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Article Review

THE ROLE OF PATIENT SAFETY EDUCATION AND TRAINING IN IMPROVING PATIENT SAFETY

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Abstract

Background

Patient safety education and trainings are an important element to promote patient safety culture. The demands on this training for the safety of healthcare staffs and patients are crucial due to the occurrence of preventable medical errors. These review aims to study the types of patient safety education and training that are delivered for the different target audiences as well as identifying the results of the training.

Methods

This study presents narrative review on literature on patient safety education and training. Peer-reviewed journals and previously published papers were searched using keywords including "patient safety training," "improvement," "outcome," "health care," and "health services". Inclusion criteria for the article include the article written in English and published between 2013 and 2018. We used several journal databases including the Journal of Patient Safety, BMJ, PubMed, BMJ Quality & Safety and Google Scholar.

Results

Reviews were done based on previously published papers. The findings revealed that the patient safety education and training are mostly conducted to nursing and medical students as well as trainee and residents. Besides, it was also conducted for anesthesiologists and patients. Typically, mannequin-based demonstrations and trainings are provided for medical students and educators through the workshop for physicians and nurses. In addition, most of the important role in ensuring patient safety is mainly done by nurses followed by the anesthesiologist.

Conclusion

In regards to patient safety, each department has a specific role in ensuring patient safety culture in a clinical unit. Patient safety education and training must be provided for all levels because they may greatly influence the outcome especially on the attitudes and behavioural changes.

Keywords: Patient Safety; Medical Errors; Health Services; patient safety training

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INTRODUCTION

Patient safety is defined as the absence of completely avoidable injury to an individual during the health services and reducing the risk of unnecessary threat within an acceptable range (WHO, 2019b) as well as prioritizing the deliverance of systemic care, error prevention, taking lessons from previous incident and integration of safety culture encompasses medical professionals, institutions and patients (Kohatsu and Alexander, 2016). Health care services require more attention since it involves a high level of risk. It needs continuous interaction and coordination with the professional teams that vary in knowledge and experience to keep up with devices, strategies and protocols that are rapidly evolving (Kohatsu and Alexander, 2016). Unsafe practices lead to adverse effects which become one of the 10 leading causes for deaths worldwide. In a developed country 1 in every 10 persons are most likely to be the victim of unsafe care although these errors can be prevented. While 2.6 million deaths are recorded due to unsafe care in developing countries (WHO, 2019). Considering this, patient safety education and training have been emphasized in all units among healthcare staff and patients. The training plays a crucial role in improving patient safety in the health care setting and it is highly expected to result in positive outcomes.

First and foremost, patient safety education serves to improve the skills and knowledge among the health care professionals to provide safer care to patients. Despite generating the medical staff workforce, patient safety education able to meet the current demand of the health care system (Dina, no date). The wastage of cost expenditures and usage of unnecessary resources can be decreased by the reductions of inevitable errors during the medical care service. The reduction in such errors eventually results in the decline of mortality rate as well. Patient safety training for health professionals has been proved with positive clinical outcomes and institutional performance in developed countries. Improvement in teamwork skills is also a part of the positive outcome that has been witnessed recently. At the same time, medical staff will be able to gain deep knowledge to increase the level of patient safety in their compound upon receiving patient safety training as well as catalysing the improvement of health care quality (Johnston *et al.*, 2019). Patient education does make patients feel more engaged and creates a positive perception of patient safety issues. For example, an educational campaign for patients may motivate behavioural changes and implement a positive attitude towards ensuring their safety. Although the role of the patients seems to be very limited on safety elements but

without their commitment and cooperation, patient safety goals will be a failure (An *et al.*, 2017).

Considering the importance of patient safety education, a clinical performance experience (CPX) program was conducted for medical and internship students at Chicago, USA. In this stimulation, threats that can be found in the clinical setting were developed in a mock room. Upon entering the room, participants were instructed to go through the safety hazard lists and they needed to provide as many as possible the hazards that possibly to be encountered in the clinical setting within specified timing. The results showed that 83% of the students managed to complete the task successfully within the time given (Farnan *et al.*, 2016). Another patient safety training (PST) was conducted in Morgan Regional hospital. This program consists of the analysis, identification of the aim of training, designing and developing the training solution as well as training implementation and evaluation. Four main areas were included, namely e-learning, action learning through face-to-face, team race and patient safety online forum, the results show that organisational effort in patient safety is much needed as compared to individual-focused training (*Patient Safety Training Program for Morgan Regional Hospital*, no date). Conversely, a systemic review on the outcome of patient safety education intervention on physician trainee and medical students from 2009 to 2014, reported that positive behaviour and engagements in quality improvements were notable while patients' benefits were not demonstrable at all. The reviewers concluded that the training had increased the participant's knowledge and skills (Kirkman *et al.*, 2015).

Ministry of Health particularly the Patient Safety Unit greatly supports such efforts to assist the implementation of patient safety curriculum into the medical learning system as well as continuing medical education (CME) to inculcate medical stuff on the importance of patient safety education (Kirkman *et al.*, 2015). Considering all the previous studies, this review paper aims to investigate patient safety education and training, specifically focuses on the types of patient safety education and training also to identify the outcomes of the program.

METHODS

Study Design

This study employed a narrative review methodology to explore the field of patient safety education and training. Our objective was to gather and analyze information from various sources in order to create a coherent narrative that encompasses the many aspects of patient safety education and training.

Data Collection

We carefully curated data from top patient safety journals such as the Journal of Patient Safety, BMJ, PubMed, and BMJ Quality & Safety. Furthermore, we used Google Scholar to broaden our search scope. Our primary focus was on peer-reviewed journals and previously published papers, with a specific emphasis on patient safety education and training. We used keywords like "patient safety training," "improvement," "outcome," "health care," and "health services" to find relevant literature. Our inclusion criteria included publications written in English and published between 2013 and 2018, ensuring that the data was current and relevant. We excluded conference papers and thesis dissertations to ensure the rigor and quality of the sources reviewed.

Data Analysis

This review paper presents a thorough examination of prior research to investigate patient safety education and training. We specifically concentrated on identifying the various types of patient safety education and training programs, and assessing the results of these programs. In order to accomplish this, we utilized thematic analysis as our chosen analytical methodology. Thematic analysis enabled us to identify recurring themes, patterns, and significant insights throughout the literature we reviewed. This allowed us to gain a comprehensive and detailed understanding of patient safety education and training initiatives and their effects.

RESULTS

Table 1. Types of training provided for the specific groups and the outcome

Authors & publication year	Research question or aim of the research	Participants or subject of the investigation	Training Method	Findings
Ottawa (2018) (Ottawa, 2018)	To investigate the effect of patient safety curriculum for nursing undergraduate students.	Nursing undergraduate students	Survey	- The contribution of a registered nurse for patient safety culture was notable. - Effective team works were witnessed among nurses to ensure patient safety. - Effective communication among nurses and patients is vital to ensure the patient's safety.

				- The registered nurse was able to manage risk effectively while they can. - Nurse successfully optimized the environment and human factors to ensure patient safety.
Kutaimy et al., (2018) (Kutaimy *et al.*, 2018)	Evaluate the outcome of the workshop on patient safety in early medical education.	First-year medical undergraduate	Pre and post-test	- Emotional discomfort created through a demonstration using mannequin prepared the students to be more engaged in patient safety practices. - Positive attitudes and knowledge were shown by the students after the end of the workshop on patient safety. - The students reflected on appreciation and awareness to avoid medical errors on the post-session test.
Ahmed at al., (2013) (Ahmed *et al.*, 2013)	To develop, implement and evaluate patients safety education for senior doctors.	Physicians	Question naire	- Knowledge, skills & attitude on patient safety were significantly improved. - The training involved senior doctors in patient safety is vital to the building capacity and capability to deliver knowledge to the junior staff. - Significant increase in the attitude and perception towards patient safety (pre-intervention and post-intervention).
Kirkman et al., (2015) (Kirkman *et al.*, 2015)	To review the latest patient safety education for medical staffs and students.	Physician trainee and medical students	Systemic review	- Most studies reported on the improvement in knowledge and skills on patient safety. - Notable behavioural changes toward patient safety were witnessed. - A positive outcome at the organisational level was seen as continually engaged in patient safety improvement projects. - Clinical commitments were the main barrier for medical

				staff to participate in such training.
Green et al., (2016) (Green, Tariq and Green, 2016)	To evaluate the outcome of stimulation training for anaesthesiologist in patient safety.	Anaesthesiologist	Literature review	- The stimulation practice leads to increase skills in anaesthesiologist; notably toward patient safety as well. - Anaesthesiologist demonstrated an increase in pre-preparedness and confidence upon stimulation training. - the increased level of knowledge and skills were notable. - Stimulation training had improved patient outcomes.
Jagneaux et al., (2017) (Jagneaux *et al.*, 2017)	To study the effect of stimulation-based learning on patient safety during venous catheter placement.	Emergency & internal medicine residents	Questionnaire	- Participants demonstrated their knowledge of sterile technique usage upon completion of the course. - Reduction in the catheter placement time decreased the attempts and arterial puncture was notified. - The confidence level of participants increased safe catheter placement at the end of the session.
Commission on Education and Training for Patient Safety Improving Safety Through Education and Training (2016) (Health Education England, 2016)	To improve patient safety through education & training.	Patient and hospital staff.	Observation & systemic review.	- NPSA program resulted in a reduced infection rate in ICU. - The rate reduction from low harm to no harm and severe harm to moderate harm was high in NHS upon completion of patient safety training. - The risk assessment program has reduced the mortality rate nationally. - The simulated patient program enhanced patient participation in their safety. - Carer skill passport which introduced in the UK enables parents and care providers to receive the necessary training concerning safe patient care.

An et al., (2017) (An *et al.*, 2017)	To study the effect of education on attitude and perception towards the patient's safety.	Patients	Questionnaire & discussion	- Participants who receive patient safety education showed a positive attitude and perception towards the importance of patient safety. - Patient with greater clinical severity demonstrated positive perception as compared to less clinical severity. - Patients admitted to the internal department showed more concern about patient safety compared to the surgery department. - College graduate demonstrated more positive attitudes than high school graduates towards the importance of patient safety.

Patient safety education and training is an important element in ensuring patient safety culture not only in the hospital setting but also outside of the hospital. The findings revealed the targeted participants are mostly students which including nursing and medical students, trainee and residents. Besides, the training was also conducted to the anaesthesiologists and patients. Initially, these types of education and training are limited only for healthcare staffs in which physicians, senior doctors, anesthesiologist and nurses are given stimulation-based training using a mannequin. But over time, healthcare units concern about the importance of stressing patient safety education starting from the base itself. So, patient safety education and training started to be implemented in the curriculum for undergraduates, especially for first-year medical and nursing students. The positive outcome was notable in all levels of implementation. Yet, patient safety could not be achieved without the participation of the caretakers and patients. So, the special training such as career skill passport has been legally introduced to ensure the caretakers are qualified to give the proper care in accordance to the patient safety culture. Patients are given the education to have positive perception and it is expected to lead their behavioural changes which make them engage in ensuring their safety which includes the role-play training. The patient safety training and education provided for each level vary as well as the outcome. The significant issue is whether patient safety education and training give a positive outcome.

DISCUSSION

Following patient safety goals, it is necessary to implement patient safety culture to all those involved in ensuring patient safety directly or indirectly especially through patient safety training and education. Considering this, the Canadian Association of Schools of Nursing together with the Canadian Patient Safety Institute collaboratively implemented a patient safety curriculum for nursing undergraduates and set a benchmark for students to pass the entry-level for nursing (Ottawa, 2018). Upon implementation of this subject, they believe that all officially registered nurses able to contribute to patient safety such as recognising and taking immediate action on preventing medical errors, making use of medical code ethics while taking a decision and able to develop critical thinking and respectful challenge concern relating to patient safety. This attitude is expected to enable nurses to have good teamwork in ensuring patient safety through developing effective communication among co-workers and patients. Thus, they will be able to use human factors to deal with the unsafe atmosphere when they are able, as well as ensuring patient safety goals are maintained (Ottawa, 2018). This statement correlates with a study conducted by Noviyanti et al., on improving the patient safety training for nursing students by using nursing students as the instructors (Noviyanti, Handiyani and Gayatri, 2018). According to her study, a pre and post-test at two different hospitals involving nursing students were conducted to investigate the outcome of implemented patient safety training. They provided patient safety program including the demonstration of the clinical nurses on the standard procedure on handling unsafe environments using fishbone analysis for about 4 months of duration. After the training session, the results indicate that the participant's skill, knowledge and positive attitude shows a significant increase in those group received in the intervention whereas those students in control groups don't show any prominent positive result. This strongly indicates that clinical guidance is the most important element for a nursing undergraduate to contribute to patient safety culture (Noviyanti, Handiyani and Gayatri, 2018). Another study conducted by Mansour et al., on the integration of patient safety curriculum for undergraduates in 2018 (Mansour *et al.*, 2018). From his study, he revealed the obstacles and chances of implementing patient safety education for nursing undergraduate students. According to the study, a hospital that has been accredited with 'Magnet' status fulfils the criteria of patient safety culture. This is because, to achieve this status, nurses should be well-trained and with basic education on patient safety during their bachelor course. This clearly defines that implementing patient safety training and education as part of accreditation raises the standard of sizeable degree and increases the quality of care at the national level.

Nevertheless, injury-based learning is witnessed to provides a hands-on learning experience for nursing students as in this case the students are demonstrated with a scenario involving patients, in which the student must use their critical thinking to gather information, analyse and provide appropriate care with the application of patient safety goals. Unfortunately, lack of competitive educators serves as the main reason for the failure of implementation of patient safety training as they are depending on modern technologies in delivering their lecture on patient safety and did not train the students through the practical session (Mansour *et al.*, 2018).

Apart from that, patient safety training involving workshop for first-year medical students can inculcate positive behaviours into them. This is proven through the study conducted by Kutaimy et al., in 2018 on a large group of junior medical students. In this hands-on training, the students were instructed to dissect a cadaver's abdomen in which then a foreign body such as sponges was hidden into the abdomen wall. Upon dissecting the abdominal wall for the second time, some students successfully discovered the retained foreign materials. Upon relating the incident to a real-life story through a sharing session, the trainee witnessed that the workshop successfully prepared the students to be more engaged in-patient safety culture through emotional discomfort. At the end of the session, students were able to demonstrate principles on patient safety, preventative medical errors and the consequences of ignorant behaviour in patient safety (Kutaimy *et al.*, 2018). This result witnessed by Dumenco et al., who also conducted a study on patient safety workshops for first-year medical students. He noticed that at the end of the workshop, students show a significant improvement in skills, attitude and knowledge as students were able to correlate the demonstrated scenario to fishbone illustration to analyse the root cause of the medical errors. At the end of the session, the researcher noticed that participants were able to "plan, do, study and act" by estimating the frequency of medical errors in the current medical care facility through a run chart (Dumenco *et al.*, 2018). This proves that patient safety training for junior medical students essential in preserving patient safety culture in a healthcare unit. This was further proven by Shekhter et al., who conducted a study on the outcome of a patient safety course for pre-clinical students by focusing on teamwork and communication skills. This course training includes the "room of horror" in which there is a demonstration full of medical errors and participants was instructed to spot out the clinical errors, lenticular puzzles which require the students to display effective role in teamwork in accordance to a real-life scenario in health care and stimulation exercise in which students need to deal with a patient with respiratory distress and suggest

appropriate treatment. At the end training session, students show an improvement in their skills, knowledge and attitude towards patient safety (Shekhter *et al.*, 2012).

On top of that, patient safety training and education for senior doctors are essential to ensure continuity of knowledge for the junior health care staff. According to the study conducted by Ahmed et al., in 2013 on patient safety education for senior doctors around 20 randomly selected hospitals, he noticed that there is a significant increase in self-reported safety skills, knowledge on incident reporting, skills and attitudes in the participated doctors. Nevertheless, upon 8 months of implementation of this course, more than 100 senior physicians volunteered to facilitate such knowledge and training for other medical staff. This proves that training involved senior doctors in patient safety is vital to building capacity and capability to deliver knowledge to the junior staff (Ahmed *et al.*, 2013). On the contrary, according to the study conducted by Hooper et al., on junior physician's perception of reporting concern about patient safety, they noticed that limited leadership of senior physician's acts as a barrier for junior physicians to follow their behaviour in ensuring patient safety. This is because the junior doctors having the thought that senior staff doesn't be a good role model in reporting the incident of medical errors. The junior staff argued that they can speak up confidently on medical errors instead of following the normal guideline of an incident report. The study concluded that junior staff are more concern on patient safety culture due to training and education on the specified field, while the obstacles include lack senior physicians role model especially for incident reporting and lack of evidence of the junior staffs' reports will be used for improvements in future (Hooper *et al.*, 2015).

Furthermore, a systemic review conducted by Kirkman et al., in 2015 revealed the improvement of patient safety culture after an intervention on patient safety education for trainee doctors and medical students. The results showed that positive changes after patient safety education are remarkable especially in the increase of willingness to participate in such education in the future was seen even in organizational levels. This shows that the patient safety concern among the participants significantly increases after the course. Most studies reported improvement in knowledge, skills, safety attitude and behavioural changes concerning patient safety significantly noted at the end of the education session. Teamwork and communication skills among the medical trainees were successfully inculcated by the facilitator through inter-professional training. From the systemic review, the researcher concluded that clinical commitment and competitive demands of the curriculum are the main obstacles for implementing patient safety education for medical trainees (Kirkman *et al.*, 2015). This

statement supported by Nabilou et al., who obtained a similar result. According to the research done by Nabilou et al., on patient safety in medical education, they observed that 80% of the medical students in needs of deep knowledge on patient safety topics and their findings reveal that nurses and midwife students interested to join patient safety education compared to medical students. This is the main reason for the high marks obtained by nurses and midwifery in positive perception towards patient safety compared to medical students who obtained very low scores. The results correlate with the initiative of nursing school who stress on patient safety education while medical school just being ignorant of patient safety education and culture. This statement clarifies that nurses and midwives are burdened by patient safety implementation in clinical settings compared to medical doctors. According to his study, 60% of the participants stated that clinical errors are inevitable, 80% of the participant stated that lack of care is being given to the patients and 64% of the students stated that medical errors are mainly due to unavoidable errors (Nabilou, Feizi and Seyedin, 2015). This simply shows the lack of proper patient safety education and training is provided in ensuring zero medical errors in clinical settings. Considering the importance of patient safety culture, John Hopkins University implemented 10-hour lessons of patient safety for the first-year medical students whereas 3 days of the curriculum for second-year medical students. Upon implementing such a lesson, they noticed a drastic positive outcome in which medical students show a positive attitude towards patient safety, improvement in patient safety skills and engagement in patient safety culture. While in the UK, 5 hours of patient safety training is compulsory for all medical graduates in which they will be exposed to common clinical errors. This improves the knowledge of students on patient safety (Wu and Busch, 2019).

Stimulation-based training provided for anaesthesiology following patient safety resulted in positive outcomes in many ways. For instance, those obstetric anaesthesia patients who completed stimulation-based training demonstrated a positive behaviour such as in checking the availability of equipment, intraoperative management and in assessing pre-operative procedure. Not only that, repeated bronchoscopy skill training for anaesthesiology also gives a positive outcome as improving the safe practice related to the procedure. Training using mannequin showed that the skills of anaesthesiology significantly improved from the first session itself. This practice does shows improvement of self-efficacy for effective teamwork performance in their work. In sum, this stimulation-based training improves the clinical performance which eventually increases the patient outcomes. This study proved that

stimulation based training for anaesthesiology ensures patient safety at the maximum level (Green, Tariq and Green, 2016).

Gaba (2000) describes anaesthesiology as a model for patient safety in the health care setting. According to his research, he summarises that patient safety training provided for anaesthesiology gives a positive outcome as well as prepares them to act immediately in an uncommon emergency. Some of his findings concluded that stimulation-based training for anaesthesiology reduced the risk for patients as they are being exposed to uncommon scenarios most of the time, and they need to train themselves to act spontaneously by prioritising patient safety. By this exposure, they can spot out the errors they made as errors are still allowed in this stage. By preparing them for this situation, it has been confirmed that they do not make the same mistake twice when handling the real patients. Nevertheless, simulation training using mannequin has given them a deep knowledge of the correct usage of actual medical equipment which makes them realize the limitation of interference between humans and machines. So, through this, they are trained to be always prepared as aid providers with very limited medical equipment. Not only that, with a full re-created version of real scenarios, they are also trained to build a good relationship between their colleagues. This is vital to build good teamwork among them as teamwork serves as a platform in ensuring patient safety culture in a clinical unit. From here, they do learn to communicate with fellow teammates and play a leadership role. This is expected to provide the best care for the patients as leadership is an essential element for ensuring patient safety. This is the main reason why anaesthesiology is also a leading medical unit concerning patient safety apart from nurses.

Considering the importance of patient safety in anaesthesiology, Anaesthesia Patient Safety Foundation together with the US Food and Drug Administration willingly sponsored a workshop for addressing clinical errors in anaesthesiology. This training successfully gathered the organizational safety and errors, human performers and human errors in the anaesthesiology unit. They act as a role model for high-risk care with low errors by providing the best care for the patients. On the other hand, Anaesthesia Patient Safety Foundation takes the responsibility to educate anaesthesiology in regards to patient safety by mailing newsletters on preeminent publications of anaesthesia and patient safety to almost all the anaesthesiology and nurses working in the anaesthesiology units in the United States (Gaba, 2000).

On the other hand, stimulated based patient safety education serves as a platform in ensuring the patient's safety culture for internal and emergency medicine residents. This statement is based on the study conducted by Jagneaux et al., in 2017 entitled Simulation-Based

Education Enhances Patient Safety Behaviours During Central Venous Catheter Placement (Jagneaux *et al.*, 2017). This stimulated based learning was approved to be conducted in the community hospital which inclusive of 90 minutes of skill session and requires all the internal and emergency residents to participate. The results showed that their knowledge and confidence level significantly improves after the course session. They showed a positive outcome in pre preparedness, post-procedure, sterile handling technique and proper method of sharp discard when handling the venous catheter insertion procedure upon completing the course. Overall, they demonstrated the proper procedure of venous catheter insertion and reduced number of attempts as the number of residents reaching the cannulisation increased to 57% from 43%. From this simulation-based training, they demonstrated a high level of self-confidence when handling real patients. Nevertheless, simulation-based training reduced the central line-associated bloodstream infection as they are well trained to spot the correct vein based on the protocol as well as enhance patient safety by avoiding poor care (Jagneaux *et al.*, 2017). This result further supported by Galen et al., who conducted almost a similar study on nurses in 2019 (Galen *et al.*, 2019). According to the study, the nurses were given stimulated-based training using ultrasound for catheter insertion and the participated nurses are provided with portable ultrasound for 10 months. Upon the completion of training, it has been noticed that there is a decrease in the intervention timing. This clearly states that the nurses are well trained and managed the place in the peripheral within a short period. This eventually increases the quality of care given in the inpatients of the medical unit drastically. The researcher concluded that nurses trained in ultrasound-guided peripheral intravenous catheter placement show a positive outcome in reducing peripheral inserted central catheter, especially in inpatient medical care units in regards to ensuring patient safety (Galen *et al.*, 2019).

Patients and hospital staff should collaborate to ensure patient safety. This is proven by a study conducted in 2016 which was reported by the commission on education and training for patient safety. Through proper training and education to the hospital staff, they witnessed improvement in many aspects of patient safety culture. For instance, a drastic rise in risk assessment from 56% to 96% resulted in a reduced mortality rate nationwide. This statement was further confirmed by England who stated that they were able to avoid 940 deaths in between 2011 and 2012 through the implementation of a national venous thromboembolism prevention program. Next, the surgical safety checklist program introduced by the World Health Organisation (WHO) in regards to patient safety does show notable results in reduced mortality and morbidity rates in a few countries. Patient safety training through patient safety

first campaign which implemented from the year 2008 till 2010, successfully made healthcare staffs assist in building the momentum to make patient safety as their top prioritization. Nevertheless, training such as clean your hands provided by the National Safety Agency has been proven to result in behavioural changes which lead to reduced nosocomial infection rates especially in the intensive care unit (ICU). A national campaign known as sign up for safety which was launched in the year of 2014 in the expectation to reduce evitable harm by 50% which saves about the life of 6000 patients (Health Education England, 2016). Concerning the safety of the patient, more than 330 National Health Service organizations committed to prioritize patient safety, learn from previous incidents, takes into account the feedback received and practice openness when things are out of control to create a conducive environment for both patients and staffs. Prioritizing patient safety, the patient safety stimulation program was legally introduced at university hospital Southampton NHS foundation trust which successfully gathered 130 stimulators including patients, children and those with learning disabilities. This stimulation training manipulates their physical signs and makes them experience and explore the real world of the healthcare system as all of the stimulators will play each role in this stimulation training such as patient, receptionist, doctors, pharmacist, etc. This training makes the participants more engaged in-patient care and makes them understand in deep of being a career. This program has reached the objective as participants realized their worth in contributing to patient safety culture. As a result, these programs enhanced patient participation in patient safety. To ensure patient safety, the engagement of family members, carers and the public is vital. Considering this, a “carer skills passport” was introduced in legally UK hospital order to ensure that all the paid carers of family members well trained to care for the subject under this program. The training provided includes training in administering buccal medication, suction, maintaining confidentiality, oxygen and resuscitation. So, if a person is a carer skill passport holder, they are said to be well trained in possessing the right skills and ability to provide safe and effective care in regards to patient safety (Health Education England, 2016).

Last but not least, patient safety education and training for patients, so they could engage more in their safety is vital (An *et al.*, 2017). The study result was constructed based on the questionnaire distributed to the admitted patients who received patient safety education by the intervention group. The results showed that those who participated in the patient safety education show a positive perception and attitude towards patient safety culture although their role is very limited in ensuring patient safety. This is mainly due to the limitation of the

information and very limited knowledge on treatment and of course patients are restricted to involve themselves in the treatment process. Results indicated that patient-centeredness is a very important element in ensuring patient safety.

On the contrary, the results comparing perception and attitude shows that perception towards patient safety shows a positive outcome whereas attitude towards patient safety shows a poor outcome. This is because the researcher concludes that patient safety education doesn't influence behavioural change as it requires a very high level of motivation and some patients require different types of intervention to make themselves to be more engaged in their safety. Patients with a severe clinical condition show a higher perception while those are less severe shows a positive attitude. This was also proven through the comparison done between college graduates who are more vulnerable to behavioural compared to high school graduates who are resistant to behavioural change. The researcher stated that patient educated reduced the knowledge gap concerning patient safety. This is witnessed through their participation in incident reporting once received education on patient safety (An *et al.*, 2017). This results supported by recent research which indicates that patient safety education for patients shows a positive outcome in which the patients are said to be more engaged in their safety. The researcher also stern on the point stating that patient education not limited only to hospital setting but also inclusive of addressing the literacy of health-related challenges, participation in the community health program, providing communication access with the health care team with no limitation and support all kind of treatment strategies. So by this, patients will have a drastic reduction in the knowledge gap and be more engaged in their safety to receive the best possible care. This was further proven through the assessment done on hospital consumer which shows a notable result on the administration of medication and communication with the staff. This statement simply concludes that patient safety education for patients benefits both parties which inclusive of patients and the health care team in a clinical setting (Wolters Kluwer, 2015).

In sum, the most commonly provided training includes mannequin-based demonstration for medical students and education through a workshop for physicians and nurses. This type of training resulted in a positive outcome in reality. According to the review above, the most important role in ensuring patient safety is mainly done by nurses followed by an anaesthesiologist. Regardless of all training and education provided, all the departments including patients are interrelated with each other in ensuring safety in the hospital setting. In

regards to patient safety, each department has a specific role in ensuring patient safety culture in a clinical unit.

CONCLUSIONS

In a nutshell, it is a must for all undergraduates from any medical speciality to gain knowledge on patient safety. Starting with the nursing undergraduates, patient safety has been part of their course and they are being exposed to stimulation-based training so they will be able to provide safe care when dealing with real patients. Medical undergraduates are trained to engage themselves in patient safety culture through initiating their emotional discomfort so they are well prepared for all hazardous situations involving a patient's life. Physicians and junior doctors play an important task here as they are being the role model in ensuring patient safety in a clinical setting. Unfortunately, poor leadership skills and commitment in clinical task serves as the main barrier for them to reveal a respectful leadership role as well as being an obstacle for implementing patient safety education and training for senior doctors. A specialist such as anaesthesiologists and residents of internal and emergency medicine are said to be very cooperative in giving the best possible care for the patients. The reason why they act as the model for patient safety apart from nurses due to their commitment to ensuring patient safety culture in a clinical setting. Patient safety culture in a hospital setting is possible with the cooperation and assistance from the caretakers and the patient itself. So, "care skills passport" has been legally imposed. Patients and caretakers are given respective education and stimulation-based training to create awareness on the job scope of health care staffs so the patients will be more aware of their role in ensuring their safety. This patient safety education and training give out the positive outcome as well as lead to drastic changes in perceptions and positive attitudes towards patient safety at all levels.

IMPLICATIONS

With this paper review, we aimed to give an overview of how patient safety education and training influences the outcome, especially in the health care setting. We have noticed that the method of delivering education and providing training has a great impact on the behavioural changes toward patient safety culture. Challenges faced by the patient safety unit in implementing patient safety education and training have been explored and discussed.

STRENGTH AND LIMITATIONS

The effectiveness of patient safety education and training programs may vary across different healthcare settings, regions, and populations. The article may not account for these variations adequately, limiting its generalizability to diverse healthcare contexts.

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CONFLICT OF INTEREST

The authors confirm the absence of any conflicts of interest.

REFERENCES

Ahmed, M. *et al.* (2013) 'Building capacity and capability for patient safety education: A train-the-trainers programme for senior doctors', *BMJ Quality and Safety*, 22(8), pp. 618–625. Available at: https://doi.org/10.1136/bmjqs-2012-001626.

An, J. *et al.* (2017) 'The effects of patient education on patient safety: can we change patient perceptions and attitudes?: Lessons from the Armed Forces Capital Hospital in Korea', *International Journal for Quality in Health Care*, 29(3), pp. 392–398. Available at: https://doi.org/10.1093/intqhc/mzx037.

Dina (no date) *Fundamentals in Patient Safety Seminar*.

Dumenco, L. *et al.* (2018) 'An Interactive Quality Improvement and Patient Safety Workshop for First-Year Medical Students', *MedEdPORTAL : the journal of teaching and learning resources*, 14, p. 10734. Available at: https://doi.org/10.15766/mep_2374-8265.10734.

Farnan, J.M. *et al.* (2016) 'Patient safety room of horrors: A novel method to assess medical students and entering residents' ability to identify hazards of hospitalisation', *BMJ Quality and Safety*, 25(3), pp. 153–158. Available at: https://doi.org/10.1136/bmjqs-2015-004621.

Gaba, D.M. (2000) 'Anaesthesiology as a model for patient safety in health care', *British Medical Journal*, pp. 785–788. Available at: https://doi.org/10.1136/bmj.320.7237.785.

Galen, B. *et al.* (2019) 'Reducing peripherally inserted central catheters and midline catheters by training nurses in ultrasound-guided peripheral intravenous catheter placement', *BMJ Quality and Safety* [Preprint]. Available at: https://doi.org/10.1136/bmjqs-2019-009923.

Green, M., Tariq, R. and Green, P. (2016) 'Improving Patient Safety through Simulation Training in Anesthesiology: Where Are We?', *Anesthesiology Research and Practice*. Hindawi Limited. Available at: https://doi.org/10.1155/2016/4237523.

Health Education England (2016) *Commission on Education and Training for Patient Safety: Progress report.pdf*. Available at: https://www.hee.nhs.uk/sites/default/files/documents/Commission%20on%20Education%20and%20Training%20for%20Patient%20Safety%20-%20progress%20report.pdf (Accessed: 13 February 2019).

Hooper, P. *et al.* (2015) 'Junior doctors' views on reporting concerns about patient safety: A qualitative study', *Postgraduate Medical Journal*, 91(1075), pp. 251–256. Available at: https://doi.org/10.1136/postgradmedj-2014-133045.

Jagneaux, T. *et al.* (2017) 'Simulation-Based Education Enhances Patient Safety Behaviors During Central Venous Catheter Placement', *Journal of Patient Safety*, p. 1. Available at: https://doi.org/10.1097/pts.0000000000000425.

Johnston, B.E. *et al.* (2019) 'Teaching patient safety in global health: Lessons from the Duke Global Health Patient Safety Fellowship', *BMJ Global Health*, 4(1). Available at: https://doi.org/10.1136/bmjgh-2018-001220.

Kirkman, M.A. *et al.* (2015) 'The outcomes of recent patient safety education interventions for trainee physicians and medical students: A systematic review', *BMJ Open*, 5(5). Available at: https://doi.org/10.1136/bmjopen-2015-007705.

Kohatsu, N. and Alexander, M. (2016) *An Introduction to Patient Safety in the Outpatient Setting*.

Kutaimy, R. *et al.* (2018) 'Integrating patient safety education into early medical education utilizing cadaver, sponges, and an inter-professional team', *BMC Medical Education*, 18(1), p. 215. Available at: https://doi.org/10.1186/s12909-018-1325-9.

Mansour, M.J. *et al.* (2018) 'Integrating Patient Safety Education in the Undergraduate Nursing Curriculum: A Discussion Paper', *The Open Nursing Journal*, 12(1), pp. 125–132. Available at: https://doi.org/10.2174/1874434601812010125.

Nabilou, B., Feizi, A. and Seyedin, H. (2015) 'Patient Safety in Medical Education: Students' Perceptions, Knowledge and Attitudes', *PLOS ONE*. Edited by M. Hodaie, 10(8), p. e0135610. Available at: https://doi.org/10.1371/journal.pone.0135610.

Noviyanti, L.W., Handiyani, H. and Gayatri, D. (2018) 'Improving the implementation of patient safety by nursing students using nursing instructors trained in the use of quality circles', *BMC Nursing*, 17(S2), p. 53. Available at: https://doi.org/10.1186/s12912-018-0318-7.

Ottawa, O.N. (2018) *Learning Outcomes for Patient Safety in Undergraduate Nursing Curricula 2*.

Patient Safety Training Program for Morgan Regional Hospital (no date).

Shekhter, I. *et al.* (2012) 'A patient safety course for preclinical medical students', *Clinical Teacher*, 9(6), pp. 376–381. Available at: https://doi.org/10.1111/j.1743-498X.2012.00592.x.

WHO (2019a) *Patient safety*. Available at: https://www.who.int/news-room/fact-sheets/detail/patient-safety (Accessed: 9 December 2019).

WHO (2019b) *Patient safety: global action on patient safety*. Available at: https://apps.who.int/gb/ebwha/pdf_files/WHA72/A72_26-en.pdf (Accessed: 9 December 2023).

Wolters Kluwer (2015) *The Value of Education for Patient Outcomes*, *Wolters Kluwer*. Available at: https://www.wolterskluwer.com/en/expert-insights/the-value-of-education-for-patient-outcomes (Accessed: 25 April 2019).

Wu, A.W. and Busch, I.M. (2019) 'Patient safety: A new basic science for professional education', *GMS Journal for Medical Education*, 36(2). Available at: https://doi.org/10.3205/zma001229.