Perceptions of preventable medical errors in Alberta, Canada

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Abstract

Objectives. (i) To compare public perceptions of the frequency, responsibility, causes and solutions for preventable medical errors for persons who report and do not report having experienced a preventable medical error while receiving healthcare services in Alberta, Canada. (ii) To describe public opinion about confidentiality and disclosure of preventable medical error. (iii) To examine the relationship between reporting preventable medical error and perceived quality of the healthcare system.

Methods. Population-based telephone survey. Households selected by random digit dialing and individual in household selected by most recent birthday. Province of Alberta, Canada. Representative sample of adult Albertans (N = 1500). Public perceptions of the frequency, responsibility, causes and solutions for preventable medical error; opinions about confidentiality and disclosure; perceived quality of the healthcare system.

Results. Five hundred and fifty-nine (37.3%; 95% CI 34.8–39.8%) of 1500 respondents reported that they or a family member had ever experienced a preventable medical error while receiving health care in Alberta, Canada. Respondents who reported a preventable medical error were more likely to believe that preventable medical errors occur with greater frequency, were less likely to think that their doctor would tell them if a preventable medical error was made in their care, and tended to rate the quality of the healthcare system less favourably.

Conclusion. This paper provides healthcare managers and policymakers with insight into the public’s perceptions of preventable medical error and may facilitate the development of strategies to improve patient safety, public confidence and public satisfaction with the healthcare system.

Keywords: health service quality, medical errors, patient safety, public satisfaction

Considerable work has been done to assess medical error and patient safety. However, interpreting this extensive body of research is complicated by diverse terminology and the variety of definitions and methods used. For example, medical mistakes, or medical errors, are considered to be preventable or nonpreventable, intercepted or nonintercepted, with serious or nonserious consequences and constituting or not constituting an adverse medical event [1, 2]. To complicate matters further, some errors are referred to as near-misses or close-calls [2]. In addition, the perception of medical error depends in part on perspective: clinicians and laypersons have been shown to have differing points of view as to what constitutes medical error, with patients extending their definition of error to include problems with service quality [2–4] and laypersons are often unaware of the meaning of the term ‘medical error’ [5]. Even among persons trained to evaluate medical errors, there is variation among reviewers [6, 7]. Finally, there is some disagreement regarding the seriousness of the consequences of medical error [6]. Although these conceptual and methodological issues confound the study of medical error, medical error can have serious consequences and may result in death, disability or other physical harm, psychological harm, additional or prolonged treatment, interruptions to patients’ normal daily activities, increased financial burden to individuals and the healthcare system and increased dissatisfaction with health care [4, 7–9].

Following the US Institute of Medicine report on medical errors [10], Blendon et al., surveyed the public in the USA in 2002 asking questions about perceptions of preventable medical error. In this survey, 42% of the public reported that they or a family member had ‘ever’ experienced a...
preventable medical error’ [8, 11]. In a 2003 survey of the Canadian public, 24% of respondents reported that they or a family member had ‘ever’ experienced a ‘preventable adverse medical event’ [12]. In 2003 and 2004, two Alberta surveys found that 13 and 14% of respondents, respectively, reported that they or a family member had experienced a ‘medical mistake’ in the past year [13, 14]. In 2006, a third Alberta survey found that 12% of respondents reported that they or a family member had experienced ‘unexpected harm’ while receiving health care in Alberta in the past year [15]. The variation from survey to survey in both language (e.g. preventable medical error, preventable adverse medical event, medical mistake, unexpected harm) and time frame (e.g. ever, in the past year) is apparent.

In this paper, we describe public perceptions of preventable medical error as reported by a representative sample of adult Albertans. We examine perceptions of quality of the healthcare system, frequency of preventable medical error, responsibility for preventable medical error, causes and solutions to reduce preventable medical error. We also describe opinions regarding confidentiality and disclosure. Finally, we compare the perceptions of those who reported personal experience with preventable medical error with those who reported not having experienced preventable medical error. It is important to understand how the broader public (i.e. not just those who have experienced medical error) perceives preventable medical error so that healthcare managers and policy makers can design effective strategies for increasing public confidence and satisfaction with the healthcare system.

Methods

The questionnaire used for the Alberta Patient Safety Survey was adapted from a structured questionnaire developed and administered in the USA by Blendon et al. [8, 11] and modified for the Alberta healthcare system. The initial questions asked respondents to rate the quality of the healthcare system in Alberta (excellent, very good, good, fair, poor) and asked how recently they had contact with Alberta’s healthcare system. Following Blendon et al. [8, 11], respondents were then told that ‘Sometimes when people are ill and receive medical care, mistakes can be made that result in serious harm, such as death, disability, or additional prolonged treatment. These are called medical errors. Some of these errors are preventable, while others may not be.’ A series of closed-ended questions elicited perceptions of preventable medical error, including frequency, responsibility, causes, solutions, and opinions regarding confidentiality and disclosure. Finally, respondents were asked ‘Have you ever been personally involved in a situation where a preventable medical error was made in your own medical care or that of a family member while receiving service within Alberta’s healthcare system?’ Interviewers were instructed that the definition of family was according to the respondent’s own interpretation.

Trained interviewers administered the survey in April and May of 2004 using a computer-assisted telephone interviewing system. Random digit dialling was used to select households and the individual 18 years of age or older in the household with the most recent birthday was selected for interview. The interview was conducted in English. The response rate was 55%, calculated as total number of completed questionnaires over total completed plus refusals plus those who could not participate due to communication and language problems.

The sample included 400 respondents each from the Calgary and Capital (Edmonton area) regional health authorities and 100 respondents from each of the seven remaining less populated regional health authorities. Respondents were chosen to fill quotas for age, gender and regional health authority. Given that the Calgary and Capital regional health authorities were under-sampled while the smaller regional health authorities were over-sampled, weights were obtained from the 2003 Alberta Health Registration Population data provided by Alberta Health and Wellness and applied to each age, gender and regional health authority category. The final sample of 1500 adult Albertans (age 18 years and older) was representative of the provincial population and provided estimates that are accurate to within plus or minus 2.5%, 19 times out of 20.

The analysis examines public perceptions of various issues relating to preventable medical error. For comparison purposes, respondents were divided into two groups: those who reported that they had never experienced preventable medical error and those who reported that they or a family member had experienced preventable medical error. For simplicity, this second group will be subsequently described as reporting personal experience with preventable medical error. Cross-tabulations and chi-square tests were used to compare the perceptions of preventable medical error for these two groups. Multiple linear regression analysis was used to examine the effect of reporting personal experience with preventable medical error on perceived quality of the healthcare system. SPSS was used to conduct the analyses.

Results

The 1500 respondents consisted of 756 females and 744 males. Average age was 46 years (age range 18–93 years). Forty-six percent of respondents had a college or technical diploma or a university degree, 47% had an annual household income of $60,000 or more and 50% had lived in Alberta for 30 years or more. Respondents rated their health as excellent (23%), very good (38%), good (26%), fair (10%) or poor (4%). The majority (57%) had been in contact with Alberta’s healthcare system within the past 2 months and 86% had contact within the past 12 months.

A total of 37.3% (95% CI 34.8–39.8%) of respondents reported that they or a family member had ever experienced preventable medical error while receiving healthcare service within Alberta. Almost one-third (32%) of respondents who had personal experience with preventable medical error indicated that the error had been made in their own care, 56% said that an error had been made in a family member’s care and 12% indicated that ‘both’ they themselves and a family
member had been involved in situations where preventable medical errors were made.

**Perceptions of frequency and responsibility for preventable medical error**

When respondents were asked how often preventable medical errors that result in serious harm to the patient were made by health professionals, 3% said very often, 23% somewhat often, 50% not very often, 12% not often at all, while 11% indicated that they did not know how often errors were made. Respondents who reported personal experience with preventable medical error were significantly more likely than those who did not \((P < 0.001)\) to perceive that preventable medical errors occur very often or somewhat often (see Fig. 1).

Respondents were asked if they thought that the ‘more’ important cause of preventable medical errors that result in serious harm was mistakes made by individual healthcare professionals or mistakes made by institutions where the healthcare professionals work. This question elicits the respondents’ perceptions and attributions of blame and determines whether the respondent tends to blame individual practitioners or the healthcare institution where they work and that sets the conditions under which they work. For example, if the respondent feels that mistakes are made because doctors are required by the healthcare institution to work long hours or because there are not enough nurses, then the institution may be held responsible rather than the individual doctor or nurse. The majority of respondents (56%) felt that the more important cause was mistakes made by individual healthcare professionals, while 23% indicated mistakes made by healthcare institutions were more important. Another 9% said ‘both’ while 12% did not know which was more important. Respondents who reported personal experience with preventable medical error were significantly more likely than those who did not to think that the more important cause of preventable medical error was mistakes made by healthcare professionals (61.8% of respondents who reported experience with preventable medical error vs. 53.7% of those who did not; \(P < 0.001\)).

Respondents were asked about their perceptions regarding how often patients were at least partially responsible for preventable medical errors made in their care. Six percent (6%) said very often, 43% somewhat often, 42% not very often, 4% never, whereas 6% said that they did not know. Perceptions regarding patient responsibility for preventable medical error were similar for respondents who did and did not report personal experience with preventable medical error.

**Perceived importance of possible causes of preventable medical error**

Respondents were read a list of factors that could ‘cause’ preventable medical error and were asked how important they thought each of these was. As shown in Table 1, the majority of respondents felt that all of the listed causes were very important or somewhat important as causes of preventable medical error, especially: overwork, stress, or fatigue of health professionals.

### Table 1 Respondents’ perceptions of the importance of possible causes of preventable medical errors by reported experience of preventable medical error

<table>
<thead>
<tr>
<th>Possible causes of preventable medical errors</th>
<th>Reported having experienced preventable medical error</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>(\text{Yes}(n=553)%), (\text{No}(n=930)%) \text{a}</td>
</tr>
<tr>
<td>Overwork, stress, or fatigue of health professionals</td>
<td>94.1, 95.4</td>
</tr>
<tr>
<td>Doctors not having enough time with their patients</td>
<td>93.9, 93.1</td>
</tr>
<tr>
<td>Not enough nurses in hospitals</td>
<td>91.3, 91.7</td>
</tr>
<tr>
<td>Health professionals not working together or not communicating as a team</td>
<td>90.5, 90.0</td>
</tr>
<tr>
<td>Medical care being very complicated</td>
<td>78.0, 80.5</td>
</tr>
<tr>
<td>Poor supervision of health professionals</td>
<td>76.7, 72.7</td>
</tr>
<tr>
<td>Poor handwriting by health professionals</td>
<td>72.6, 74.2</td>
</tr>
<tr>
<td>Poor training of health professionals</td>
<td>68.5, 70.1</td>
</tr>
<tr>
<td>Uncaring health professionals</td>
<td>66.7, 60.4</td>
</tr>
<tr>
<td>Lack of computerized medical records</td>
<td>63.2, 65.3</td>
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</tbody>
</table>

\(\text{P} \) determined by chi-square with df = 1.

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**Figure 1** When people seek help from a health professional, how often do you think preventable medical errors are made in their care? \(\chi^2 = 125, \text{df} = 4, P < 0.001\).

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\(\text{P} \) determined by chi-square with df = 1.
health professionals; doctors not having enough time with their patients; not enough nurses in hospitals; and health professionals not working together or not communicating as a team. Respondents, regardless of their reported experience with preventable medical error, tended to have similar perceptions regarding the importance of possible causes of preventable medical error. A statistically significant difference was found for only one of the ten listed causes: respondents who reported personal experience with preventable medical error were more likely to state that uncaring health professionals were very or somewhat important causes of preventable medical error.

**Perceived effectiveness of possible solutions for reducing preventable medical error**

Respondents were read a list of possible ‘solutions’ to prevent medical errors and were asked how effective they thought each of these would be. As shown in Table 2, the majority of respondents felt that all but one of the listed solutions (more lawsuits for malpractice) would be very or somewhat effective in reducing preventable medical errors. Respondents, regardless of their reported experience with preventable medical error, tended to have similar perceptions regarding the importance of possible solutions to prevent medical error. A statistically significant difference was found only for 2 of the 16 listed solutions: respondents who reported personal experience with preventable medical error were more likely to indicate that having a government agency fine health professionals who make medical errors and more lawsuits for malpractice would be very or somewhat effective.

**Sources of knowledge about preventable medical error**

Respondents were asked about the source of their knowledge about preventable medical error. Forty-eight percent of respondents said that their knowledge was based mainly on what they had seen, heard, or read on TV, radio, or in the newspapers, 28% indicated that their knowledge was primarily based on the experience of friends and family, 21% on their own experience and 3% did not know. There was a significant difference, however, in information sources between those who did and did not report personal experience with preventable medical error: 73% of those who reported personal experience with preventable medical error indicated that their knowledge was based mainly on their own experience or the experience of family and friends, while 62% of those who did not report personal experience with preventable medical error indicated that their knowledge of preventable medical error was based mainly on what they had seen, heard, or read on TV, radio, or in the newspapers.

**Opinions about confidentiality and disclosure**

Respondents were asked if hospital reports of serious medical errors should be confidential and only used to

<table>
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<th>Possible solutions to prevent medical errors</th>
<th>Reported having experienced preventable medical error</th>
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<tbody>
<tr>
<td>Requiring hospitals to develop systems to avoid medical errors</td>
<td>Yes (n = 554)%</td>
</tr>
<tr>
<td>Giving doctors more time to spend with patients</td>
<td>95.9</td>
</tr>
<tr>
<td>Requiring hospitals to report all serious medical errors to a provincial agency</td>
<td>95.8</td>
</tr>
<tr>
<td>Reducing the work hours of doctors in training to avoid fatigue</td>
<td>94.8</td>
</tr>
<tr>
<td>Using only doctors specially trained in intensive care medicine on intensive care units</td>
<td>93.3</td>
</tr>
<tr>
<td>Increasing the number of hospital nurses</td>
<td>92.9</td>
</tr>
<tr>
<td>Better training of health professionals</td>
<td>90.5</td>
</tr>
<tr>
<td>Limiting certain high-risk medical procedures to hospitals that do a lot of these procedures</td>
<td>87.2</td>
</tr>
<tr>
<td>More use of computerized medical records</td>
<td>81.7</td>
</tr>
<tr>
<td>More use of computers instead of paper records for ordering of drugs and medical tests</td>
<td>79.1</td>
</tr>
<tr>
<td>Encouraging hospitals to voluntarily report serious medical errors to a provincial agency</td>
<td>78.2</td>
</tr>
</tbody>
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(continued)
preventable medical error were less likely to rate the healthcare system as excellent (4.1 vs. 8.5%) or very good (22.0 vs. 30.3%) and were more likely to rate the healthcare system as poor (9.3 vs. 3.2%) or fair (21.6 vs. 14.6%).

A regression analysis was performed to examine the relationship between reporting having experienced preventable medical error and ratings of the quality of the healthcare system (see Table 3). The analysis shows that there is a negative correlation between ratings of the healthcare system and reporting having personally experienced preventable medical error and also reporting a family member having experienced preventable medical error. That is, individuals who reported personal experience with preventable medical error were significantly more likely to rate the quality of the healthcare system negatively. In addition, persons reporting poor health status, females and younger persons tended to rate the healthcare system more negatively.

**Discussion**

The 2004 Alberta Patient Safety Survey was the first in Canada to explore public perceptions of preventable medical error. A survey of the general public is more likely to reflect the public’s degree of satisfaction with the healthcare system than administrative documentation of actual experiences with preventable medical error, and therefore the results of this survey are instructive for healthcare administrators and decision-makers working to increase public satisfaction and confidence in the healthcare system.

While respondents to the Alberta Patient Safety Survey felt that preventable medical errors are a relatively rare occurrence, nevertheless, 37.3% (95% CI 34.8–39.8%) reported that they or a family member had ever experienced a preventable medical error. Fifty percent of all respondents said that the reports should be released to the public, 41% said that hospital reports should be confidential and 9% said they did not know. Respondents reporting and not reporting personal experience with preventable medical error held similar opinions on this issue.

Although almost all respondents (95%) felt that physicians should be required to tell patients or their family if a preventable medical error is made in a patient’s care, only 22% thought that it was very likely that they would be told while 29% said it was somewhat likely that the doctor would tell them, 29% said it was not very likely, 13% said it was not at all likely and 7% said they did not know. Respondents who reported personal experience with preventable medical error were less likely than those who did not report personal experience with preventable medical error ($P < 0.001$) to think that the doctor would tell them about a preventable medical error made in their care (see Fig. 2).

Figure 2 If a preventable medical error that resulted in serious harm was made in your care, how likely do you think it is that the doctor would tell you? $\chi^2 = 59.2$, df = 4, $P < 0.001$.

(6%) and 1% did not provide a rating. These ratings varied significantly for persons who reported and did not report having experienced preventable medical error ($\chi^2 = 60$, df = 5, $P < 0.001$). Respondents who reported experiencing preventable medical error were less likely to rate the healthcare system as excellent (4.1 vs. 8.5%) or very good (22.0 vs. 30.3%) and were more likely to rate the healthcare system as poor (9.3 vs. 3.2%) or fair (21.6 vs. 14.6%).

**Ratings of the quality of the healthcare system**

Respondents rated Alberta’s healthcare system as excellent (7%), very good (27%), good (42%), fair (17%) or poor (6%) and 1% did not provide a rating. These ratings varied significantly for persons who reported and did not report having experienced preventable medical error ($\chi^2 = 60$, df = 5, $P < 0.001$). Respondents who reported experiencing preventable medical error were less likely to rate the healthcare system as excellent (4.1 vs. 8.5%) or very good (22.0 vs. 30.3%) and were more likely to rate the healthcare system as poor (9.3 vs. 3.2%) or fair (21.6 vs. 14.6%).

A regression analysis was performed to examine the relationship between reporting having experienced preventable medical error and ratings of the quality of the healthcare system (see Table 3). The analysis shows that there is a negative correlation between ratings of the healthcare system and reporting having personally experienced preventable medical error and also reporting a family member having experienced preventable medical error. That is, individuals who reported personal experience with preventable medical error were significantly more likely to rate the quality of the healthcare system negatively. In addition, persons reporting poor health status, females and younger persons tended to rate the healthcare system more negatively.

**Table 2 Continued**

<table>
<thead>
<tr>
<th>Possible solutions to prevent medical errors</th>
<th>Reported having experienced preventable medical error $P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including a pharmacist on hospital rounds when doctors review the progress of patients</td>
<td>Yes ($n = 554$)%a No ($n = 931$)%a 0.47</td>
</tr>
<tr>
<td>Suspending the license of health professionals who make medical errors</td>
<td>76.1 75.5 0.79</td>
</tr>
<tr>
<td>Having a government agency fine health professionals who make medical errors</td>
<td>69.2 60.4 &lt;0.001</td>
</tr>
<tr>
<td>Having hospitalized patients be taken care of by hospital doctors rather than their regular doctors</td>
<td>58.4 58.2 0.94</td>
</tr>
<tr>
<td>More lawsuits for malpractice</td>
<td>42.1 32.9 &lt;0.001</td>
</tr>
</tbody>
</table>

*Percentage indicating that item was very or somewhat important. Probability ($P$) determined by Chi-square with df = 1.
medical error while receiving healthcare in Alberta. Respondents who reported personal experience with preventable medical error tended to have different perceptions of certain aspects of preventable medical error than those who did not report having experience with preventable medical error. In short, respondents who had personal experience with preventable medical error were more pessimistic about the frequency of preventable medical error, the transparency of reporting, and were less satisfied with the healthcare services they receive. It follows that persons’ reporting experiences with preventable medical error are an important group to consider when developing policy or education and communication strategies. Further, given that half of respondents said that their knowledge of preventable medical error was based mainly on what they had seen, heard, or read on TV, radio, or in the newspapers, it follows that the media can be an important partner in education and communication strategies.

This study also suggests that increased public satisfaction and confidence will result from the promotion of preventable medical error reduction strategies that focus on healthcare professionals and on the institutional constraints that influence professional healthcare. For example, respondents suggested that healthcare professionals can increase public satisfaction and confidence by admitting errors to patients, taking more time with patients, caring more and communicating more carefully. Further, institutional strategies perceived by the public as useful include: reducing hours of work for doctors in training, increasing the number of hospital nurses, giving doctors more time to spend with patients, and improving teamwork and communication. Finally, given that 95% of respondents said that physicians should be required to disclose medical error to patients and 50% said that reports of medical error should be released to the public, issues of confidentiality and disclosure of medical errors require further administrative attention and perhaps public consultation.

The results of the Alberta Patient Safety Survey are comparable to those reported by Blendon et al. [8] who reported that 42.0% (95% CI 39.4–44.6%) of the American public indicated they have had personal experience with preventable medical error compared to 37.3% (95% CI 34.8–39.8%) of the Alberta public. Respondents to both surveys felt that the
more important cause of preventable medical error was mistakes made by individual healthcare professionals, as opposed to the institutions where they work. Fifty-five percent of the American public and 56% of the Alberta public shared this belief. The top four (out of eleven) perceived causes of preventable medical error and the top two (out of 16) potential solutions to reduce preventable medical error were the same in both surveys. One difference between the two surveys is that while 26% of Albertan respondents perceived that preventable medical error occurs very often or somewhat often, 49% of the American public reported this perception. Given the differences in the structure and delivery of healthcare between the two countries, more differences in results might have been expected. Similarities, however, may result from cross-border media coverage of both healthcare systems.

This study has several limitations. Response rates in telephone surveys have been declining as more people screen in-coming calls and opt for cell phones in place of landlines. The response rate for this study is 55%. The survey was conducted in English, and while most Albertans speak English, some recent immigrants to Alberta may not speak fluently and may have been excluded. Respondents were asked to report preventable medical error that either they or a family member had experienced at any point during their lives in Alberta. Accordingly responses may be influenced by recall bias in that less recent events may be less likely to be recalled and parents may better recall events affecting family members than nonparents.

Responses therefore may not be entirely representative of the current situation regarding medical error, although current perceptions of preventable medical error are likely shaped by past experiences. Respondents were allowed to use their own definition of family, introducing another potential source of variability in responses. Further variability may result from respondents not necessarily knowing the meaning of medical error and not being able to distinguish between preventable and nonpreventable error; however, a definition of preventable medical error was included in the survey questionnaire and read to each respondent. Finally, for responses to questions regarding possible causes of preventable medical error and potential solutions to prevent preventable medical error, many respondents may have been unable to meaningfully differentiate between choices—as a consequence of their unfamiliarity with the specific logistics of the healthcare system—and consequently may have indicated a strong role for each listed cause and solution. Nevertheless, the data are instructive as a means to prioritize strategies designed to improve patient safety and confidence in the healthcare system.

The public perspective is a valuable addition to the growing body of literature on medical error. Although often overlooked in patient safety research, this perspective contributes to a comprehensive understanding of medical error. Further, the public perspective is informative in the development of initiatives designed to improve patient safety, public confidence and public satisfaction with healthcare. The public and the patient perspectives are important and valuable to healthcare providers concerned with developing, implementing and evaluating patient safety strategies, policies and initiatives. Patients should be recognized as part of the healthcare team and should play a role in safety design. ‘In many cases, the best window on the safety and quality of care is through the eyes of the patient’ and inviting patients (and healthcare workers) ‘to comment on the performance of the health system as they experience it ... is a core way of learning about the system’s performance and how to improve it.’ ([16, p. 45]). In essence, the public perspective puts the public back at the heart of the healthcare system, a place that they do not always hold in a politically and administratively burdened system.

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References


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