Emotional Impact of Medication-Related Patient Safety Incidents on Canadian Hospital Pharmacists: A Mixed-Methods Study

Mikaela Ney, Christine Landry, Melanie Trinacty, Mélanie Joanisse, and Carolanne Caron

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ABSTRACT

Background: Patient safety incidents are the third leading cause of death in Canada. These occurrences have negative effects on patients and on the well-being of health care professionals. They also lead to financial burdens on the health care system. Several organizations focus on minimizing patient safety incidents; however, an area requiring additional research is evaluating the emotional impact of medication-related patient safety incidents (MRPSIs) on Canadian hospital pharmacists. An MRPSI is a preventable, unintended outcome resulting from medication management rather than an underlying disease. The consequences may be no harm, temporary harm, prolonged hospital stay, disability, or death.

Objectives: To describe the psychological burden on pharmacists after occurrence of an MRPSI and to identify supportive strategies.

Methods: This mixed-methods study involved a voluntary survey of hospital pharmacists and structured individual interviews. Survey respondents scored their emotional distress on the Impact of Event Scale (IES), a validated self-reporting tool used to assess the impact of traumatic life events. Interviewees' responses were analyzed qualitatively.

Results: Of the 128 pharmacists who had experienced an MRPSI and submitted a complete survey response, 105 (82%) had a score above 8 on the IES, indicating that the MRPSI had an important impact. Commonly reported factors contributing to MRPSIs were heavy workload, interruptions, and inexperience. The most desired support strategies included talking to a colleague, compassionate notification of the event through management, and involvement in team debriefs.

Conclusions: The emotional impact of MRPSIs as reported by Canadian hospital pharmacists is significant. Most participants felt that increased support is needed to overcome emotional burdens related to MRPSIs.

Keywords: emotional impact, trauma, error, mistake, safety incident

RÉSUMÉ

Contexte : Les incidents liés à la sécurité des patients sont la troisième cause de décès au Canada. Ces événements ont des effets négatifs sur les patients et sur le bien-être des professionnels de la santé. Ils entraînent en outre des charges financières pour le système de santé. Plusieurs organismes se concentrent sur la réduction de ces incidents; cependant, l'évaluation de l'effet émotionnel des incidents liés à la sécurité des patients découlant des médicaments (ci-après « les incidents ») sur les pharmaciens hospitaliers canadiens est un domaine qui nécessite des recherches supplémentaires. Un incident est un résultat évitable et imprévu résultant de la gestion des médicaments plutôt que d'une maladie sous-jacente. Les conséquences peuvent être l'absence de préjudice, un préjudice temporaire, un séjour prolongé à l'hôpital, une invalidité ou la mort.

Objectifs : Décrire le fardeau psychologique des pharmaciens dans un contexte où un incident s'est produit et identifier des stratégies d'accompagnement.

Méthodes : Cette étude à méthodes mixtes comportait une enquête volontaire auprès des pharmaciens hospitaliers et des entretiens individuels structurés. Les répondants au sondage ont noté leur détresse émotionnelle sur l'échelle de l'effet des événements (IES [*Impact of Event Scale*]), un outil d'auto-déclaration validé utilisé pour évaluer l'impact des événements traumatisants de la vie. Les réponses des personnes interrogées ont été analysées qualitativement.

Résultats : Sur les 128 pharmaciens qui avaient fait l'expérience d'un incident et qui avaient soumis une réponse complète à l'enquête, 105 (82 %) avaient un score supérieur à 8 sur l'IES. Ce score indique que l'incident avait eu un impact important. Les facteurs couramment signalés contribuant aux incidents étaient la lourde charge de travail, les interruptions et l'inexpérience. Les stratégies de soutien les plus recherchées comprenaient : la discussion avec un collègue; la notification compatissante de l'événement par l'intermédiaire de la direction; et la participation aux comptes rendus de l'équipe.

Conclusions : L'impact émotionnel des incidents, tel que rapporté par les pharmaciens hospitaliers canadiens, est important. La plupart des participants ont estimé qu'un soutien accru est nécessaire pour surmonter le fardeau émotionnel associé.

Mots-clés : effet émotionnel, traumatisme, erreur, incident de sécurité

INTRODUCTION

Patient safety incidents, an unfortunately common occurrence in Canada, have significant impacts on patients and on the health care system.[1] Patient safety incidents are the third leading cause of death, after cancer and heart disease.[1] It is estimated that over the next 30 years, up to 400 000 patient safety incidents will occur each year in Canada, generating more than $2.75 billion in treatment costs annually.[1] In the literature, medication-related events are reported to account for between 0.02% and 2.27% of patient safety incidents, but these rates may be an under-representation, given that medication-related events are often reported under different incident categories; for example, a fall secondary to a medication may be classified as a trauma.[1] As a result, medication-related patient safety incidents (MRPSIs) are a point of focus for many national organizations, such as the Institute for Safe Medication Practices Canada (ISMP Canada), the Canadian Patient Safety Institute (now incorporated within Healthcare Excellence Canada), the Canadian Institute for Health Information, and the Canadian Society of Hospital Pharmacists (CSHP).[1-3] An MRPSI is a preventable, unintended outcome resulting from medication management rather than an underlying disease.[1] The consequences may be no harm, temporary harm, prolonged hospital stay, disability, or death.[1] Increased reporting through avenues such as the Canadian Medication Incident Reporting and Prevention System have allowed various organizations to perform research and create reports with recommendations to improve patient safety.[1-3] However, one area of research that has not been evaluated is the emotional impact of MRPSIs on Canadian health care professionals, specifically hospital pharmacists.

Several factors can lead to MRPSIs, including human error by health care professionals (which can be due to underlying problems such as lack of training, being overworked, poor communication), patient-related factors (e.g., health literacy, polypharmacy), work environment (e.g., workload, distractions, lack of standardization), medication-related factors (e.g., packaging, medication names), and issues relating to computerized information systems (e.g., inaccuracies in patient records, design that allows for human error).[4] Therefore, it is common for an MRPSI to be the result of a complex combination of factors.[5] This phenomenon is often described as the Swiss cheese model, whereby a combination of holes in the system leads to a safety incident.[1]

Following an incident report, organizations often complete a root cause analysis, a systematic process to investigate factors contributing to the event.[5] Such an analysis tends to focus on identifying conditions contributing to the error, rather than the actions of a particular individual, with the goal of guiding future improvements.[5] The detrimental consequences of MRPSIs on health care providers are not considered in such analyses. Although patients and their families experience the most obvious toll of MRPSIs, the health care professionals involved can also face a great deal of distress. The notion of caregivers as second victims (the patient and their family being the first victims) in MRPSIs is well accepted.[6] One systematic review found that physicians involved in medical errors expressed emotional distress that seemed to increase their risk for burnout and depression, potentially leading to an increase in future errors.[7] Substance use, depression, suicide, quitting the medical field, and litigation stress have also been reported as sequalae of MRPSIs affecting health care professionals.[8-10]

Previous researchers have surveyed Canadian health care workers to determine the supports needed following medical errors and to identify the means to implement these supports.[11] Overall, there is consensus in the literature that support from colleagues and supervisors is key when coping with error-related stress.[7] Assistance from the institution of work is also cited as a main source of support, but a survey of practising physicians in the United States and Canada revealed that only 10% of respondents felt adequately supported by their organization following an MRPSI.[11] These results are in line with a survey of 390 health care professionals completed by the Canadian Patient Safety Institute, including responses from 32 pharmacists, which found that over half of participants (54.3%) were fearful of future errors and 35% were not satisfied with the support they received.[12] This dissatisfaction highlights that more research is needed to inform organizations on how they can support medical professionals following patient safety incidents.[11] For these reasons, the current study aimed to not only describe the emotional impact of patient safety incidents on hospital pharmacists, but also to identify strategies to help hospital pharmacists cope effectively with such events.

The primary objective of this study was to determine the emotional impact of MRPSIs on Canadian hospital pharmacists. The secondary objectives were to identify factors influencing pharmacists' emotional burden following MRPSIs and the support strategies currently in place to assist Canadian hospital pharmacists with their emotional burden following MRPSIs, as well as to determine the support strategies that Canadian hospital pharmacists desire to assist them in overcoming these emotional burdens.

METHODS

This mixed-methods study received ethics approval from the Montfort Research Ethics Board. Participants provided written informed consent. Research was conducted in accordance with the principles of the Helsinki Declaration.

Participants

Those eligible to participate included current or retired Canadian hospital pharmacists or pharmacy residents

who consented to participate and had been involved in an MRPSI. Potential participants were invited via email bulletins distributed through the CSHP, the Association des pharmaciens en établissement de santé du Québec, and the Canadian Association of Pharmacy in Oncology. Social media platforms and email messages sent directly to eligible pharmacists were also used. The survey was disseminated to pharmacists in all 13 Canadian provinces and territories. A consent letter was included, with a link to the voluntary survey, which was open from March 26 to April 26, 2021. The survey, available in French and English, used the web-based program Microsoft Forms. At the end of the survey, respondents were invited to participate in an interview.

Study Tool

The Impact of Event Scale (IES) was chosen to quantify the emotional burden of hospital pharmacists. This validated, self-reported measure was originally created to assess the impact of traumatic life events.[13] This instrument has shown good psychometric properties, supporting its use as a measure of stress reactions, and is often considered the gold standard in screening for post-traumatic stress disorder (PTSD).[13] Participants are asked to respond on a Likert scale ranging from "not at all" (scored as 0) to "often" (scored as 5). This tool has established thresholds, whereby a score of 9 represents the lower limit for a mild level of clinically concerning event-related distress.[14] A cut-off score of 27 on the IES was found to have a sensitivity of 0.91, specificity of 0.72, and overall correct classification of 0.80 when used as a PTSD screening tool for motor vehicle accident survivors.[15] Furthermore, a score of 35 produced sensitivity of 0.89, specificity of 0.94, and overall agreement of 0.94.[15] However, as noted by Beck and others,[16] IES scores are not diagnostic, and the original 15-item IES does not include the hyperarousal symptoms that appear in the most recent criteria of the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition). The revised version of the scale includes additional items, but these were deemed less appropriate for the aims of the current study. Furthermore, diagnosis of PTSD was not within the scope of this research project; rather, the goal was to quantify the trauma experienced. Therefore, the original version of the IES was chosen. It was also selected for its brevity and applicability to MRPSIs.[16]

Procedure

The target sample size for the survey was 370 hospital pharmacists, which would represent more than 5% of the 6560 Canadian hospital pharmacists practising at the time.[17] Predefined subgroups for analysis were pharmacy residents, interviewees, pediatric pharmacists, oncology pharmacists, distribution pharmacists, and pharmacists working in the intensive care unit (ICU). In addition to the survey, we conducted web-based individual interviews to allow survey participants to anonymously share additional in-depth qualitative information. The questions (see Appendix 1, available from https://www.cjhp-online.ca/index.php/cjhp/issue/view/216) explored respondents' emotions resulting from the MRPSI, their interactions with others following the event, and how they could be better supported. In addition to the predetermined questions, the interviewer used prompting questions to maintain the conversation or ask for elaboration. Sessions were no longer than 20 minutes each and were conducted by a single interviewer (M.N.). The interviews were set up with respondents who volunteered in response to a question at the end of the survey. Interviews were conducted in English or French on the Microsoft Teams platform from April 19 to May 7, 2021. Instructions were provided for participants to anonymize their call settings, if they chose to remain anonymous. All interviews were audio-recorded for analysis by the research team. Given that the survey and the interviews could elicit emotional responses, contact information for a psychologist was offered in the consent portion of both the survey and the interview information package, and this offer was repeated at the beginning of each interview.

Data Analysis

Survey responses were analyzed quantitatively in total and by subgroup. Subgroups were assessed by 1-way analysis of variance (ANOVA) to determine whether the IES scores varied among types of errors (near miss and errors with unknown harm, no harm, reversible harm, or irreversible harm). Mann–Whitney *U* tests were also performed to compare the IES scores of population subgroups (pharmacy residents, ICU pharmacists, oncology pharmacists, pediatric pharmacists, distribution pharmacists, and study interviewees).

Responses from interviewees were transcribed and reviewed for thematic analysis, including categorization into codes by 2 independent reviewers (M.N., C.C.).

RESULTS

Quantitative Analysis

Responses were received from 179 hospital pharmacists across Canada. This corresponds to 2.73% of the target population.[17] Responses came from all provinces and the Yukon (Table 1). In total, 123 (69%) of the participants completed the survey in English and 56 (31%) in French. The majority (82%) of respondents were women, which was expected given the gender imbalance in the pharmacy profession.[18] Fifty-one participants were excluded from further analysis, 2 because they did not consent to participate and 49 because they had not been involved in an MRPSI. The data summarized below represent responses from the remaining 128 pharmacists, who answered all of the survey questions.

In terms of negative consequences following the incident, most participants noted stress (n = 124, 97%) and

TABLE 1 (Part 1 of 2). Demographic and Other Relevant Information

Characteristic	No. (%) of Respondents
Survey language	*n* = 179
English	123 (69)
French	56 (31)
Consent to participate	*n* = 179
Consented	177 (99)
Did not consent	2 (1)
Region of practice	*n* = 177
Western region (Yukon, British Columbia)	10 (6)
Prairie region (Alberta, Saskatchewan, Manitoba)	37 (21)
Ontario	63 (36)
Quebec	55 (31)
Atlantic region (New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador)	12 (7)
Gender	*n* = 177
Female	145 (82)
Male	29 (16)
Gender variant/nonconforming	1 (1)
Prefer not to answer	2 (1)
Pharmacist practice	*n* = 177
Hospital pharmacist (including managers and retirees)	168 (95)
Hospital pharmacy resident or candidate for master in pharmaceutical sciences (Quebec)	9 (5)
Residency status	*n* = 177
Completed a residency	111 (63)
Did not complete a residency	59 (33)
Currently completing a residency	7 (4)
Area of practice	*n* = 177
Inpatient hospital pharmacy	154 (87)
Outpatient hospital pharmacy	22 (12)
Pharmacy manager	1 (1)
Involvement in MRPSI	*n* = 177
Yes	128 (72)
No	49 (28)
Duration of practice (years)	*n* = 128
≤ 2	32 (25)
> 2 and < 5	36 (28)
5–10	27 (21)
11–20	22 (17)
> 20	11 (9)
Age (years)	*n* = 128
< 25	12 (9)
25–35	81 (63)
36–45	27 (21)
46–55	5 (4)
> 55	3 (2)

TABLE 1 (Part 2 of 2). Demographic and Other Relevant Information

Characteristic	No. (%) of Respondents
Time since the event (years)	*n* = 128
≤ 2	52 (41)
> 2 and < 5	24 (19)
5–10	27 (21)
11–20	22 (17)
> 20	3 (2)
Unit of practice	*n* = 128
General medicine	25 (20)
Oncology	23 (18)
Other (dispensary shift, management, sterile preparation)	18 (14)
Pediatrics	16 (13)
Intensive care unit	15 (12)
Emergency	7 (5)
Surgical specialties	7 (5)
Palliative care	6 (5)
Other medical specialties (cardiology, geriatrics, infectious disease, nephrology, neurology, psychiatry, pulmonary)	11 (9)
Did the pharmacist report the MRPSI to the patient?	*n* = 128
Yes	20 (16)
No	108 (84)
Was the incident reported in the workplace?	*n* = 128
Yes	120 (94)
No	8 (6)
Does your workplace culture support incident reporting?	*n* = 128
Strongly agree	27 (21)
Agree	52 (41)
Neutral	32 (25)
Disagree	15 (12)
Strongly disagree	2 (2)

MRPSI = medication-related patient safety incident.

anxiety (*n* = 119, 93%), with few experiencing new or worsened substance use disorder or suicidal ideation as a result of the MRPSI. Participants were generally earlier in their careers, with most (63%) being between the ages of 25 and 35 years at the time of the event. Most events (59%) were relatively recent, having occurred within the past 5 years, but some participants (20%) referred to events that occurred more than 10 years ago. Respondents' area of practice varied, but commonly reported areas were general medicine, dispensary work, oncology, pediatrics, and the ICU. There was also a wide range in the types of errors reported, from near misses to incidents resulting in irreversible harm. The 3 most frequently reported factors contributing to MRPSIs were heavy workload, interruptions, and cognitive overload.

The original 15-item IES has a maximum score of 75. On the IES, 12% of participants scored between 44 and 75 (severe impact), 34% scored between 26 and 43 (powerful impact), 36% scored between 9 and 25 ("impact event" that might have some effect), and 18% scored 8 or below (no meaningful impact) (Figure 1). In terms of subgroup analysis among the types of errors, mean IES scores were similar across the subgroups, ranging from 20.0 to 28.6. The 1-way ANOVA revealed no significant effect of the type of error on the IES score: $F(4,123) = 1.2$, $p = 0.3$. Mann–Whitney U tests between population subgroups showed that ICU pharmacists scored significantly lower on the IES (mean score 13.7) than all other pharmacists (mean score 26.1) ($p = 0.004$). A Bonferroni correction was applied to account for the increased risk of a type I error when completing multiple statistical tests; with this correction, the significance level of 0.05 was divided by the number of tests (6), yielding an adjusted significance level of 0.008. Even with this adjustment, the p value for the comparison between ICU pharmacists and all other pharmacists (0.004) remained statistically significant. Overall, ICU pharmacists tended to have more clinical experience at the time of the event and reported increased satisfaction with support received compared to other participants.

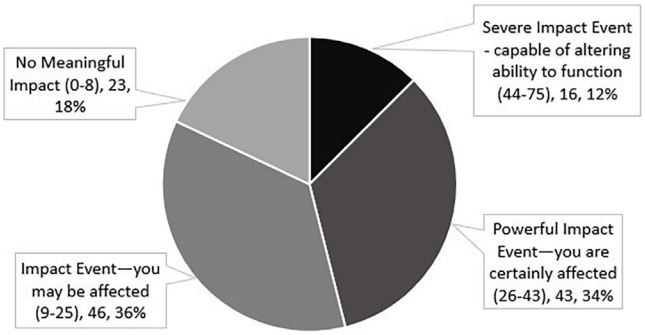

FIGURE 1. Scores on the Impact of Event Scale for the 128 participants who submitted complete responses.

Lastly, 78 (61%) of the participants agreed or strongly agreed that they needed support following the incident, whereas 51 (40%) agreed or strongly agreed that they were satisfied with the support they received. Desired support strategies are summarized in Figure 2. The most popular method of support that respondents had actually pursued was talking to a colleague ($n = 100$, 78%) and the least popular method was support through an employee assistance program ($n = 2$, 2%).

Qualitative Analysis

Twenty-two participants volunteered for an interview. Eighteen interviews were conducted, 1 in French and 17 in English; the other 4 participants did not respond to email invitations to schedule an interview. Thematic analysis exposed the following recurrent themes: factors contributing to the error, impact on the pharmacist, and strategies for overcoming emotions. All of the interviewees discussed factors contributing to the error, both systemic (such as staffing levels, technology-related deficiencies, and inefficient workflows) and personal (such as inexperience, making assumptions, and cognitive overload). All interview participants spoke of negative emotions pertaining to the event, and 16 (89%) also outlined positive emotions. All interview participants revealed strategies (coded as personal, peer, and institutional methods) for overcoming incident-related emotions. The various themes, codes with examples, and interview quotes are summarized in Table 2.

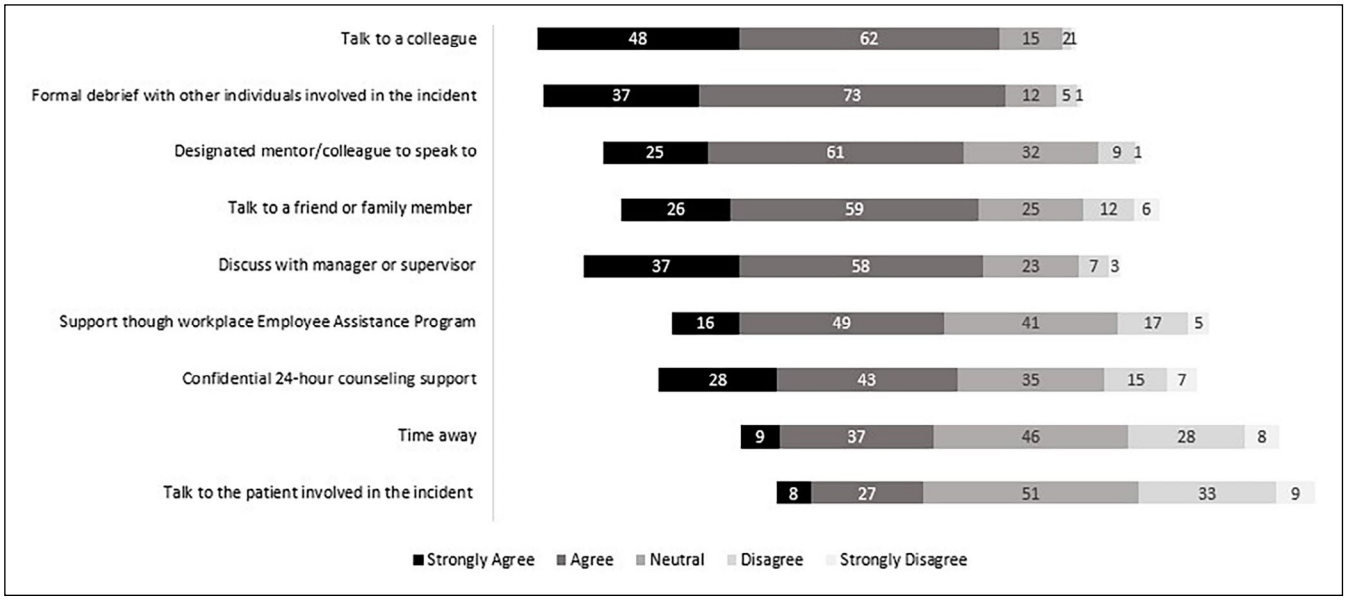

FIGURE 2. Desired forms of support following medication-related patient safety incidents for the 128 participants who submitted complete responses. In the graph, bars are aligned on "neutral" responses, to show skewing toward agree or disagree for each item.

TABLE 2. Summary of Qualitative Interview Findings

Overarching Theme and Related Codes	Frequency of Code (%)[a]	Supporting Quotes
Theme: Factors contributing to the error		
Code: Systemic (e.g., workload, lack of standardization, insufficient resources, computerized information systems [designs that allow for human error])	100	"It got through so many steps of checks and balances of something that was weird that multiple people did say yeah that's weird but then it never really was actioned or resolved." (Interviewee 1) "It's not like you did something bad on purpose. There were flaws in the system. There's holes in the Swiss cheese model. There's lots of places you know that this could happen to someone else." (Interviewee 3)
Code: Personal (e.g., lack of training, inadequate knowledge, being overworked, poor communication, making an assumption)	100	"I think I was also a little bit on autopilot, just trying to finish the orders." (Interviewee 13) "As a new practitioner, you don't necessarily have that experience, so you are relying more on those resources. And in that moment having to make a decision that you know seems clinically sound and obviously in the end it really wasn't." (Interviewee 8)
Theme: Impact on the pharmacist		
Code: Negative emotions (e.g., shame, guilt, shock, surprise, expecting perfection from oneself, hurt, fear, blame from others, feeling incompetent)	100	"Her child is dead because of me so that was really hard to kind of I guess have that image in my mind." (Interviewee 3) "Can I go back to work? Can I still be a pharmacist? Am I competent to be a pharmacist?" (Interviewee 3) "I think that perfectionism contributed to the negative emotions because we're never trained to not be perfect." (Interviewee 15) "It was just completely overwhelming. I was just absolutely devastated. I felt obviously extreme sadness, guilt, the guilt was weighed very heavily, you know replaying it back in your mind." (Interviewee 12) "Definitely there was scared, you know, fear for myself as well in definitely the fear of like oh my gosh am I going to lose my job? Am I going to lose my license? Am I going to be financially, you know like, oh am I going to be sued for this incident you know?" (Interviewee 10)
Code: Positive emotions (e.g., pride in preventing future errors)	89	"So it did give me an opportunity to make some suggestions for change, which I thought was really good." (Interviewee 16)
Theme: Strategies for overcoming emotions		
Code: Personal (e.g., time off from work, faith, counselling, resiliency in accepting errors as human)	100	"Every mistake is a learning opportunity." (Interviewee 15) "I was sent home because obviously I was not in a condition to continue working that day." (Interviewee 3) "Making one mistake doesn't automatically invalidate everything else that I do." (Interviewee 10) "I am human and I made a human error." (Interviewee 6)
Code: Peer (e.g., showing empathy for others, support from colleagues/family/ friends, understanding that others experience similar feelings after MRPSIs)	100	"Even competent and thorough people, who take their work to heart, will make mistakes." (Interviewee 6) "To hear from people afterwards, I think was reassuring when they tell you, you know, similar stories or just show empathy." (Interviewee 12) "The greatest support is the team around us." (Interviewee 6) "So it was really important to know that I wasn't alone I think was probably one of the biggest things." (Interviewee 12)
Code: Institutional (e.g., disclosure training, formal support being offered, improving processes, improving error culture)	100	"If errors happen and they're not shared and we don't share the solutions, I feel like we're wasting the opportunity to make changes that are needed to prevent them." (Interviewee 2) "The lack of support from the manager led me to blame myself even more." (Interviewee 9) "If we don't have a culture of safety in our organization, what happens is errors are hidden, and when errors are hidden, change can't be made to improve them." (Interviewee 2)

MRPSI = medication-related patient safety incident.
[a]Percentage of interviews with this code.

DISCUSSION

Previous research has evaluated the emotional impact of errors on health care professionals, but to our knowledge, this study is the first to focus specifically on hospital pharmacists. Overall, hospital pharmacists participating in our study reported significant emotional impacts following MRPSIs. More specifically, the survey results suggest that anxiety (93%) and stress (97%) are the most frequent reactions following MRPSIs, but the qualitative analysis revealed that guilt, shame, fear of repeating the error, blame from others, and a tendency to be hard on oneself are also repercussions of MRPSIs in which pharmacists have been involved. Research interviews highlighted and expanded upon the participants' feelings, and these findings reinforced the survey outcomes. Participants expressed these emotions both in cases of near misses and in cases of irreversible harm to the patient. Of concern, the majority of participants also expressed feeling a lack of competence or questioning their abilities after the incident. Many questioned whether they could continue working or whether they should continue in the profession. Many also expressed litigation-related stress or fears (Table 2).

Interestingly, positive emotions, such as pride in preventing future errors, were also reported. The interviews revealed that participants felt that, following these events, they increased their level of vigilance or contributed to the implementation of systemic changes to prevent similar errors from occurring in the future.

Among the predefined subgroups, specifically pharmacy residents, interviewees, and pharmacists working in pediatrics, oncology, distribution, and the ICU, the only subgroup for which the IES result differed from that of the other survey respondents were the ICU pharmacists. A possible explanation for this finding is that the ICU pharmacists reported a higher degree of satisfaction with the support they received following MRPSIs. Additionally, although not specifically evaluated in this research project, ICU pharmacists may have extra opportunities for support within their workplace through their integration within the medical team. They may also have more time to come to fully informed decisions about patient care compared with pharmacists working distribution shifts. The ICU pharmacists also had more years in practice and more clinical experience than the other pharmacists who responded to the survey.

Although the average IES score for the 18 interviewees (29.8) was not significantly higher than that of other participants, it did trend higher than the overall average (24.6). This is reasonable, given that participants who carry emotional burden from an MRPSI would likely be biased toward participating in an interview. Interestingly, the subgroup with the highest mean IES score was pharmacists working distribution shifts (32.4). One hypothesis to explain this value is that pharmacists must make numerous quick decisions during distribution shifts, often involving patients who are unfamiliar to them. There is less time to establish an informed decision, which may lead to increased emotional burden in the event of an MRPSI.

Strategies for managing emotions could be stratified into 3 main codes: personal strategies, peer support, and institutional strategies. Methods for supporting oneself included faith, self-acceptance, letting go of perfectionism, and professional counselling. Peer support methods were the most commonly sought out strategy and focused on accepting that everyone makes mistakes. Sharing incidents with colleagues and gathering reassurance of a thought process or reassurance that the mistake could happen to anyone were comforting to participants. Finally, methods for institutional support focused on conveying errors in a compassionate way, offering disclosure training, including all members of the team in debriefs, following up with pharmacists after the event, making improvements to error culture and perfectionism culture, and changing processes to prevent errors. Notably, 63% of participants were early in their careers (under the age of 35 at the time of the event), and many attributed the incident to a lack of experience or training, particularly when working in an area of decreased familiarity. Workplaces can better support employees by providing adequate training opportunities, particularly in new areas of work.

Limitations

The limitations of this research project include the sample size, language offerings for interviews, and recall bias. The target sample size for the survey was 370 hospital pharmacists, with the aim of reaching over 5% of the 6560 Canadian hospital pharmacists practising at the time.[17] This value was not achieved, as there were only 179 survey responses. One reason for lower-than-desired participation may have been the ongoing pandemic, when pharmacists were facing increased workplace demands and therefore had less time available for research participation. However, the research team was able to recruit sufficient volunteers for the qualitative portion of the study. Another limitation was the restricted advertising to recruit French interviewees. As a result, only 1 French interview was completed. Recall bias was also evident, given that 59% of events described by participants had happened in the past 5 years. Pharmacists were more likely to think of a recent incident because the emotional effects were probably more easily recalled. Conversely, for events that occurred more than 10 years prior, we speculate that the emotional effects on the pharmacist were likely significant, given that they continued to recall the event even after such a long time. Recall bias may lead to memory amplification, resulting in vivid memories of highly emotional events. Contrariwise, an individual may unconsciously suppress memories of traumatic events, which may lead to decreased recall. These forms of recall bias may have affected participants' responses in this project.

Future Directions

Future research could investigate why ICU pharmacists experienced less emotional burden or could expand the pool of respondents to include additional pharmacy populations, such as technicians and community pharmacists. Such research could describe additional approaches for supporting individuals in a variety of settings. Additionally, future studies could survey the curriculums of Canadian pharmacy schools to identify opportunities for content related to managing emotional distress.

CONCLUSION

Hospital pharmacists responding to our survey experienced significant emotional impacts following MRPSIs, and only 40% reported satisfaction in the support they received. Institutions can support their pharmacists by improving error culture, specifically by fostering an environment in which staff members learn from mistakes, by informing staff of errors compassionately, by including all those affected in debriefs or investigations, and by training pharmacists on how to disclose errors. Future projects could include development of pharmacist support campaigns, for example, mentorship experiences or training related to managing errors and the associated emotional distress.

References

1. *The case for investing in patient safety in Canada*. RiskAnalytica; 2017 Aug [cited 2022 Sep 12]. Available from: https://www.patientsafetyinstitute.ca/en/About/Documents/The%20Case%20for%20Investing%20in%20Patient%20Safety.pdf
2. Medication safety and drug use management enhanced by drug distribution. Canadian Society of Hospital Pharmacists; 2008 [cited 2021 Jan 10]. Available from: https://cshp.ca/sites/default/files/files/Advocacy/Drug%20Distribution/DrugDistributionSystBackgroundPaperJune5'08%20FINAL.pdf
3. *Evaluation of the Institute for Safe Medication Practices Canada (ISMP Canada) activities for the Canadian Medication Incident Reporting and Prevention System (CMIRPS): final report executive summary.* Prairie Research Associates; 2012 Dec 18 [cited 2022 Sep 12]. Available from: https://www.ismp-canada.org/download/cmirps/rptISMPC_CMIRPS_Final_Report_2012.pdf
4. *Technical series on safer primary care: medication errors*. World Health Organization; 2016 [cited 2022 Sep 12]. Available from: https://apps.who.int/iris/bitstream/handle/10665/252274/9789241511643-eng.pdf;jsessionid=0818EAD0F9C0076ACD9E57A10A8007D3?sequence=1
5. Davies JM, Hébert P, Hoffman C. *The Canadian patient safety dictionary*. Self-published; 2003 Oct [cited 2022 Sep 12]. Available from: https://www.ottawahospital.on.ca/en/documents/2017/01/patient_safety_dictionary_e.pdf/
6. Denham CR. TRUST: the 5 rights of the second victim. *J Patient Saf*. 2007;3(2):107-19.
7. Schwappach DL, Boluarte TA. The emotional impact of medical error involvement on physicians: a call for leadership and organisational accountability. *Swiss Med Wkly.* 2009;139(1-2):9-15.
8. Oreskovich MR, Shanafelt T, Dyrbye LN, Tan L, Sotile W, Satele D, et al. The prevalence of substance use disorders in American physicians. *Am J Addict*. 2015;24(1):30-8.
9. Stehman C, Testo Z, Gershaw R, Kellogg A. Burnout, drop out, suicide: physician loss in emergency medicine, part I. *West J Emerg Med*. 2019;20(3):485-94.
10. Grissinger M. Too many abandon the "second victims" of medical errors. *P T*. 2014;39(9):591-2.
11. Waterman AD, Garbutt J, Hazel E, Dunagan WC, Levinson W, Fraser VJ, et al. The emotional impact of medical errors on practicing physicians in the United States and Canada. *Jt Comm J Qual Patient Saf*. 2007;33(8):467-76.
12. *Creating a safe space. Section 1: Survey of healthcare providers' perceptions related to the second victim phenomenon*. Canadian Patient Safety Institute; 2019 [cited 2022 Sep 12]. Available from: https://www.patientsafetyinstitute.ca/en/toolsResources/Creating-a-Safe-Space-Psychological-Safety-of-Healthcare-Workers/Documents/Manuscript%20Documents/1_Survey%20of%20Healthcare%20Providers%20Perceptions.pdf
13. Sundin EC, Horowitz MJ. Impact of Event Scale: psychometric properties. *Br J Psychiatry*. 2002;180(3):205-9.
14. Reed SB. Measuring the emotional impact of an event: how to use an effective PTSD test. Self-published; 2007 [cited 2022 Aug 2]. Available from: https://psychotherapy-center.com/counseling-issues/trauma-and-stressors/ptsd-post-traumatic-stress-disorder-therapy/measuring-the-emotional-impact-of-an-event/
15. Coffey SF, Gudmundsdottir B, Beck JG, Palyo SA, Miller L. Screening for PTSD in motor vehicle accident survivors using the PSS-SR and IES. *J Trauma Stress*. 2006;19(1):119-28.
16. Beck JG, Grant DM, Read JP, Clapp JD, Coffey SF, Miller LM, et al. The Impact of Event Scale-Revised: psychometric properties in a sample of motor vehicle accident survivors. *J Anxiety Disord*. 2008;22(2):187-98.
17. *National statistics*. National Association of Pharmacy Regulatory Authorities; 2020 Jan 1 [cited 2022 Sep 12]. Available from: https://napra.ca/national-statistics
18. *Women in pharmacy: the current landscape*. Canadian Pharmacists Association [cited 2022 Aug 2]. Available from: https://www.pharmacists.ca/cpha-ca/assets/File/cpha-on-the-issues/WomeninPharmacyReport_final.pdf

Mikaela Ney, BSc, PharmD, RPh, ACPR, is with The Ottawa Hospital, Ottawa, Ontario.

Christine Landry, BPharm, MSc, PharmD, BCPS, is with Hôpital Montfort, Ottawa, Ontario

Melanie Trinacty, BSc, BScPharm, RPh, ACPR, MScHQ, is with The Ottawa Hospital, Ottawa, Ontario.

Mélanie Joanisse, CPsych, PhD, Psychologist, is with Hôpital Montfort, Ottawa, Ontario.

Carolanne Caron, BSc, BScPharm, RPh, is with Hôpital Montfort, Ottawa, Ontario.

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Address correspondence to:
Dr Mikaela Ney
The Ottawa Hospital
501 Smyth Road
Ottawa ON K1H 8L6

email: mqney@uwaterloo.ca

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