt I feel that his son's dead...I couldn't prevent that death… and his heart's broken and I can't change that...he'll blame himself for the rest of his life and look for answers why his son died (P8).

Collegial concern was also expressed, indicating that participants empathized with nurses involved in adverse events and recognized that it could have happened to them:

> …what if it had have been me that administered that medication, how would I have felt?" (P4).

Nurses reported a range of feelings and personal effects following involvement in an adverse event. These feelings included a sense of failure, loss of confidence, self - blame and doubt, grief, shock, uneasiness, anger, anxiety, lack of support, traumatized, stressed, depressed, over-reactions, exhaustion, sleeping difficulties, concern about perceived professional incompetence, helplessness, isolation, use of alcohol, embarrassment, devastation, felt vulnerability, haunted by flashbacks/memories, panic, disbelief and fear (of blame). Some nurses stated that they didn't trust themselves, they continued to 'beat themselves up", that it took hours for them to 'wind down' after an event and that they had difficulty going back to work the next day.

Some of these feelings are reflected in the following excerpts about nurse's feelings during and after being involved in an adverse event.

> (It) deeply affected me …after that day and for the rest of the triage for that shift I just couldn't concentrate … because everything was insignificant compared to what we had just gone through. And um…I felt… I couldn't deliver … my sympathy towards other patients that presented that day because … nothing compared to losing a child …and the hard part was when the doctor called it and I …inside I felt like saying to him, 'keep going' to try and bring this boy back to life but I knew deep down …it was pointless (P3).

These nurses described suffering intense emotional reactions as a result of their involvement in an adverse event that could be described as psychological trauma. Their sense of professional responsibility and concern about having contributed in some way to the event clearly contributed to these emotional reactions. In addition, nurses were concerned about how their actions might be viewed by their colleagues and managers, and that such observers may criticize their actions and perceive them as incapable of doing their job adequately or appropriately.

Nurses described the effects on their clinical practice following experiencing an adverse event. They described a range of short term effects including being concerned about documentation, becoming increasingly cautious with future patients and checking everything, that suggested they were experiencing anxiety in their normal working role. One nurse commented about the documentation:

> …the full story wasn't there…"(P2), and went on to say they were "…petrified…very, very heavily clouded my opinion of myself and what I can actually do for anybody else that…had … (a diagnosis) …even similar to that…it was terrible…. (P2).

Others described increased attention to their clinical practice:

> …More mindful of our practice…" (P8), and "…much more diligent…checking doses and charting and medication…thinking about…drug interactions…questioning basic doses… (P10).

Some participants described negative effects on professional dynamics and working relationships following adverse events, for example:

> I'll do things like make sure I'm close by if I know he's going to be dealing with any … medications that we need to be concerned about. Or, not leave the room if he's on his own with a single female staff member**...** it's been an ongoing issue … and he's been brought up before management, several times for bullying female staff. So … not trusting him (P10).

Long term effects in clinical practice included attending training to improve clinical skills, considering leaving nursing and second guessing their career. In addition some nurses described being fearful about being blamed, losing their registration, being punished, being investigated and losing their job. One nurse did a course in recognition of the deteriorating patient, but also stated *"…*one more thing happens that's it, I'm going*…" (P2)*.

Others expressed significant professional concerns about being investigated, and self-doubt and anxiety about being able to continue to practice such as:

> … we're going to the coroners…we're in trouble…there's going to be some ugly questions asked…you really question your own judgement… (P9); …I'm going to end up…being disciplined or my registration on the line… (P10).

The descriptions by participants of experiences of adverse events indicated that they thought adverse events at work were inevitable and that they had to find a way to cope with them.

Professional responsibility

Professional Responsibility describes nurses' sense of responsibility and accountability both as members of the health care team (Shared responsibility) and as individuals (Personal responsibility) during and after adverse events. The shared responsibility described by participants demonstrated a team response to adverse events in the initial stages. Nurses described MET (Medical Emergency Team) calls and getting senior staff involved in events

and also discussed shared thinking by team members after the event, who reflected on what had happened and what the team could have done differently.

Participants frequently described how the team reviewed the incident after it occurred and re-examined what occurred:

> …whether or not we should have recognized her deterioration earlier?...it was very heart breaking…" (P7), and "…sort of banging (our) heads and saying…what did we do and what could we have done? (P9).

There were aspects of shared responsibility that were significant in terms of the aftermath of the event including positive and negative experiences of professional dynamics and support. Some nurses described feeling supported and providing support to their colleagues:

> …felt supported by all my colleagues… (P3); …we've had that opportunity to go through things and we've been able to talk…talk with your co-workers…talk to your more senior colleagues…(about) what happened … (P7).

However, others felt unsupported, isolated and unable to trust their colleagues to help them evaluate the event:

> … I was scared that my reputation would be damaged on the ward… I didn't talk to many people about it P2).

In addition nurses described an expectation of their colleagues being truthful, for example:

> …didn't match the notes and that made me cranky because I thought, well, you're not telling the truth…(P2); …quite dishonourable to just to deny it and kind of blatantly lie about it rather than...say, well I did make a mistake… (P10);

and this manifested as a lack of trust expressed by a participant on the occasion when a colleague failed to accept responsibility for their error:

> …thought I'd just keep away from there for a bit…wary of working with (the colleague)… (P10).

Some nurses also indicated that they had concerns about being punished or blamed by investigatory bodies and professional registration authorities, and the following comment reflects these concerns:

> …the HCCC (Health Care Complaints Commission) wanted my registration number so I was… thinking … I'm going to be deregistered or they're going to have something against my name that I'm being investigated …(P2).

Nurses felt concern about whether they might have contributed to the adverse event in question. Interviewees discussed how they re-examined the event multiple times in their minds, seeking to understand exactly what happened, and their role, and how it might have been prevented, and how they could have managed the situation differently, for example:

> … you think back to everything you did and you think, oh was there something I could have done? … You question everything you've done … the test results that we got back showed that basically there was nothing that could have been done medically to change the outcome ... You're thinking about it and it's always there and I guess patients that you see afterwards as well you think, … could this be another one of them? (P1).

The nurses' sense of professional responsibility was evident in many experiences described by participants, and the detail they recalled and expressed evaluation of these events indicated that many of them continued to be concerned about what happened and their involvement in these adverse events.

Needs of nurses involved in adverse events

Needs of Nurses describes the nurse's need for information and adequate support during and subsequent to an adverse event. This was a pervasive theme in the data including the need for information during and after the event about aspects of the event and the outcome; and the need for collegial support associated with their involvement in an adverse event.

Nurses described the need for clinical information from patients or colleagues during the rescue of deteriorating patients, to assist them to understand what may have contributed to the event occurring, for example:

> it didn't match up with how he looked as opposed to the story that we received (P1).

Participants also described the need for information following the event including the outcome for the patient, further evaluation of contributing factors or processes (ie. what happened), how it might have been prevented, how future similar events might be prevented or managed, and expectations regarding investigations of adverse events. For example one interviewee explained that when documentation was examined following an event:

> …the full story wasn't there…(P2).

Nurses expressed the need for information to rule out uncertainty about causes and outcomes:

> …I needed a resolution in terms of the facts of the matter…", "…what was the cause of death, that's what we needed to know… (P9).

Information was also needed in terms of actually following up an event after it occurred:

> …I think I just needed advice because it was the first one I'd dealt with as a manager…what …procedures there were… (P8).

Reflection about the event and how it might be prevented was illustrated by P6*:*

> He spent a night in intensive care…. was discovered … that this gentleman was …a CO_2 (carbon dioxide) retainer. He'd had high flow oxygen applied and basically just knocked off his respiratory drive and he started to retain CO_2. So what was an alert… short of breath man, entered hospital unconscious and then his length of stay … was extended … perhaps …if that had not … happened, we just may have been treating a shortness of breath, fairly…non-invasively but it … had become an incident where we needed to intubate....

The need for information about what procedures should be followed after an adverse event occurred was expressed by nurses who were being investigated*:*

> …maybe my expectations were skewed … because I would have thought that if the HCCC was investigating a nurse … in a case, that they would be required to tell the hospital that they were doing that? … if someone had been there to say, well… you know, yes, you will get a letter from the HCCC …(P2).

During the actual event, nurses described needing support and active involvement from colleagues in their efforts to rescue the patient and work together as a team, which reflects the team work described in the theme of shared responsibility. For example, (realized)

> That I needed help... Yep, and his family needed help and it was…life or death scenario … to try and keep this boy alive…I screamed. I carried the boy into the resuscitation bay and I yelled for help (P3).

After the event occurred, these nurses, some of whom described profound emotional effects as a consequence of being involved in these events, all identified the need for some form of support. The support they needed varied between individuals, however, at a minimum nurses explained that they needed professional reassurance and recognition of their actions and collegial trust such as:

> …would have been good to be acknowledged, by…the staff…that...they trusted my…story… (P10), and …they said, no, I wouldn't have done anything different...(P2).

Some nurses reported being referred to employee assistance programs and counselling, and treatment for depression and an extended period of time to recover from these effects. One nurse had EAP (Employee Assistance Program) suggested by a manager and explained:

> …I went to EAP and … it was beneficial to go and I'm grateful that it was suggested to me but … I sort of didn't think to go…" "I was put on an antidepressant which did help with the depression… , (duration of these feelings was) …three years… (P2).

Several participants described seeking informal support such as discussion with colleagues and described this strategy as helpful.

> …the ability to talk with your co-workers…is probably the first debriefing type of thing that you do and it's usually done during the clean-up…and then everybody sort of goes off and gets the opportunity to have a break…talk to your senior colleagues…what happened… (P7).

For those who were involved in subsequent formal investigations, the need for adequate support was described as critically important:

> …a support person for someone because when you don't know… what's going on and what's happening and the processes for things, it is really, really scary … (P2); … the manager was really good. …she kept me up to date with everything that was happening through the RCA… the biggest thing was knowing that (from the autopsy and everything that was done) that there was nothing that we could have done (P1).

The analysis identified that the themes of professional responsibility and needs of nurses were also running through the nurse's accounts and recollections and were clearly evident in the data across themes.

Discussion

The aim of this study was to understand the effects of adverse events in health care on nurses in acute health care settings in an Australian context. Some participants described events that were not a direct result of health care management, however they described meaningful experiences that equate with involvement in adverse events in terms of their responses and effects on nurses. There is an expectation (by health professionals) that clinical staff should be able to manage and deal with a vast range of challenges in their professional activities (Magin, Adams, Ireland, Heaney, & Darab, 2005; Magin et al., 2006).

This is intrinsically associated with the notion of competence. While some of these adverse events might be considered to be extraordinary, managers and colleagues expect nurses to be able to manage them competently.

The nurses descriptions in this study consistently illustrated the four themes were associated with their experiences of adverse events in the acute setting, and often in the context of significant pressures and staffing issues. After an initial response directed towards rescuing patients, nurses then focused on the impact of the event on the families. They described significant emotional responses towards the families who had suffered loss of a loved one or whose relative had been involved in an adverse event. This was evident in their sincere efforts to provide adequate support for these families; and the emotional impact on the families contributed to the trauma the nurses experienced. These responses to adverse events demonstrate the highly professional attitudes of these nurses in terms of putting the patient first and providing appropriate support and follow-up after an adverse event occurs.

Many of the effects identified as related to adverse events and described by nurses in this study (for example, continued reliving of the event repetitively, intensified awareness or hyper vigilance, fear, guilt, shame and loss of confidence) are consistent with the experiences of survivors of traumatic events who develop symptoms of Post -Traumatic Stress Disorder (Dekker, 2013; Rassin et al., 2005). A recent qualitative study of health care professionals in an acute care hospital in Sweden reported similar impacts on staff including emotional reactions, professional performance and self-confidence issues, and long lasting effects of the event (Ullstrom, Sachs, Hansson, Ovretveit, & Brommels, 2014); and a study in Israel also reported effects on nurses performance, catastrophic pressure, focus on minimising imminent danger to the patient, severe emotional effects and extended duration of these effects (Rassin et al., 2005). The results of this study are consistent with the results from two US-based studies where initial responses, professional responsibility, lost confidence, emotional devastation, second guessing their career choice and the need for emotional first aid were similar issues for health professionals involved in adverse events (S.

Scott et al., 2009; Treiber & Jones, 2010); and a study in the United Kingdom that reported nurses experienced stronger negative feelings after an error (Harrison et al., 2015). A recent systematic review of literature on the emotional impact of medical error involvement on physicians identified that health professional's involvement in adverse events often results in their suffering intense emotional distress, with the potential for increased burn-out, depression and a permanent emotional scar (Schwappach & Boluarte, 2008).

This study did not seek to evaluate the care provided. These nurses had engaged in providing clinical responses in extreme circumstances; and these events caused them significant distress, assailed their professional identities, and in some cases resulted in ongoing psychological trauma. This often extended to being fearful of collegial criticism, blame and a perception of lack of competence. All of the participants felt a sense of vulnerability and/or having their clinical actions exposed to intense scrutiny as a consequence of their involvement in adverse events. Peer support was consistently described as helpful and valued by participants, and this is consistent with a recent study in the United States of America, of health care workers (n = 350) that reported that informal emotional support and peer support were highly valued strategies (Edrees, Paine, Feroli, & Wu, 2011).

For nurses who were involved in investigations by their organisation or the Health Care Complaints Commission (HCCC), the provision of information about these processes could have alleviated the anxiety associated with an investigation. These nurses described a total of five root cause analyses, two HCCC investigations and three cases investigated by autopsy or a coroner, so this was quite a significant need.

The nurses need for information and support in this study illustrates the uncertainty expressed by participants during and after the adverse events occurred. The nurses' motivation for seeking information was described by participants as a need to understand what happened, how it happened and how it could be prevented in the future. This is

consistent with an orientation to patient safety strategies, where adverse events are often evaluated for the purpose of preventing their recurrence in the future. The participants consistently described forms of desired support including: professional trust and reassurance or recognition of their clinical actions (perceived competency) associated with the event, a sense of being a valued team member, opportunities to talk with trusted colleagues and validation of their feelings. Nurses in this study described needing support from managers as well as colleagues and these individual needs and organisational support issues have also been identified in a recent study in Sweden (Ullstrom et al., 2014). Many descriptions in this study reflected a shared responsibility and team approach to responding to these events, however subsequently some professional interactions indicated that there was a lack of support/collegiality and on occasion, conflict within teams. This has potential to result in inadequate team communication and team dysfunction which can contribute to the occurrence of additional adverse events, as communication is considered to be a critical element in maintaining patient safety (Levett-Jones, 2014).

The contextual aspects of the adverse events in this study should also prompt consideration of organisational support for nurses who may be involved in adverse events. Although the notion of a “no-blame culture” has been promulgated by the Clinical Excellence Commission in NSW for several years, this does not appear to have translated into the organisational context adequately. In a recent study of nurse second victims (n = 155) in the United States of America, it was determined that organisational support mediated distress-turnover intentions of nurses, and confirmed that adequate support could reduce trauma and the loss of valued health professionals from the workforce (Burlison, Quillivan, Scott, Johnson, & Hoffman, 2016). Nurses who were subsequently involved in investigations described needing additional ongoing support during the period in which they were conducted. Nurses who have been involved in adverse events suffer a range of personal and professional effects that can ultimately damage their professional identity and personal lives and on occasion with long term consequences including psychiatric illness and suicide

(Denham, 2007), (Ostrom, 2011) cited in (Santomauro, Kalkman, & Dekker, 2014). Many second victims endure terribly painful isolation, abandonment, trauma (Denham, 2007) and punishment (Rassin et al., 2005) and Denham recommends that they should be entitled to five rights: Just treatment, respect, understanding and compassion, supportive care and transparency and the opportunity to contribute (Denham, 2007). The findings of this study indicate that there is scope to improve the adoption of the five rights in the organisational response to nurses who are involved in adverse events.

Limitations

This was a qualitative study with a small number of participants and during recruitment, we extended the recruitment time period to include as many potential participants as possible. The psychological trauma associated with being involved in some of these adverse events may have contributed to the low response rate. The small number of participants may limit the transferability of the findings to other contexts, however there is substantial consistency in the findings compared with similar studies in other countries suggesting that they may be transferable in the acute care context. The various practice settings of participants or types of adverse events in this study, may have also contributed to some variation in the findings but detailed analysis of this issue is beyond the scope of this paper. In addition, we note that there is potential for self-selection bias due to the recruitment and sampling strategy used. Although the potential for recall bias also existed, the researchers found that these events had such a profound effect on participants, that they were able to recall them in significant detail.

Conclusion

Nurses involved in adverse events in their work reported an initial patient focused response to minimize the impact of the event on the patient and their family. Subsequently, these events had significant effects on nurses' professional and personal lives and in many instances over a long duration. These effects included profound emotional trauma, loss of

confidence and isolation in the acute care setting where adequate information and support was not always provided. There is scope to improve the organisational response to nurses who are second victims and address their needs following the occurrence of adverse events. Such a response could assist nurses to cope more effectively; return to clinical duties with better support and self-confidence, and to contribute to preventative strategies for adverse events.

Funding Acknowledgement

This work was supported by an Equity Research Fellowship from the University of Newcastle, Australia (G1000908).

Author Contributions

Study Design: AK, BK

Data Collection and Analysis: AK, BK, JA

Manuscript Writing: AK, BK, JA

All authors read and approved the final manuscript.

References

Aaraas, I. J., Jones, B., & Gupta, T. S. (2004). Reactions to adverse events among Australian and Norwegian doctors. *Australian Family Physician, 33*(12), 1045-1046.

Anonymous. (2013). The ugly reality of medical mistakes. Retrieved from http://www.foxnews.com/health/2013/02/05/ugly-reality-medical-mistakes/

Bonifield, J., & Cohen, E. (2012). 10 shocking medical mistakes. Retrieved from http://www.cnn.com/2012/06/09/health/medical-mistakes/index.html

Burlison, J., Quillivan, R., Scott, S., Johnson, S., & Hoffman, J. (2016). The Effects of the Second Victim Phenomenon on Work-Related Outcomes: Connecting Self-Reported Caregiver Distress to Turnover Intentions and Absenteeism. *Journal of Patient Safety,* doi:10.1097/PTS.000000000000301

Chard, R. (2010). How perioperative nurses define, attribute causes of, and react to intraoperative nursing errors. *AORN Journal, 91*(1), 132-145.

Dekker, S. (2013). *Second Victim: Error, Guilt, Trauma, and Resilience*. Boca Raton: CRC Press.

Denham, C. (2007). TRUST: The 5 Rights of the second victim. *Journal of Patient Safety, 3*(2), 107-119.

Edrees, H., Paine, L., Feroli, R., & Wu, A. (2011). Health care workers as second victims of medical errors. *Polskie Archiwum Medycyny Wewnetrznej, 121*(4), 101-107.

Harrison, R., Lawton, R., Perlo, J., Gardner, P., Armitage, G., & Shapiro, J. (2015). Emotion and Coping in the Aftermath of Medical Error: A Cross-Country Exploration. *Journal of Patient Safety, 11*(1), 28-35.

Kable, A., Gibberd, R., & Spigelman, A. (2002). Adverse events in surgical patients in Australia. *International Journal for Quality in Health Care, 14*(4), 269-276.

Kable, A., Gibberd, R., & Spigelman, A. (2008). Predictors of adverse events in surgical admissions in Australia. *International Journal for Quality in Health Care, 20*(6), 406-411.

Kable, A., Gibberd, R., & Spigelman, A. (2009). Australian Perspectives. Adverse events in five surgical procedures. *Clinical Governance: An International Journal, 14*(2), 145-155. doi:10.1108/14777270910952306

Leape, L. (2009). Errors in Medicine. *Clinica Chimica Acta, 404*(1), 2-5.

Levett-Jones, T. (Ed.) (2014). *Critical Conversations for Patient Safety*. Frenchs Forest, NSW: Pearson Australia.

Magin, P., Adams, J., Ireland, M., Heaney, S., & Darab, S. (2005). After hours care: A qualitative study of GPs' perceptions of risk of violence and effect on service provision. *Australian Family Physician, 34*(1/2), 91- 92.

Magin, P., Adams, J., Ireland, M., Joy, E., Heaney, S., & Darab, S. (2006). The response of general practitioners to the threat of violence in their practices: results from a qualitative study. *Family Practice, 23*(3), 273-278.

Miles, M., & Huberman, A. (1994). *Qualitative data analysis - An expanded sourcebook.* (2nd Edition ed.). Thousand Oaks: SAGE Publications.

Neergaard, M., Olesen, F., Andersen, R., & Sondergaard, J. (2009). Qualitative description - the poor cousin of health research? *BMC Medical Research Methodology, 9*, 52-56.

Ostrom, C. (2011, 21 April 2011). Nurse's suicide follows tragedy. *The Seattle Times*.

Rassin, M., Kanti, T., & Silner, D. (2005). Chronology of medication errors by nurses: Accumulation of stresses and PTSD symptoms. *Issues in Mental Health Nursing, 26*, 873-886.

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health, 23*, 334-340.

Santomauro, C., Kalkman, C., & Dekker, S. (2014). Second victims, organisational resilience and the role of hospital administration. *Journal of Hospital Administration, 3*(3), 95-103.

Schwappach, D. L. B., & Boluarte, T. A. (2008). The emotional impact of medical error involvement on physicians: a call for leadership and organisational accountability. *Swiss Medical Weekly, 138*(1-2), 9-15.

Scott, S., Hirschinger, L., Cox, K., McCoig, M., Brandt, J., & Hall, L. (2009). The natural history of recovery for the healthcare provider 'second victim' after adverse patient events. *Quality and Safety in Healthcare, 18*, 325-330. doi:10.1136/qshc.2009.032870

Scott, S. D., Hirschinger, L. E., & Cox, K. R. (2008). Sharing the load of a nurse "second victim". Rescuing the healer after trauma. *RN, 71*(12), 38-43.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*, 63-75.

Sirriyeh, R., Lawton, R., Gardner, P., & Armitage, G. (2010). Coping with medical error: a systematic review of papers to assess the effects of involvement in medical errors on healthcare professionals' psychological well-being. *Quality and Safety in Health Care, 19*(e43), 1-8.

Treiber, L., & Jones, J. (2010). Devastatingly human: An analysis of registered nurse's medication error accounts. *Qualitative Health Research, 20*(10), 1327-1342.

Ullstrom, S., Sachs, M., Hansson, J., Ovretveit, J., & Brommels, M. (2014). Suffering in silence: a qualitative study of second victims of adverse events. *BMJ Quality and Safety, 23*, 325-331.

Wilson, R. M., Runciman, W., Gibberd, R., Harrison, B., Newby, L., & Hamilton, J. (1995). The Quality in Australian Health Care Study. *Medical Journal of Australia, 163*(9), 458-471.

Wu, A., & Steckelberg, R. (2012). Medical error, incident investigation and the second victim: doing better but feeling worse? *BMJ Quality and Safety in Health Care, 21*(4), 267-270.

Wu, A. W. (2000). Medical error: the second victim: The doctor who makes the mistake needs help too. *British Medical Journal, 320*(7237), 726-727.