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PATIENT SAFETY CULTURE: A MINI-REVIEW

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ABSTRACT

Introduction: Patient safety as a concept emerged in response to the high burden of avoidable adverse events. Safety culture, otherwise referred to as safety climate, has been embraced by high reliability organisations (HROs) such as aviation and healthcare organisations. This review presents characteristics of organisational culture, measurement of patient safety culture of an organisation and factors that affect patient safety culture.

Main Text: Measuring and assessing patient safety culture is important so as to identify areas in need of improvement, increase awareness of patient safety concepts, evaluate the effectiveness of patient safety interventions over time, and conduct internal and external benchmarking. A number of quantitative measures using surveys are available for measuring patient safety culture, with the most common being the Hospital Survey on Patient Safety Culture (HSOPSC). Additionally, qualitative methods have been suggested to provide in depth responses on safety culture while other researchers believe an ideal approach would be to use a variety of measurements (mixed methods approach) to obtain a comprehensive understanding of the phenomena. A number of factors are considered to affect patient safety culture. These range from factors affecting unit/departmental level, to system/management factors and patient factors. These factors require periodic measurement to identify areas of weakness for improvement purposes.

Conclusion: As safety culture is a complex phenomenon, healthcare organisations must understand and consider the underlying constructs, attributes and factors that affect patient safety in order to reduce adverse events, improve quality of care and carry out regular assessments.

Keywords: safety culture; patient safety; safety climate; measurement; surveys

INTRODUCTION

The concept of 'patient safety' emerged in response to the high burden of avoidable adverse events worldwide [1]. Patient safety has been defined by the Institute of Medicine (IOM) as "freedom from accidental injury" [2]. It has also been defined by the World Health Organisation (WHO) as "the absence of preventable harm to a patient during the process of health care" [3].

The term 'safety culture' was introduced after the Chernobyl nuclear power disaster of 1986

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[4]. The concept has since then been embraced by several industries, especially high reliability organisations (HROs) to improve safety [5]. These HROs are also known as 'extremely safe' or 'high risk organisations', for example, aviation. Safety culture is commonly defined as "the product of individual and group values, attitudes, competencies and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety programmes. Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measure" [6].

Safety culture is an aspect of organisational culture that captures attitudes, beliefs, perceptions, and values about safety. It is sometimes referred to as 'safety climate', and the two terms are often defined to be the same concept and are used interchangeably [5].

MAIN TEXT

Concept of Organisational Culture

An organisation's safety culture is the most critical, underlying predictor of accomplishments related to safety [7]. Organisational culture has been defined simply as "the way we do things around here" [8]. It has also been defined as "a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to these problems" [9].

Organisational culture has further been described based on the attributes of a culture supporting safety which reflects many of the high reliability organisations (HRO) elements. According to the renowned researcher James Reason, a 'safe culture' is first of all an informed culture and this informed culture is one in which those who manage and operate the system have current knowledge about the human, technical, organisational and environmental factors that determine the safety as a whole system [10]. Furthermore, *informed culture* can be further broken down into the underlying constructs of reporting, learning, justice, and flexibility.

A reporting culture is one in which people are prepared and encouraged to report their errors and near misses while a learning culture is characterised by the willingness and ability of individuals to understand and make changes based on the safety information provided through the system [10]. It has been suggested that acknowledging failures and reframing them into learning opportunities encourages employees to be engaged in system improvements [11]. Providing an atmosphere of trust in which persons are encouraged, or even rewarded for providing important safety-related information ensures justice [10]. Finally, the ability of an organisation to reconfigure and adapt when faced with challenges is described as a flexible culture.

It is important to consider these underlying constructs in the establishment of a supportive patient safety culture in healthcare organisations as they are among the highest priorities in ensuring reduction of adverse events and improving patient safety as well as quality of care.

Measuring and Assessing Safety Culture

Assessments are beneficial in detecting weaknesses and strengths of the safety practices of an organization and providing recommendations for improvement. Organisations must assess safety culture at the unit/department level and at the organisational level to identify areas of culture in need of improvement, increase awareness of patient safety concepts, evaluate the effectiveness of patient safety interventions over time, and

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conduct internal and external benchmarking [12]. Many types of questionnaires can be used to evaluate safety culture. Although there are no rules to distinguish the most relevant tool, tools that have undergone psychometric validation are recommended for use [13, 14]. Some studies have suggested focusing assessments of safety culture mainly at the unit level because culture is a local phenomenon and often varies between units of a single hospital [15, 16].

However, qualitative methods have also been used to measure safety culture. This is usually carried out of semi-structured interviews, focus groups, or observations as methods of data collection. While surveys can provide an understanding of staff attitudes and beliefs, it has been recommended by several authors to supplement this quantitative data with richer qualitative data through interviews, focus groups and/or observations to gain a better sense of the underlying culture [12, 17, 18]. Ethnographic methods of observation and interviews have also been suggested to examine the validity of surveys [17].

Amongst the questionnaires used for assessing patient safety culture, the two most commonly used are the Hospital Survey on Patient Safety Culture (HSOPSC) and the Safety Attitude Questionnaire (SAQ) [5]. These two tools are recommended due to their validity, psychometric properties and applicability to safety culture research [19]. Other tools used include the Patient Safety Culture in Health Organisations (PSCHO) survey and the Safety Climate Scale (SCS) [5]. Table 1 provides a brief description of the two most commonly used questionnaires with their measurement dimensions.

Table 1: Most Common Safety Culture Surveys with their Dimensions

Original authors	Dimensions of safety culture	Survey
Sorra and Nieva (2004)[20]	Management support for safety Supervisor expectations and actions promoting safety Compliance with procedures Teamwork within units Teamwork across units Handoffs and transitions Staffing Openness of communication Non-punitive response to error Error feedback and communication Positive reporting norms Organizational learning	Hospital Survey on Patient Safety Culture (HSOPSC)
Sexton *et al*., (2006) [21]	Teamwork climate Stress climate Job satisfaction Stress recognition Perceptions of management	Safety Attitudes Questionnaire (SAQ)

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Working conditions

Source: adapted from Halligan and Zecevic (2011) [5]

The Hospital Survey on Patient Safety Survey (HSOPSC)

In 2004, a Hospital Survey on Patient Safety Culture for hospital staff was designed by the US Agency for Healthcare Research and Quality following a review of the literature on safety, patient safety, accidents, medical malpractice, error reporting, safety climate and safety culture [20]. The survey collects data on healthcare worker's perception of the culture of safety in their organisations. It contains 42 items and 12 dimensions to evaluate the culture of patient safety at the unit and hospital levels. The survey tool is a validated tool and has been translated into multiple languages and is used globally to assess patient safety culture. As at 2012, the Hospital Survey on Patient Safety Culture has been translated into 24 languages and used in 45 different countries to measure patient safety culture in their hospitals [22]. Many studies have shown that the HSOPSC has good psychometric properties. Sorra and Dyer analysed survey data from 2,267 hospital units and 50,513 respondents to examine the psychometric properties of the items and composites of the HSOPSC whilst studying 331 US hospitals [23]. Their results provided overall supporting evidence that the 12 dimensions and 42 items of the survey had accepTable psychometric properties at all levels of analysis.

The Safety Attitudes Questionnaire (SAQ)

This questionnaire was derived from an attitudes questionnaire based on intensive care unit management, which was designed from a questionnaire in commercial aviation, the Flight Management Attitudes Questionnaire [21]. The SAQ was formed based on two conceptual models; the Vincent's framework for analysing risk and safety and Donabedian's conceptual model for assessing quality [21]. The final survey contains six factor-analytically derived attitudinal domains containing 40 items. The factors include teamwork climate, job satisfaction, perceptions of management, working conditions and stress recognition. The SAQ has been adapted for use in several health care settings including operating rooms, ambulatory clinics and general inpatient settings.

Qualitative Methods of Assessing Patient Safety Culture

Much focus has been on the quantitative measurement of patient safety culture, however, many researchers believe that culture can only truly be understood by taking an in depth qualitative approach to studying the phenomena [17, 18]. Some researchers believe that the possibility of uncovering the true and encompassing factors of the organisational culture can only be achieved through qualitative methods [24]. Others, however, believe an ideal approach would be to use a variety of measurements (mixed methods approach) to obtain a comprehensive understanding of the phenomena [25].

Factors affecting patient safety culture

Leadership support for patient safety

Research has shown the importance of the management team in promoting patient safety. The National Quality Forum (NQF) in the US stated that health care managers have both legal and moral obligations in ensuring implementation of high quality systems in their hospitals [26]. Leaders play a role in driving

forward the culture of an organisation through the design of strategies and placing a structure that acts as a guide to processes and outcomes for safety [27].

Leadership is key to creating a patient safety culture, and effective leadership is considered an indispensable prerequisite [28]. Both formal and informal leadership is considered necessary to forming and sustaining an organisational safety culture [29]. A study conducted in the United States of America (USA) involving in-depth interviews with hospital administrators to identify facilitators and barriers to the implementation of programs that support the NQF safety practices found that leadership was one of the most significant facilitators in the establishment and promotion of a safety culture [30].

Another important role of leadership support to patient safety is through "executive walkrounds". Walkrounds were introduced in US hospitals in 1999 as a program for hospital leadership to sustain good relations with frontline caregivers, promote conversations to identify hazards, and gather information to enhance decision making around patient safety [31]. Studies have shown the benefits of executive walk rounds as an interventional strategy on management support for patient safety that engages organisational leadership directly with frontline care providers [31, 32]. Executives or senior leaders visit front-line patient care areas with the goal of observing and discussing current or potential threats to patient safety, as well as supporting front-line staff in addressing such threats. These walk rounds are conducted to show leadership commitment to safety, foster trust and psychological safety, and provide support for front-line providers to proactively address threats to patient safety [31].

It has also been suggested that leaders can create a safety climate that makes frontline providers feel either safe or afraid to report errors and speak up regarding safety issues. Notably, leadership support for safety is one of the most important and psychometrically robust dimensions of patient safety climate in the safety literature [33, 34]. It is best developed by learning in leadership teams that are multidisciplinary, supportive, respectful, and not governed by hierarchy and status differences.

Staffing and Patient Safety

Evidence has shown that staffing levels in healthcare settings play an important role in the quality of care and patient safety [35, 36]. A quantitative survey of 7,076 registered nurses (RNs) in 161 hospitals in Pennsylvania, USA was carried out to assess the incidence of urinary tract infection and surgical site infection. The study concluded that there was an association between the number of staff and patients and hospital infection rates. In addition, departments with an adequate level of staff and few patients reported less hospital infection incidences [37].

A study in the United Kingdom (UK) to examine the nature and prevalence of patient care that was left undone by nurses was conducted among 2, 917 RNs of 46 general hospitals. 86% of the nurses responded that one or more healthcare activities had been left undone due to lack of time. The study highlighted that patient to nurse ratio was a significant factor in the issue of 'left undone care' which poses a threat to patient safety [38].

Other studies have also been conducted that show the relationship between staff mental wellbeing and patient safety and have shown evidence that both wellbeing and burnout are associated with patient safety [39-41]. In particular, poor wellbeing, as characterised by depression, anxiety, poor quality of life and stress, and high levels of burnout, were found to be significantly associated with more self-

reported errors amongst healthcare providers. It was found that when resident doctors suffered from both high burnout and risk of depression, they reported even more errors than those who suffered solely from burnout or depression alone [39]. These studies signify that both staff wellbeing and burnout may be important targets for patient safety interventions.

Error Reporting and Non-punitive Response

Obtaining the opportunity for learning from errors requires a system for error reporting [42]. Absence of good reporting systems decrease improvement opportunities, which makes it possible for same errors to occur repeatedly [43].

In the US, a study conducted amongst 338 physicians revealed that only 39.5% knew the types of errors that need to be reported, 3.8% admitted not reporting actual major errors and only 54% of the participants knew the proper error reporting methods [44]. In Nigeria, a cross sectional survey among 2, 386 doctors, pharmacists and nurses in 10 tertiary hospitals in the country found that only 35.5% had ever reported an error, 33.4% did not think error reporting was necessary and only 20.2% were aware of mechanisms for reporting medication errors in their hospitals [45].

A study conducted at a Canadian cancer centre which aimed to measure the perceptions that staff had of how organisations analysed incidents and their personal experiences reported that adverse events are much more likely to continue to occur if a health organisation does not learn from mistakes that have been made, and take appropriate measures [46]. In Iran, a study conducted amongst 16 nurses with the aim of exploring the barriers to reporting nursing errors in intensive care units in Iranian hospitals [47]. It reported that nurses' perception of incident reporting practices was strongly affected by their work culture and teamwork practices. However, fear of litigation affected nurses' perceptions and reporting practices. In addition, the participants reported that poor and inappropriate reporting tools and unit culture served as barriers to reporting errors [47].

Some factors identified as barriers to medication error reporting include: professional identity (the fear of appearing incompetent before colleagues and patients), reporting processes (time and work involved), organisational culture (how things are done within the organisation because of reporting) and the fear of malpractice suits [48]. However, it is found that healthcare professionals were willing to report if the reporting process was more straightforward, if they received adequate training on the process and if they received feedback about errors reported [48].

Teamwork

Teamwork is an important aspect that plays a vital role in the promotion of patient safety in hospitals. During the last decade, teamwork has been addressed under the rationale of inter professional practice or collaboration, highlighted by the attributes of this practice such as: interdependence of professional actions, focus on user needs, negotiation between professionals and shared decision making. Other attributes include mutual respect, trust among professionals, and acknowledgment of the role and work of the different professional groups [49]. Teamwork and inter professional collaboration have been pointed out as a strategy for effective organisation of health care services as the complexity of healthcare requires integration of knowledge and practices from different professional groups.

Studies have reported of the link between better coordination and teamwork to fewer medical errors and better patient outcomes such as length of stay [42, 50]. Teamwork is also an

important predictor of another indicator of hospitals' organisational performance: the well-being of healthcare providers [51, 52]. Research has shown that effective teamwork may protect team members from the effects of work stress, since positive perceptions of teamwork are associated with enhanced occupational well-being indicators such as better mental health in nurses and physicians [53, 54]. The adoption of a teamwork approach in health organisations has many potential benefits including improvement in the quality of patient care provided and a reduction in errors [55, 56].

Growing recognition of the need for teamwork has led to the application of teamwork training principles to a variety of health care settings. The Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) program was developed in collaboration by the US Department of Defense and AHRQ in order to support effective communication and teamwork in health care. TeamSTEPPS has been successfully implemented in a variety of clinical settings, including intensive care units and operating rooms [57, 58]. AHRQ offers a comprehensive curriculum and training program for interested organizations, which includes hands-on training through regular meetings and conferences as well as an online toolkit with an implementation guide, training materials, and measurement tools [59]. Although originally developed for hospitals, the TeamSTEPPS program has been expanded to include long-term care and primary care.

Teamwork training programs have been implemented in a wide variety of clinical environments, including the emergency department, operating rooms, obstetrics units, and outpatient primary care clinics [60, 61]. They are also being used to train hospital leadership in responding to safety events [62]. The evidence supporting the benefits of such programs in health care is growing. In 2010, Neily and colleagues conducted a landmark study which demonstrated a significant reduction in surgical mortality associated with implementation of the Medical Team Training program [63]. Other studies have consistently demonstrated improvements in participants' knowledge of teamwork principles, attitudes toward the importance of teamwork, and overall safety climate, although these have not necessarily translated into durable behavioral changes or enhanced skills [64, 65]. The effectiveness of teamwork training may depend on baseline perceptions of safety culture and readiness for change within a given unit or organization, as well as the intensity and duration of the intervention.

Communication Openness and Feedback

Lack of communication or communication failure is considered as a leading cause of adverse events [66]. It has been reported that ambiguity of roles amongst workers, differences in hierarchy, and conflicting roles contribute to communication failure [67]. It has been found that patient safety might be compromised by poor documentation of patient information and handoff procedures during shift changes [68]. Furthermore, patient safety in hospitals could be affected by poor organisational communication in the transfer of information from managers to health care workers. A cross-sectional study among a sample of 48 doctors and 136 nurses in four hospitals in the UK to investigate whether nurses and doctors in Intensive Care Units (ICU) had a shared perception of interdisciplinary communication found differing perceptions amongst staff [69]. The study showed that nurses reported that there was a low level of interdisciplinary communication openness between them and doctors and also reported that communication

openness was low between trainee doctors and senior doctors.

In an effort to minimise communication problems and its effects on patient safety, Clark *et al*. conducted an intervention study to evaluate and describe an intervention called the PACT (Patient assessment, Assertive communication, Continuum of care and Teamwork with trust) project which aimed to improve communication between hospital staff during patient handover [70]. The researchers concluded that there was an improved communication between nurse and doctors after written SBAR (Situation, Background, Assessment and Recommendation) reviews of patient care during handover procedures were produced by the staff involved.

Patient factors

Empowering patients to take an active role in their own health care has been nationally and internationally identified as a key factor in the drive to improve health services for patients [71]. Research has shown that patients can play an important role in reduction of patient safety incidents. At most stages of care there is the opportunity for a patient to contribute, for example, helping avoid medication errors and the monitoring of adverse events [72, 73].

It has been recognised that patients can make valuable contributions to health safety. In the United Kingdom, a report was made that emphasised the need to create a clear role for patients to help, promote and achieve safety objectives. As a result of this report, the National Agency for Patient Safety was established, which since its inception has promoted the need for patients' participation in safety. This was achieved through numerous leaflets and campaigns to encourage active patient participation in conjunction with specific guidelines for health personnel on how to communicate with patients or families following the error or injury [74]. However, engaging patients in the safety of care delivered to them should not be taken to mean that the patients should carry the ultimate responsibility for the safety of the care that they receive [74]. Patients are only to function as a safety 'buffer' in addition to those in the healthcare system that are already in place. Patients should not be made to feel that if they do not wish or are unable to contribute to their own safety they will, as a result, receive substandard care. The responsibility of delivering safe care remains in the hands of the health care professionals [75].

Patient involvement in their healthcare have been found to vary based on patient age, sex and education. Research has shown that younger patients tend to want more involvement than older patients, females prefer a more active role than males and highly educated patients opt for greater engagement than their less academic peers [76]. Additionally, the way individual patients deal with their illness(es) or health care experience can affect involvement in healthcare. Research has shown that active coping styles are conducive to greater involvement in medical decisions [77]. In the same way, active coping strategies could lead to greater involvement in safety.

Furthermore, research has shown that although patients may be willing to play an active role in the reduction of patient safety incidents, however, they do not feel comfortable questioning the safety practices of all health-care staff [71]. An intervention study amongst two hundred and nine adult in-patients in a general medicine unit in a Boston hospital in the US showed that interventions aiming to lower prevalence rates of medication errors and hospital-acquired infections by encouraging patients to be involved in their health care and ask health care professionals questions provided some support for the view that

patients may want to participate in the reduction of patient safety incidents [78].

CONCLUSION

Organisational safety culture is a complex phenomenon. Healthcare organisations must understand and consider the underlying constructs, attributes and factors affecting patient safety in order to improve their safety culture and quality of care.

Improving patient safety is greatly influenced by the safety culture of that organisation. A vital component in achieving improvements in the quality of healthcare organisations is changing the patient safety culture from one in which individuals are blamed for errors to one in which errors are treated as opportunities to improve the system and prevent harm.

As assessments are a critical way of improving patient safety culture, organisations must assess safety culture at various levels so as to identify areas of culture in need of improvement, increase awareness of patient safety concepts and evaluate the effectiveness of patient safety interventions over time.

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