

Patient Safety Education 20 Years After the Institute of Medicine Report: Results From a Cross-sectional National Survey

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Conflicts

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ABSTRACT

Objectives

Educating healthcare professionals in patient safety is essential to achieving sustainable improvements in care. This study aimed to identify the key constituents of patient safety education alongside its facilitators and barriers from a frontline perspective.

Methods

An electronic survey was sent to 592 healthcare professionals and educators in patient safety education in the United Kingdom. Free-text responses were coded using a content theme approach by 2 independent coders. A coding framework was used to analyze the themes of effective content, learning practices, and facilitators and barriers to patient safety education.

Results

Of 592 individuals completing the survey, 545 (92%) submitted analyzable responses. Interrater reliability of coding was high with Cohen k value of 0.86. Participants endorsed experiential and interactive learning as ideal modalities for delivery and expressed a need for content to be based on real clinical cases and tailored to the needs of the learners. The most commonly mentioned facilitators were standardization of methods and assessment (49%), dedicated funding (21%), and culture of openness (20%). Staffing problems and high workload (41%) and lack of accessibility of training (23%) were identified as primary barriers of efficacy and uptake.

Conclusions

This study identified key factors to the success of patient safety education in terms of content and delivery alongside facilitators and barriers. Future curricula developers and interventions

should improve standardization, funding, culture, and access so as to optimize education programs to enhance patient safety.

Key Words: patient safety, education, training

Introduction

Twenty years have passed since the publication of the Institute of Medicine's seminal report propelled patient safety into the public eye¹. Since then, much has been achieved, yet little has changed. A growing realization has emerged that to have a significant effect on patient safety, system-level change, and cultural transformation is required². The ambition is not just to make a change but to see it permeate throughout the entire healthcare system leading to improvement, which makes an impact on a national level and is both scalable and sustainable^{2, 3}.

Education of healthcare staff is being increasingly acknowledged as not only one of the main enablers of improvement, but an important factor in its own right, which if not addressed, can lead to the failure of many promising safety innovations⁴. This recognition is reflected in the development of patient safety courses at all levels of medical education and the publication of a multi professional patient safety curriculum guide by the World Health Organization⁵. In today's fiscal climate, educational programs are also particularly important as they are low-cost interventions that scale well, making them especially desirable if a large number of healthcare workers are to be targeted⁶.

Although several case studies demonstrate the positive effects of patient safety teaching^{7, 8}, many of these only capture immediate improvements in learner satisfaction, knowledge, and attitudes after the educational intervention^{9, 10}. Findings from more longitudinal studies indicate that not all safety education methods are equally effective, and not all content is retained equally well¹¹. Earlier studies have also identified that educational modality, timing, and course content are influencing factors with regard to the long-term retention of learned material and that buy-in or engagement from trainers and learners are key facilitators of success¹¹. However, even fewer studies have demonstrated any change in the behaviour of learners or inpatient outcomes after patient safety training. This is primarily due to the challenges that surround the implementation and sustainable integration of such programs¹⁰.

Furthermore, although numerous training curricula and courses have been developed, these have often not been supported by an evidence based or a training needs analysis to guide either content or implementation.

Despite its considerable promise, therefore, little is known about how to enhance the efficiency of patient safety training and which learning methods and content are superior. Previous studies attempting to address this have been confined to single institutions and, because of the very nature of their quantitative methodology, have failed to obtain the rich understanding that is required to address this problem of generalizability^{8,11,12}. In contrast, obtaining an expert view from people who regularly deliver and receive such training would enable us to identify what elements of patient safety education are deemed most effective by those on the “frontline” alongside the key enablers and challenges to their success. This is crucial so that future patient safety training programs are responsive to learner needs and adhere to best practice standards, thereby increasing their chances of success.

The aims of this study were to identify the key components of patient safety education alongside the learning practices deemed most effective. A further aim was to explore the facilitators and barriers to safety education, comparing and contrasting the perspectives of both learners and educators so as to maximize engagement from both groups.

Methods

Study Setting and Population

The study population consisted of 592 healthcare professionals/ educators with strategic positions in patient safety education in the England, United Kingdom. These were identified by Healthcare Education England, the national body responsible for overseeing postgraduate training in England. Each institution providing patient safety training across the country was

also asked to nominate a representative learner to provide 360-degree feedback.

Questionnaire development and distribution

The questionnaire was developed by an expert panel consisting of members from the NIHR Patient Safety Translational Research Centre, the Institute of Global Health Innovation, and the Centre for Health Policy at Imperial College London in collaboration with Health Education England (n = 12). It consisted of 4 open ended questions on the following topics: (a) experience of the respondent in patient safety training; (b) facilitators of patient safety education; (c) challenges and suggestions for improvement; and (d) additional comments/insights. Answers were recorded in free-text response fields so as to minimize response bias associated with numerical data and to provide a richer understanding commensurate with qualitative data. The resultant questionnaire was reviewed by an expert in survey methodology and psychometrics to provide an understanding of how respondents would perceive the questions. It was also piloted with a representative sample population before minor amendments were made for clarity. The questionnaire was sent to all possible respondents via Survey Monkey and was held open for 3 months from June to August, with fortnightly reminders sent to non-responders.

Data Analysis

All data from the questionnaires were exported onto a database. Two independent reviewers used a content theme methodology to conduct a qualitative analysis of the free-text responses^{13,14}. Content themes were extracted through an initial exploratory categorization of all responses. This extraction, naming, and description of themes were informed by a review of the literature on patient safety education so as to ensure a standardized language to our findings¹⁵. After piloting the initial coding framework, all subsequent results were coded iteratively to aid an in-depth understanding of the key themes. Specifically, the primary coder extracted meaningful data excerpts from the free-text responses and then coded these excerpts into the semantic themes. The process was both deductive and inductive, as

category names and descriptions were amended during this process, and new categories were introduced, and themes redefined, where appropriate, until no new categories or themes emerged, and thematic saturation was reached. Twenty percent of the excerpts were recoded independently by another researcher to establish the consistency of the themes. Any disagreements were resolved by discussion with a third researcher, thereby providing reconciliation of our findings. Quantitative synthesis of the frequency of occurrence was carried out on the respondent level and analysed using descriptive statistics on SPSS. The role of the respondent (educator or learner) was also used as a categorical variable to test hypotheses about the differences between learners and educators with regard to their views on patient safety education. Specifically, based on previous reports^{11,15,16}, we expected that educators would identify the following criteria as more important than learners: (a) standardization of teaching content and competencies; (b) content of safety training to be evidence based; and (c) group learning as an effective teaching modality. In contrast, we expected a higher degree of importance attributed to the following topics among learners: (a) involvement of patients and carers; (b) content to be clinically relevant; and (c) experiential learning to be the optimal learning modality. These hypotheses were formally tested with a χ^2 test, with a $P < 0.05$ set as statistically significant.

Results

Participant Characteristics and Coding Reliability

Of the 592 individuals who received the survey, 92% provided valid answers to be included in analysis. Table 1 summarizes the participants' primary professional roles in which they encountered patient safety education. Of these, 67% of participants indicated that they had experience as educators/trainers in the topic of patient safety. We classified these respondents as educators, whereas everyone else was classified as learners (33% of population). A total of 2073 excerpts were extracted from responses to the free text questions. These excerpts were coded into emergent themes with excellent interrater

agreement between the 2 coders (Cohen κ = 0.86 [95%confidence interval = 0.81–0.91]) indicating a high reliability of our coding.

Content of Training

Seven key factors emerged regarding the ideal content of patient safety training with no significant differences observed between educators and learners. These themes are depicted in Table 2. Almost half the study population stated that content of such training must be clinically relevant, using real-life examples, case studies, or patient stories to support the narrative. Human factors were also endorsed as important content by more than a third of participants particularly because it is often the failure of nontechnical skills that leads to harm. Participants felt that formal training in communication and teamwork as part of a patient safety educational package would help circumvent some of these issues. Training on risk management, safer systems, quality improvement, and medication safety were also key themes. Importantly, a third of all participants explicitly mentioned that any training program must be adapted to the needs of the learners to maximize engagement. This suggests that a one-size-fits-all approach may not be suitable for patient safety education.

Delivery of Training

Five different teaching methodologies were identified including experiential learning, interactive learning, group-based learning, didactic learning, and one-to-one learning (Table 3). Of these, experiential learning methods such as on-the-job learning (in vivo) or simulations (ex vivo) were identified as most useful for participants. There were no significant differences regarding the best teaching technique between learners and educators—both groups highlighted experiential learning as the preferred modality. Being involved in quality or safety improvement projects was another method for helping participants actively engage with patient safety training. Regarding classroom-type education, many participants favourably mentioned interactive learning techniques, such as role-play and scenario-based learning as way of embedding key principles. Learning in a group or an inter-professional

setting was also endorsed by a third of the respondents. Opinions on didactic techniques were mixed. Although respondents expressed positive sentiments about visual aids, such as videos and presentation slides, more than half of the comments on web-based learning were negative. Similarly, more than half of those mentioning lectures or theory-related classes expressed negative attitudes about these types of learning techniques.

Facilitators to safety education

Nine key facilitators of effective patient safety education were identified. These are shown in Table 4 alongside representative participant quotes. The most important enabler was the need for standardization with almost half of respondents perceiving that it was necessary for making training more efficient. Standardization involved identifying the key competencies for patient safety education alongside regulation of the frequency, quality, and content of the education programs offered. This would help reduce variation and enable better quality assurance. Of our 2 groups, learners were more likely to highlight such standardization as a facilitator for the effectiveness of safety training ($\chi^2 = 5.27$, $P = 0.021$). For example, several learners called for better-standardized assessment, whereas many educators were more inclined toward a policy change that would make safety education mandatory. More than 20% of respondents also indicated that having allocated funding for safety education is essential if we are to make substantial gains in this field. Acknowledging the role of human factors be it through a culture of transparency, the freedom to speak up or through the use of champions and role models was also deemed critical. Participants also felt that the remit of patient safety education should be expanded to be more inclusive by targeting a broader range of healthcare workers (not just doctors and nurses) and involving patients and carers in training. This last point was deemed more important to learners rather than educators ($\chi^2 = 14.91$, $P < 0.001$). These techniques would allow learners to benefit from each other's experiences, enabling them to appreciate an alternative perspective as well as facilitate peer-to-peer learning.

Barriers to safety education

Key barriers to the uptake and delivery of effective patient safety education are highlighted in Table 5 with example quotes. The most common issue was staffing problems and heavy workload resulting in healthcare workers not being able or permitted to attend training. Similarly, issues with lack of accessibility due to inconvenient timing, location, or unavailable technology were also raised. Respondents also felt that there was a lack of awareness among healthcare workers about the importance of patient safety and the impact of education on reducing harm, which then subsequently resulted in a low uptake of training. Inadequate support from the management and leadership and the low number of high-quality trainers with clinical experience were also identified as key barriers. Educators mentioned an inadequate evidence base for safety training more often than learners ($\chi^2 = 5.72$, $P = 0.02$), but there were no other differences between the groups with regard to potential barriers.

Discussion

This study identified facilitators of patient safety education including standardization of specific funding, a culture of openness, broadening the scope of training, and earlier involvement. At the same time, high workload combined with staffing problems, lack of awareness, inaccessibility, an inadequate evidence base, and lack of support from the leadership were the 5 most often mentioned barriers. Sentiments of learners and educators about experiential learning, interactive learning, and group-based learning were positive, whereas attitudes about didactic methods were mixed with several respondents expressing negative opinions about e-learning and didactic classroom lectures. Importantly, a large number of respondents mentioned that the content of the education should be clinically relevant, as well as being tailored to the needs of the learners. This is in parallel with previous studies demonstrating that residents rate real-life examples of incidents most valuable when learning about patient safety^{17,18}. However, according to a systematic review, only 7 of the 26 included education programs use case-based learning¹⁰. Our participants

also endorsed human factors skill as useful teaching content, but the prevalence of this content was also low (31%) within recently published studies¹⁰. It seems that there is disparity between learner needs and training content of current programs, which must be addressed if long-term engagement and sustainability can be achieved.

In line with previous work, this study also found that one of the most important barriers of successful patient safety education was the competing time commitments of both learners and educators^{9,10}. These results therefore support previous recommendations that a successful education program needs to ensure complete freedom from other commitments^{9,10}. Providing such protected time may have an impact on funding as appropriate cover must be arranged. In addition, in line with other research, our study supports the fact that there is no silver bullet for enhancing safety education—it requires a complex approach including dedicated funding, investment in faculty development, careful balancing of staffing and workload, and optimal timing/ location of training so as to improve access. Furthermore, broadening access to safety education is consistent with the growing emphasis in the literature on inter-professional learning as a mechanism to achieving safer care^{19,20}. Our results confirm that it is not only economical to design training that can be attended by multiple professional groups, but it also makes the results of that education more effective.

Another interesting finding was the importance attributed to institutional culture. Specifically, we found that from a top-down perspective, insufficient support from managers and leaders was a significant barrier to accessing training. On the other hand, the presence of a culture of openness and the duty of candour, alongside champions and role models advocating safe care, were deemed as important facilitators of effective training. This finding is also in support of previous literature recognizing institutional culture as a key factor for the successful implementation of safety curricula^{9,10}.

In contrast to other studies, we found that the most important facilitator of safety training was standardizing the competencies taught as well as the frequency, content, and quality of delivery. This is seldom mentioned in previous work whose scope has been limited to a single intervention, thereby restricting views to that particular program only. Our study, however, was more generalizable as its breadth of responses meant that it was not constrained to any one program, thereby providing a much-needed oversight of the wider picture. There have been attempts at standardization previously, for example, the American Board of Medical Specialties advises to include patient safety questions on board certification examinations²¹. However, the evidence based necessary to transform such guidelines into mandatory policy is still lacking, making it incumbent on future researchers to fill this lacuna. Interestingly, although half of our learners favoured standardization, others called for a more tailored approach. We would therefore advocate that although generic elements of training should be uniform, e.g., methodologies for patient safety research, definitions, etc., there should also be room for educators to deliver site-specific elements of safety training adjusted to local needs. Limited high-level evidence was also a commonly cited barrier to sustainable patient safety training. This may be because thus far, there has been little empirical research on patient outcomes after safety education^{9,10}. However, measuring clinical outcomes may not be the most effective metric by which to judge the result of such educational interventions. Our results therefore support the call for further studies to identify the most appropriate outcome measures alongside enhanced knowledge mobilization and dissemination of existing evidence^{10,22}.

Inevitably, this study was subject to some limitations. Firstly, the results are based on a voluntary online survey and self-report. Thus, it represents the views of a selected sample, and as with many survey studies, we cannot be certain of how representative our results are to all learners and educators. However, the widespread breadth and volume of responses across the country (n = 592) allows us to have some confidence in the generalizability of our findings. As there was an element of snowball sampling, with institutions being asked to

identify appropriate learners themselves, we could not fully control for the types of participants who received the questionnaire. However, the qualitative nature of our study did provide an in-depth richness to our results, which would not have been possible with a quantitative approach. A replication of our results with a more controlled sampling technique would, however, strengthen our interpretations.

With regard to future research and implications for practice, several factors should be considered. In this study, both learners and educators expressed a preference for adult pedagogical techniques, such as experiential and immersive learning techniques over didactic methods. Future research should seek to determine which modality best supports optimal learning outcomes. It should also elucidate the ideal timing, location, and duration of safety training to inform future educators on best practice. Educational programs must be devised that are specific enough to standardize the core components of training yet remain flexible to adapt to the need of local learners. Their outcomes must be evaluated using the most appropriate metrics, which are not just psychometrically robust but also pragmatic and realistic to everyday clinical practice—itself a topic for further research. Only then can the evidence based for safety education be truly built, thereby ensuring that it is no longer part of the “hidden curricula” but rather becomes mainstream practice.

Conclusion

This study identified the key factors influencing the success of patient safety education from the perspectives of frontline educators and learners. It highlighted the preferred content and learning modality of experiential learning based on real-life cases. Standardization, dedicated funding, and resources alongside an open learning culture were identified as primary facilitators, whereas the main barriers were staffing problems/workload, poor accessibility, and senior support. Our results also highlight the importance of increasing patient involvement, including a broader scope of healthcare workers and taking a more complex systems-based approach to improving the sustainability of patient safety training. Further

research should focus on identifying the best teaching practices, appropriate outcome measures, and optimal delivery, thereby ensuring that the patient safety momentum is maintained for future generations.

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