


# BMJ Open Quality Understanding patient safety in dentistry: evaluating the present and envisioning the future – a narrative review

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**To cite:** Padmanabhan V, Islam MS, Rahman MM, *et al.* Understanding patient safety in dentistry: evaluating the present and envisioning the future—a narrative review. *BMJ Open Quality* 2024;**13**:e002502. doi:10.1136/bmj-2023-002502

Received 14 July 2023  
Accepted 26 October 2023

## ABSTRACT

**Background** Patient safety is crucial in dentistry, yet it has received delayed recognition compared with other healthcare fields. This literature review assesses the current state of patient safety in dentistry, investigates the reasons for the delay, and offers recommendations for enhancing patient safety in dental practices, dental schools, and hospitals.

**Methods** The review incorporates a thorough analysis of existing literature on patient safety in dentistry. Various sources, including research articles, guidelines and reports, were reviewed to gather insights into patient safety definitions, challenges and best practices specific to dentistry.

**Results** The review underscores the importance of prioritising patient safety in dentistry at all levels of healthcare. It identifies key definitions and factors contributing to the delayed focus on patient safety in the field. Additionally, it emphasises the significance of establishing a patient safety culture and discusses approaches such as safety plans, incident management systems, blame-free cultures and ethical frameworks to enhance patient safety.

**Conclusion** Patient safety is vital in dentistry to ensure high-quality care and patient well-being. The review emphasises the importance of prioritising patient safety in dental practices, dental schools and hospitals. Through the implementation of recommended strategies and best practices, dental organisations can cultivate a patient safety culture, enhance communication, mitigate risks and continually improve patient safety outcomes. The dissemination of knowledge and the active involvement of all stakeholders are crucial for promoting patient safety and establishing a safe dental healthcare system.

## INTRODUCTION

The safety of patients is of utmost importance in healthcare systems around the world. The primary goal is to prevent avoidable mistakes and harmful incidents that could negatively impact patients when they interact with healthcare providers.<sup>1</sup> This objective is achieved through the implementation of various strategies, guidelines and protocols aimed at minimising risks and improving

the quality of care. In recent years, there has been a growing emphasis on patient safety as healthcare organisations strive to enhance patient outcomes and the overall delivery of healthcare services.<sup>2</sup> Healthcare professionals demonstrate their commitment to patient safety by adopting a systematic and proactive approach to identify, analyse and address potential risks throughout a patient's healthcare journey.<sup>1 2</sup> This dedication to safety involves creating a culture that values safety, implementing practices based on evidence and reducing preventable harm. Ultimately, prioritising patient safety not only fosters trust and confidence but also plays a crucial role in promoting positive health outcomes for individuals seeking medical treatment.<sup>2 3</sup> Patient safety in dentistry is a critical aspect of healthcare, encompassing strategies, protocols and guidelines to ensure the well-being and protection of patients during dental procedures. While traditionally associated with medical specialties, patient safety in dentistry has gained increasing recognition in recent years.<sup>4</sup> Dental professionals are dedicated to enhancing patient outcomes, improving the quality of care and minimising preventable incidents. This involves creating a culture of safety, identifying and mitigating risks and implementing evidence-based practices. Ongoing research, collaborative initiatives and the development of guidelines and standards contribute to the present status of patient safety in dentistry.<sup>4 5</sup> It is imperative for dental professionals to prioritise patient safety and collectively work towards providing the highest standard of care.<sup>6</sup> By proactively addressing risks and promoting a safe dental environment, dental practitioners can ensure the optimal well-being of their patients and uphold the principles of patient safety in dentistry.<sup>4-7</sup> This comprehensive literature review focuses on patient safety in the field



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of dentistry, specifically addressing the unique challenges and considerations found in dental settings. The review discusses various strategies, guidelines and technologies that can be employed to enhance safety in dental practice. The primary objective is to promote collaboration among dental professionals, researchers and policy-makers, facilitating the development of effective interventions and protocols that prioritise patient well-being and reduce errors. By conducting an extensive analysis of the existing literature, this review offers valuable insights into the current state of patient safety in dentistry, identifies areas that require improvement and presents recommendations for optimising patient safety practices. The dissemination of this knowledge aims to emphasise the importance of prioritising patient safety, delivering high-quality dental care and cultivating a global culture of safety. Furthermore, the review provides an overview of the definitions commonly used in patient safety, explores the current status of patient safety in dentistry, examines the factors that may have contributed to a delayed focus on patient safety in the field and investigates the overall patient safety culture and climate, both in general and within the dental profession. The authors introduce definitions related to patient safety in dentistry and delve into potential practical approaches for improving patient safety within dental schools and dental hospitals.

### Definitions generally used in patient safety<sup>1 3 8-11</sup>

To discuss patient safety, it is important to understand some key definitions commonly used in this field. Here are several definitions frequently referenced in the context of patient safety:

#### Patient safety

Patient safety refers to the prevention of harm to patients during their interactions with healthcare systems. It involves minimising risks, avoiding errors, and improving the overall quality of care to ensure the well-being and safety of patients.<sup>1</sup>

#### Adverse event

An adverse event refers to an unintended or harmful incident that occurs during healthcare delivery. It can result from medical errors, system failures or a combination of factors and may cause injury, disability, or even death to a patient.<sup>3</sup>

#### Medical error

A medical error is an act of commission (doing something wrong) or omission (failing to do the right thing) that leads to an unintended outcome or patient harm. It can occur at any stage of the healthcare process, including diagnosis, treatment, medication administration and communication.<sup>3 8</sup>

#### Near miss

A near miss, also known as a close call or a near-incident, is an event or situation that could have resulted in harm to a patient but was prevented or did not cause harm due

to timely intervention, luck or other mitigating factors. Near misses are important opportunities for identifying and addressing potential risks in healthcare processes.<sup>3 8</sup>

#### Root cause analysis

Root cause analysis is a systematic approach used to identify the underlying causes or factors that contribute to adverse events or errors. It involves investigating the event, identifying contributing factors, and developing strategies to prevent future occurrences.<sup>11</sup>

#### Safety culture

Safety culture refers to the shared values, beliefs, attitudes and behaviours within an organisation or healthcare setting that prioritise and promote safety. It encompasses the collective commitment to open communication, learning from errors and continuous improvement to ensure patient safety.<sup>8 11</sup>

#### Sentinel event

A sentinel event is a severe, unexpected and generally avoidable adverse event that results in serious harm, death or the risk of serious harm to a patient. Sentinel events often trigger in-depth investigations, reporting and the implementation of preventive measures to prevent similar incidents in the future.<sup>8</sup>

#### Just culture

Just culture refers to a fair and balanced approach to managing errors and adverse events, emphasising accountability while also recognising that errors can result from system failures rather than individual negligence. It aims to foster a non-punitive environment that encourages reporting, learning, and improvement.<sup>8 11</sup>

Understanding these definitions provides a foundation for discussing patient safety and enables the implementation of effective strategies to improve healthcare practices and enhance patient outcomes.

### Current status of patient safety in dentistry

Patient safety in dentistry is gaining attention and recognition as a crucial aspect of healthcare. The dental profession is increasingly proactive in identifying and addressing potential risks and adverse events during dental procedures, aiming to improve patient safety outcomes.<sup>12 13</sup> However, challenges persist. One challenge is the lack of standardised reporting systems and comprehensive data collection specifically focused on patient safety incidents in dental settings, hindering the assessment and targeted intervention of patient safety issues.<sup>14</sup> Complexities in dental procedures and the potential for adverse events pose another challenge, requiring dental professionals to remain vigilant and prioritise patient safety throughout treatments. Despite these challenges, promising initiatives are underway. Dental education now incorporates patient safety training to equip future professionals with the necessary knowledge and skills.<sup>13 14</sup> Patient safety guidelines and protocols specific to dentistry are also being developed and adopted, covering infection

control, medication safety, anaesthesia management and patient communication. Addressing challenges such as reporting systems and procedure complexities while fostering a safety culture will enable the dental community to further enhance patient safety and deliver high-quality care.<sup>15 16</sup>

### Why patient safety in dentistry is delayed?

Patient safety in dentistry has faced a delayed recognition and implementation compared with other healthcare fields, and several factors contribute to this phenomenon. Historically, dentistry has primarily focused on technical proficiency rather than systemic safety considerations, emphasising the treatment of oral diseases and pain relief over broader patient safety concerns.<sup>7</sup> Moreover, dental treatments have been perceived as less invasive and associated with a lower risk of serious complications compared with medical procedures, leading to a diminished sense of urgency in implementing patient safety protocols.<sup>13</sup> The lack of formal reporting systems and limited data collection on adverse events and errors in dentistry further hinders the identification of patterns and the need for systematic improvements in patient safety.<sup>13 17</sup> Professional autonomy in dental practice, gaps in education and training on patient safety principles and the perception of lesser harm in dental care also contribute to the delayed integration of safety practices.<sup>1 18 19</sup> Additionally, challenges arise from the ambulatory nature of dental patients, the dispersed nature of dental practices, concerns about the private nature of dental care impacting clinic profits and the absence of a widespread safety culture explicitly addressing patient safety in dentistry.<sup>19 20</sup> Addressing these factors is essential to foster a comprehensive culture of safety and ensure the timely integration of patient safety measures in dentistry. Despite these challenges, there are compelling reasons why dentistry must be proactive in addressing patient safety. First, dental professionals frequently handle pharmaceuticals with inherent risks, requiring safe medication administration and monitoring for adverse drug events. Second, advances in dental techniques, particularly in aggressive surgical procedures like implantology, necessitate the recognition and mitigation of potential risks to ensure patient safety. Third, the use of technical instruments such as ionising radiation, lasers and other tools in dentistry requires the implementation of proper safety protocols and training to prevent adverse events. Additionally, the risk of disease transmission through contact between dental instruments and bodily fluids underscores the importance of strict infection control measures and adherence to standard precautions. In light of these considerations, the dental profession must actively engage with patient safety by acknowledging and addressing risks, implementing standardised safety protocols and fostering a culture of safety. By doing so, dentistry can enhance patient care, mitigate adverse events and prioritise the well-being of patients.

### Building a strong foundation: prioritising patient safety in dental practices, dental schools and hospitals to foster patient safety culture and climate

Developing a patient safety culture and climate is of utmost significance in not only dental practices but also in dental schools and dental hospitals. Creating a strong patient safety culture in these settings helps to instil the principles and values of patient safety in future dental professionals and sets the foundation for a safe and effective dental healthcare system.<sup>21–24</sup> In dental schools, incorporating a patient safety culture prepares students for their future roles as dental practitioners. By emphasising the importance of patient safety throughout their education and training, dental schools instil in students a mindset that prioritises patient well-being.<sup>25</sup> Students learn to identify and address potential risks, practice effective communication and adhere to safety protocols. This training ensures that dental graduates are equipped with the necessary knowledge and skills to provide safe and high-quality care to their patients.<sup>24–26</sup> Dental hospitals also play a crucial role in fostering a patient safety culture. These institutions often serve as referral centres for complex cases, and patient safety must be at the forefront of their operations. By establishing robust safety protocols, encouraging reporting of adverse events and conducting regular safety audits, dental schools and hospitals create an environment where patient safety is a shared responsibility among all healthcare professionals.<sup>27–30</sup> This approach helps to minimise errors, enhance patient outcomes and ensure that patients receive the highest level of care possible. Furthermore, developing a patient safety culture in dental schools and hospitals contributes to the overall advancement of dental healthcare.<sup>29 30</sup> These settings serve as hubs for research, innovation and the dissemination of best practices. By integrating patient safety principles into research endeavours and educational curricula, dental schools and hospitals can contribute to the development of evidence-based safety guidelines and protocols.<sup>26 31</sup> This, in turn, benefits the entire dental community by improving the safety and quality of care provided across various dental settings. Additionally, dental schools and hospitals have a responsibility to train and mentor future dental professionals, and by fostering a patient safety culture, they can shape the attitudes and behaviours of the next generation of dental practitioners.<sup>32</sup> Students and residents who are exposed to a strong patient safety culture during their formative years are more likely to carry these principles into their professional careers.<sup>33</sup> As a result, patient safety becomes ingrained in the dental profession, leading to a safer and more reliable healthcare system for all patients. Developing a patient safety culture and climate in dental schools and hospitals is crucial for shaping the future of dentistry. It ensures that dental professionals are equipped with the knowledge, skills and mindset necessary to provide safe and effective care.<sup>27 28</sup> By promoting patient safety from the educational stage through to clinical practice, dental schools and hospitals contribute to

the overall improvement of dental healthcare and the well-being of patients.<sup>24–30</sup>

### Authors' insights into patient safety in dentistry: defining the core concepts

When it comes to patient safety in dentistry, several definitions are relevant to understanding and addressing safety issues specific to dental care. Here are some key definitions related to patient safety in dentistry which the authors feel need to be specific to dentistry:

#### Dental patient safety

Dental patient safety refers to the measures and practices implemented in dental care settings to prevent harm, minimise risks and ensure the well-being of patients during their interactions with dental services. It involves recognising and addressing potential hazards, errors, and adverse events that may occur in dental practice.

#### Dental adverse event

A dental adverse event refers to an unintended or harmful incident that occurs during the delivery of dental care, resulting in patient harm or injury. It can include errors in treatment, medication administration, infection control, diagnostic procedures or any other aspect of dental practice that leads to negative consequences for the patient.

#### Dental medical error

A dental medical error refers to an act of commission or omission that deviates from accepted dental practice standards and leads to unintended patient harm or injury. It can include errors in diagnosis, treatment planning, surgical procedures, medication administration, or any other aspect of dental care delivery.

#### Dental near miss

A dental near miss, similar to its general healthcare counterpart, refers to an event or situation in dental practice that could have resulted in harm to a patient but was prevented or did not cause harm due to timely intervention, luck or other mitigating factors. Dental near misses provide valuable opportunities for identifying and addressing potential risks and improving patient safety.

#### Dental safety culture

Dental safety culture refers to the collective values, attitudes, behaviours and practices within a dental practice or dental healthcare setting that prioritise and promote patient safety. It encompasses open communication, teamwork, continuous learning and a commitment to identifying and addressing potential safety risks in dental care.

#### Dental sentinel event

A dental sentinel event refers to a serious, unexpected and generally avoidable adverse event in dental care that results in significant harm, death or the risk of serious harm to a patient. Dental sentinel events trigger in-depth investigations, reporting and the implementation of

preventive measures to prevent similar incidents in the future.

According to the authors, understanding these definitions specific to patient safety in dentistry is crucial for dental professionals, organisations and regulatory bodies to develop and implement effective patient safety strategies, improve the quality of dental care and ensure the well-being of dental patients.

### Applying patient safety in dentistry—best practices and recommendations for dental practices, dental schools and dental hospitals

Patient safety is a critical aspect of quality healthcare, extending to all areas of practice, including dentistry. The field of patient safety in dentistry involves the implementation of measures aimed at preventing harm, mitigating risks and fostering a safe environment for dental patients. Applying patient safety methods in dentistry is essential for minimising adverse events, improving treatment outcomes and enhancing overall patient satisfaction.

In the following part of the article, the authors try to enumerate and emphasise on methods which can be introduced to ensure patient safety in dental practices, dental schools and dental hospitals.

### According to the authors, the following are potential approaches to promote patient safety

1. To make patient safety a strategic priority.
2. To prioritise and integrate patient safety into the care delivery model of the organisation.
3. Annual trainings on patient safety.
4. Patient safety plan.
5. Patient safety incident management system.
6. Blame-free culture
7. Performance indicators of patient safety.
8. Ethical framework of the organisation.

### To make patient safety a strategic priority of the organisation

To make patient safety a strategic priority of the organisation, several key steps need to be taken. First, leadership must recognise the significance of patient safety and actively promote it throughout the organisation. This involves setting clear goals and expectations related to patient safety, allocating resources for its implementation and fostering a culture that values and prioritises patient well-being. Second, comprehensive policies and protocols should be developed and implemented to guide healthcare practices and ensure adherence to established safety standards. These policies should encompass all aspects of patient care, including prevention of medical errors, infection control, medication safety and effective communication among healthcare providers. Third, regular training and education programmes should be provided to all staff members, equipping them with the necessary knowledge and skills to identify and address potential safety risks. Additionally, mechanisms for reporting and analysing patient safety incidents should be established, promoting a culture of learning from mistakes and

implementing improvements to prevent their recurrence. Finally, organisations should foster collaboration and engagement with patients and their families, involving them in decision-making processes and soliciting their feedback to continuously improve patient safety practices. By integrating patient safety into the strategic priorities of the organisation, healthcare institutions can ensure that the well-being and safety of patients remain at the forefront of their mission.

#### To prioritise and integrate patient safety into the care delivery model of the organisation

Prioritising patient safety as a part of all decision-making procedures and integrating it into the care delivery model of the organisation is paramount for ensuring high-quality healthcare. By incorporating patient safety considerations into every aspect of decision-making, healthcare organisations can proactively identify potential risks and implement appropriate measures to mitigate them. This involves evaluating the potential impact on patient safety when making decisions related to resource allocation, process improvements and policy development. Additionally, integrating patient safety into the care delivery model means designing systems and workflows that prioritise patient well-being at every stage of the healthcare journey. This includes standardised protocols, effective communication channels and ongoing monitoring and feedback mechanisms to continuously evaluate and improve patient safety practices. By ingraining patient safety into the very fabric of the organisation's decision-making processes and care delivery model, healthcare institutions demonstrate their commitment to provide safe and reliable healthcare services to their patients.

#### Annual trainings on patient safety

Annual trainings on patient safety within an organisation hold significant importance in maintaining a culture of safety and ensuring continuous improvement in healthcare practices. These trainings provide an opportunity for healthcare professionals to stay updated on the latest patient safety guidelines, best practices and emerging trends in the field. By participating in these trainings, healthcare staff can enhance their knowledge and skills in areas such as identifying potential risks, implementing preventive measures, effective communication and error reporting. Moreover, these trainings create a forum for open discussions and shared experiences, allowing for the exchange of ideas and fostering a collaborative approach towards patient safety. Regular trainings also serve as a reminder of the organisation's commitment to patient safety, reinforcing its importance as a core value. By investing in annual trainings on patient safety, organisations can empower their staff with the necessary tools and knowledge to provide safe and high-quality care to patients, ultimately reducing the likelihood of adverse events and improving overall patient outcomes.

#### Patient safety plan of the organisation

Having a patient safety plan within a dental school or hospital holds immense significance in ensuring the well-being and safety of patients. A patient safety plan serves as a comprehensive roadmap that outlines strategies, protocols and actions to prevent and address potential risks and adverse events in the healthcare setting. By implementing a patient safety plan, dental schools and hospitals can create a systematic and organised approach to patient care, incorporating evidence-based practices, standardised procedures and effective communication channels. This plan helps in identifying areas of improvement, establishing clear roles and responsibilities and promoting a culture of continuous learning and quality improvement. It also facilitates the implementation of preventive measures, such as infection control protocols, medication safety systems and regular staff trainings on patient safety. Additionally, a patient safety plan provides a framework for monitoring and evaluating patient safety initiatives, enabling the organisation to measure its performance and make informed decisions for further enhancements. Ultimately, having a patient safety plan demonstrates the institution's commitment to providing safe and reliable dental services or healthcare, instils confidence in patients and helps in building a strong reputation for delivering high-quality care.

#### Patient safety incident management system and incident reporting

The significance of a patient safety incident management system and incident reporting within a dental hospital cannot be overstated. These systems play a crucial role in promoting patient safety, improving the quality of care and fostering a culture of continuous learning and improvement. By implementing an incident management system, dental hospitals create a structured and standardised approach for reporting and investigating patient safety incidents and near misses. This enables the identification of underlying causes, contributing factors and system vulnerabilities that may lead to adverse events. Incident reporting allows dental professionals to capture valuable data and information, which can be analysed to identify patterns, trends and areas for improvement. It facilitates the identification of potential risks and the implementation of preventive measures to mitigate them, thus reducing the likelihood of recurrence. Moreover, incident reporting promotes transparency, accountability and communication among healthcare professionals. It encourages open dialogue, the sharing of experiences and the dissemination of lessons learnt, thereby enhancing collaboration and enabling the dissemination of best practices. By actively engaging in incident reporting, dental hospitals can identify opportunities for systemic improvements, enhance patient safety protocols and provide a safer and more reliable healthcare environment for their patients.

### Blame-free culture

Having a blame-free culture within a dental school or hospital is of utmost significance in ensuring patient safety. A blame-free culture encourages open communication, transparency and a focus on learning from errors rather than assigning blame to individuals. In such a culture, dental professionals feel safe to report near misses, adverse events and potential risks without fear of retribution. This allows for a thorough investigation and understanding of the underlying causes and system failures that contribute to patient safety incidents. By avoiding a blame game, the emphasis shifts towards identifying systemic vulnerabilities and implementing preventive measures to improve patient safety. A blame-free culture fosters a sense of trust and psychological safety among dental staff, enabling them to openly discuss and learn from mistakes. It encourages collaboration, teamwork and the sharing of experiences, leading to collective efforts in enhancing patient safety practices. Ultimately, a blame-free culture within a dental school or hospital creates an environment conducive to continuous improvement, where the focus is on providing the highest level of safe and quality care to patients.

### Performance indicators of patient safety

Performance indicators provide a measurable and objective way to assess the effectiveness of patient safety initiatives and the overall quality of care delivered. By establishing and tracking these indicators, dental hospitals can monitor key aspects of patient safety, identify areas for improvement and measure progress over time. Performance indicators can include metrics related to infection control, medication safety, adverse events, patient satisfaction and compliance with safety protocols. They serve as valuable tools for benchmarking performance against established standards and best practices, allowing dental hospitals to compare their results with industry benchmarks and identify areas where they may be falling short. Furthermore, performance indicators provide a means of accountability and transparency, allowing stakeholders to assess the dental hospital's commitment to patient safety. By regularly analysing and acting on performance indicators, dental hospitals can implement targeted interventions, allocate resources effectively and continuously strive to enhance patient safety practices, ultimately leading to improved outcomes and a higher level of care for dental patients.

### Significance of ethical framework of an organisation

An ethical framework provides a set of guiding principles and values that govern the conduct and decision-making of healthcare professionals. In the dental field, ethical considerations are paramount as they ensure the well-being and rights of patients are respected and protected. An ethical framework establishes standards of behaviour and professionalism, ensuring that dental professionals prioritise patient autonomy, confidentiality, beneficence, non-maleficence and justice. It guides ethical dilemmas

and promotes the highest level of integrity and ethical conduct in patient care. Moreover, an ethical framework promotes trust and confidence in the dental profession, strengthening the patient-provider relationship. It fosters an environment of respect, empathy and cultural sensitivity, promoting equitable access to care and eliminating discrimination. Additionally, an ethical framework supports ethical research practices and the responsible use of emerging technologies in dental practice. It serves as a reference point for ethical decision-making, helps resolve conflicts and protects both patients and healthcare professionals from potential harm. By adhering to an ethical framework, dental schools and hospitals ensure that patient care is not only clinically sound but also ethically sound, upholding the highest standards of professionalism and ensuring the dignity and well-being of every patient.

### Patient representatives and their contribution towards enhancement of patient safety within the organisation

Including patients as a part of decision-making committees holds immense significance in increasing patient safety within an organisation. Patients are the ultimate recipients of healthcare services, and their perspectives, experiences and insights are invaluable in shaping policies, practices and protocols. By involving patients in decision-making committees, organisations gain a unique and firsthand understanding of the challenges, needs and preferences of the individuals they serve. Patients can provide valuable input on various aspects of patient safety, such as care delivery models, communication strategies and the design of healthcare systems. Their involvement ensures that decisions are patient-centred, promoting individualised care and enhancing overall patient satisfaction. Furthermore, including patients in decision-making committees' fosters transparency, accountability and shared responsibility in patient safety initiatives. It empowers patients to actively participate in their own care, encouraging them to ask questions, voice concerns and contribute to the improvement of safety practices. Patient engagement in decision-making committees also helps identify potential risks and areas for improvement that may not be apparent to healthcare professionals alone. Ultimately, by including patients as active participants in decision-making processes, organisations can create a culture of collaboration, trust and continuous improvement, leading to enhanced patient safety, better healthcare outcomes and a more patient-centred approach to care.

### CONCLUSION

In conclusion, patient safety is a critical component of providing quality healthcare within dental schools and hospitals. By implementing various strategies and systems, such as a patient safety plan, incident management systems, blame-free cultures, performance indicators, ethical frameworks and including patients in

decision-making committees, organisations can create a comprehensive approach to ensure patient safety. These initiatives promote a culture of transparency, continuous learning and improvement, with a focus on preventing adverse events, enhancing communication and delivering patient-centred care. By prioritising patient safety, dental schools and hospitals can significantly reduce risks, improve treatment outcomes and foster trust and confidence among patients. Patient safety is a collective responsibility that requires the commitment and collaboration of all stakeholders, from healthcare professionals to administrators and patients themselves. With a steadfast dedication to patient safety, dental organisations can create an environment that not only promotes optimal patient care but also cultivates a culture of excellence, accountability and continuous improvement.

**Acknowledgements** Acknowledge all the contributing authors for their commitment.

**Contributors** Conceptualisation, methodology/study design, investigation, resources, data curation, writing—original draft: VP; validation, formal analysis, writing—review and editing: VP, MSI, MR, NCSKC, PPS; visualisation, supervision: VP, MSI, NCSKC, PPS.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Not applicable.

**Ethics approval** Not applicable.

**Provenance and peer review** Not commissioned; externally peer-reviewed.

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