

## Knowledge, attitudes and practices regarding patient safety among surgical trainees in Sri Lanka

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### Abstract

#### Introduction

Surgical trainees play an integral role in the perioperative workup and safety of patients undergoing surgery. This study was aimed to assess surgical trainees' knowledge, attitudes and practices on perioperative surgical patient safety.

#### Methods

A descriptive cross-sectional study among 105 surgical trainees (males 96%, mean age 33 years, range 30-40 years) was performed using self-administered validated questionnaires on knowledge, attitudes (Safety Attitude Questionnaire-SAQ) and practices (Questionnaire on evidence-based safety practices and reporting of medical errors). Responses were marked on a 5-point Likert scale and were analysed.

#### Results

Approximately two thirds (n=72, 69%) were junior registrars and the rest (n=33, 31%) were senior registrars. The median knowledge score was 60 (range 10-90). The Median SAQ score was 74 (151/205, range 57-95). Approximately 65% (n=68) claimed they were aware of the protocols of marking the surgical site. Nearly three quarters (n=78, 74%) have read the WHO safe surgery guidelines. Eighty-seven participants (84%) had not attended a formal risk management course/teaching activity. Only 53% (n=56) believed that medical errors were handled appropriately and less than a third (31%, n=33) believed that the work environment was favourable to discuss errors. Only 54% (n=57) had received appropriate feedback about their performances.

#### Conclusion

Overall, the patient safety culture among surgical trainees was found to be suboptimal. Formal teaching sessions, workshops and local guidelines may help improve knowledge and attitudes on patient safety among surgical trainees.

Furthermore, working conditions need to be improved to encourage discussion of medical errors and allow frequent feedback.


#### Introduction

Patient safety is a well-established essential concept in modern medicine and is defined as the prevention or reduction of adverse outcomes due to health care [1]. It plays an integral role in maintaining the quality of patient care and helps minimize unfavourable outcomes affecting both patient and healthcare personnel [1]. Patients may face unpleasant experiences such as pain, disability, psychological trauma, and even death due to failures in patient safety which are mostly preventable [1]. Repeated hospital admissions and deaths were among the common consequences of errors reported in many countries which also contributes to increased healthcare costs [2]. Adverse events have been reported in approximately 10% of in-ward patients and nearly two-thirds of such events were related to the actions of a surgical care provider [3]. Furthermore, around 50% of such adverse events in the surgical practice are largely preventable [4]. The morbidity due to unsafe patient care is a major contributor to healthcare expenditure which has an even greater impact on resources limited in developing countries [5]. To mitigate this, the World Health Organization (WHO) implemented the "Safe Surgery Saves Lives campaign" intending to implement best practices and safe surgery principles to enhance patient safety by minimizing preventable adverse events both inward and in operating theatre [6].

Sri Lanka is a lower-middle-income South Asian country with limited facilities, resources and technology. Compared to the West, the concepts of patient safety and reporting of medical errors have been less established in Sri Lanka [7]. Knowledge and attitudes towards patient safety among future surgeons are key aspects in improving patient safety practices in the surgical field in Sri Lanka. Furthermore, it is recommended that the exposure to patient safety should be from the beginning of surgical training and be continued throughout which would ensure the continuation of these practices beyond the period of training [8]. Assessing knowledge, attitudes and practices on patient safety among postgraduate surgical trainees is, therefore, an important area that also

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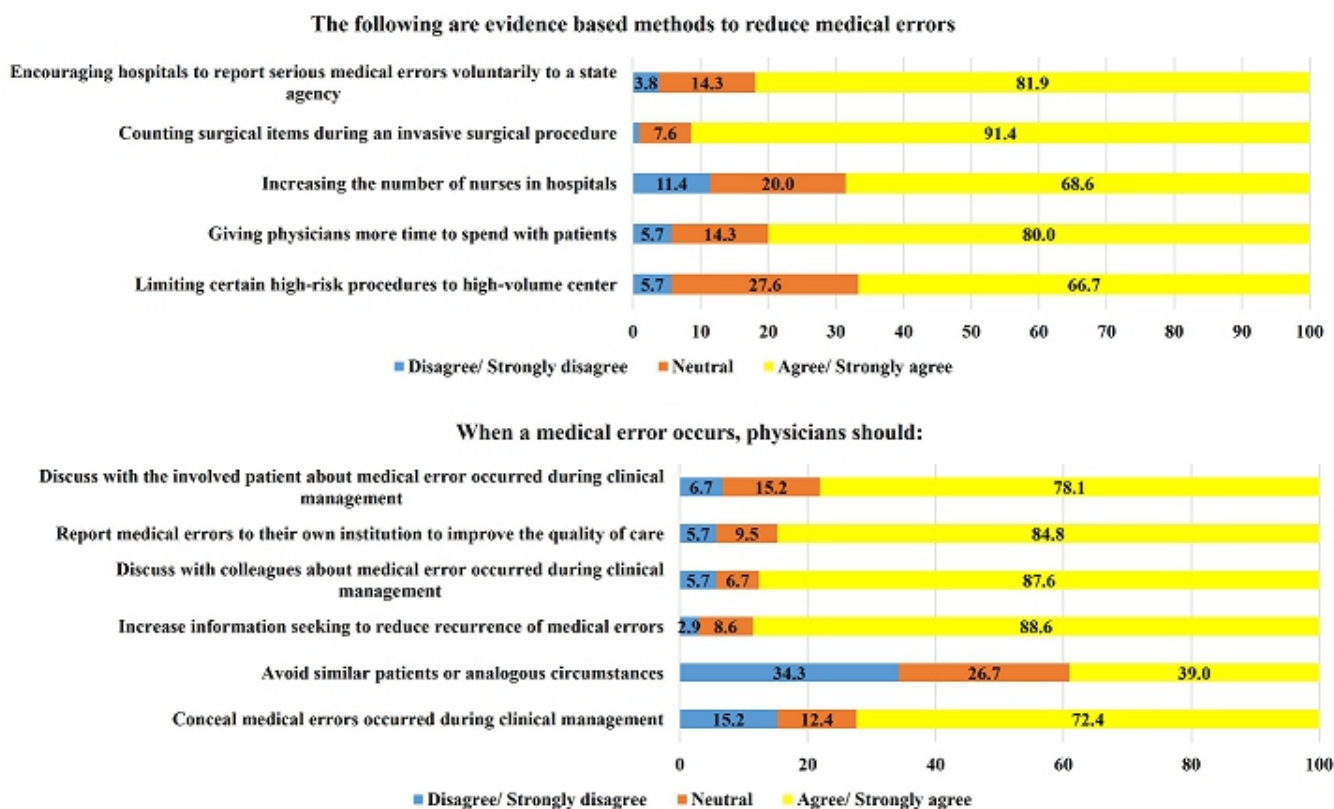
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**Figure 1.** The perception of surgical trainees regarding evidence-based methods for reducing medical errors and the actions that should be taken following the recognition of a medical error.

would help recognize areas where further improvements are needed. This study was conducted to assess knowledge, attitudes and practices towards patient safety among postgraduate surgical trainees in Sri Lanka.

### Methods

A descriptive cross-sectional study was carried out among active surgical postgraduate trainees in Sri Lanka including all registrars (residents) and senior registrars (senior residents) in all surgical specialities who have completed a minimum of 6 months of surgical training (include the period). Trainees who have completed their training period, or are currently employed overseas were excluded from the study. Ethical clearance for the study was obtained from the Ethical Review Committee of the National Hospital of Sri Lanka.

A self-administered online questionnaire in English was emailed to the trainees. The questionnaire consisted of demographic characteristics and details related to the training and clinical exposure. The knowledge was assessed using questions based on the WHO patient safety manual [9]. Validated tools including the Time Out Survey questionnaire [10] and Operating Room Version of Safety Attitude Questionnaire (SAQ) [11] were used to collect data on attitudes and practices. The Time Out Survey questionnaire

consists of 14 items regarding the perceptions of practices on patient safety measures in the operating theatre. A 4-point Likert scale was used which consisted of subjective responses including rarely, occasionally, often and very often. The team's experience related to mistakes or near misses were assessed together with the usual strategies which included correct verification and safety measures. Safety Attitudes Questionnaire (SAQ) is a validated tool used to investigate the attitudes of patient safety about six dimensions such as Working Condition (WC), Job Satisfaction (JS), Safety Climate (SC), Teamwork Climate (TC), Stress Recognition (SR) and Perception of Management (PM) with acceptable validity and reliability [11]. The results were expressed as frequencies and percentages.

### Results

Out of approximately 250 eligible surgical trainees, a total of 105 who responded to the questionnaire were included in the study. The vast majority were males (96%, n=101). The mean age was 33 years (range: 30-40). Approximately two thirds (n=72, 69%) were registrars (residents) and the rest (n=33, 31%) were senior registrars (senior residents). The majority (67%, n=70) of the trainees were training in general surgery followed by 16% (n=17) in orthopaedic surgery. Only 15% (n=16) have attended some form of patient risk management course.

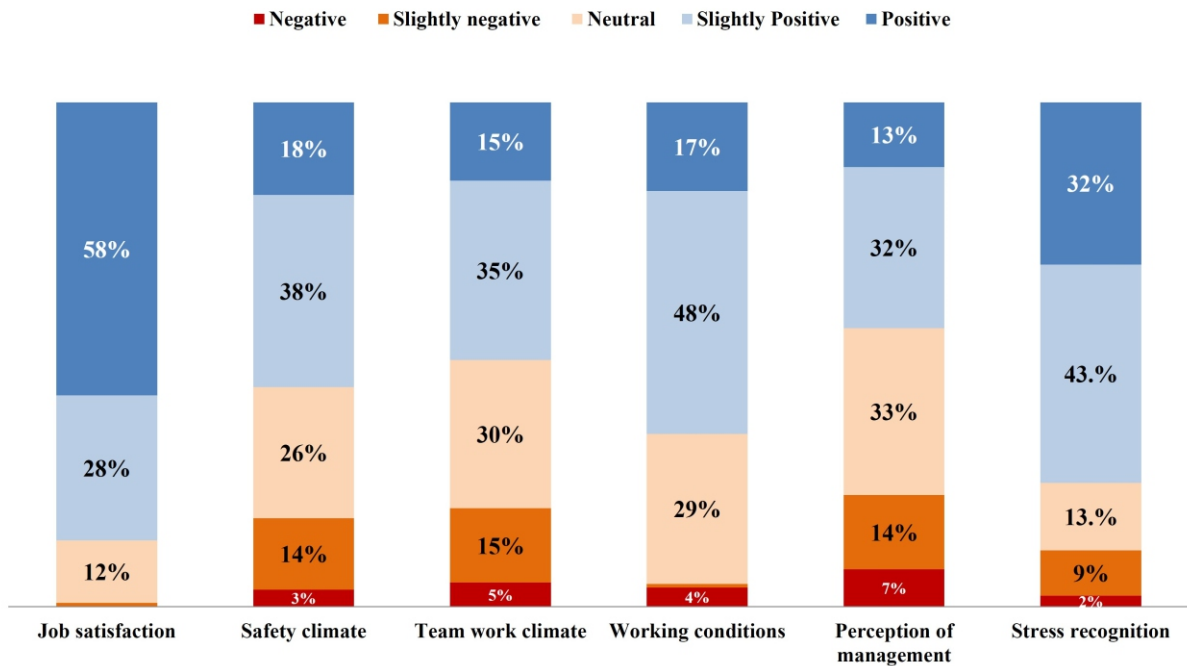


Figure 2. Trainees' response regarding the safety attitude questionnaire (SAQ)

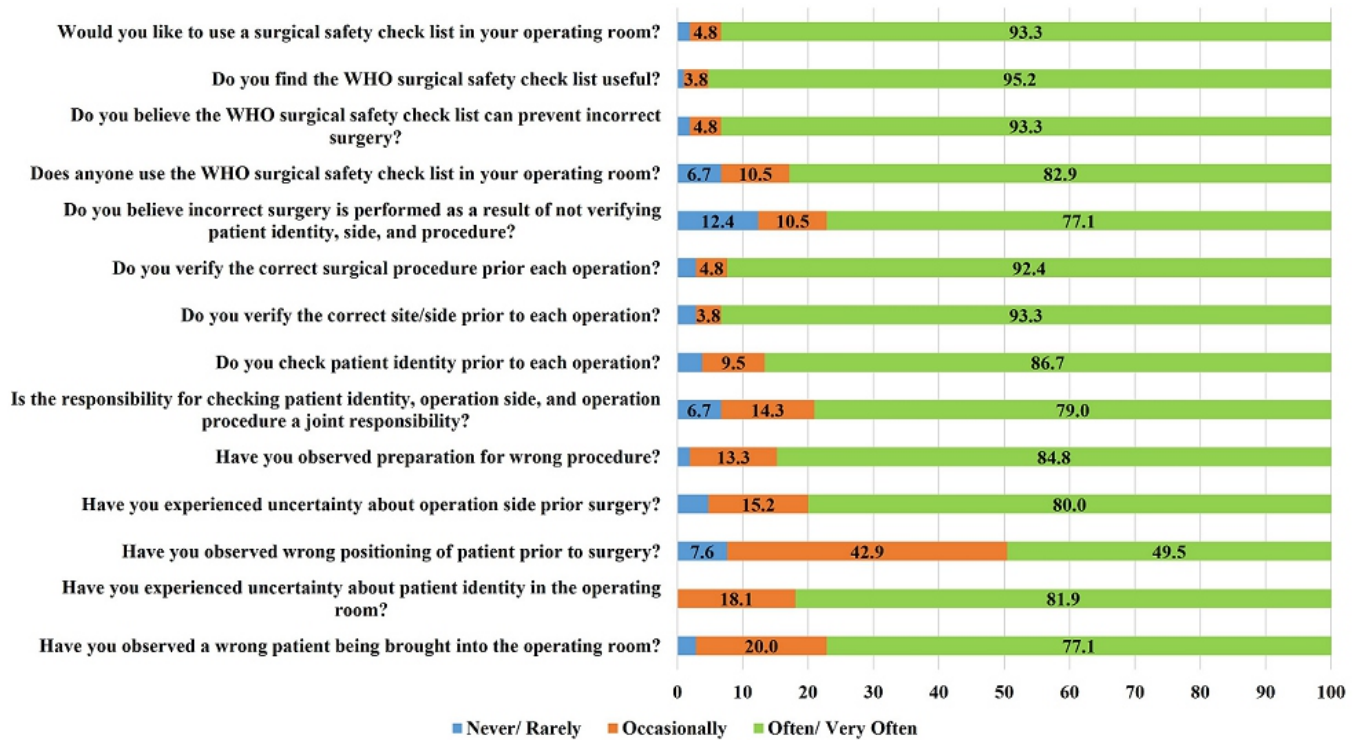


Figure 3. The summary of the responses received in the Time Out Survey questionnaire

### Perceived causes of medical errors

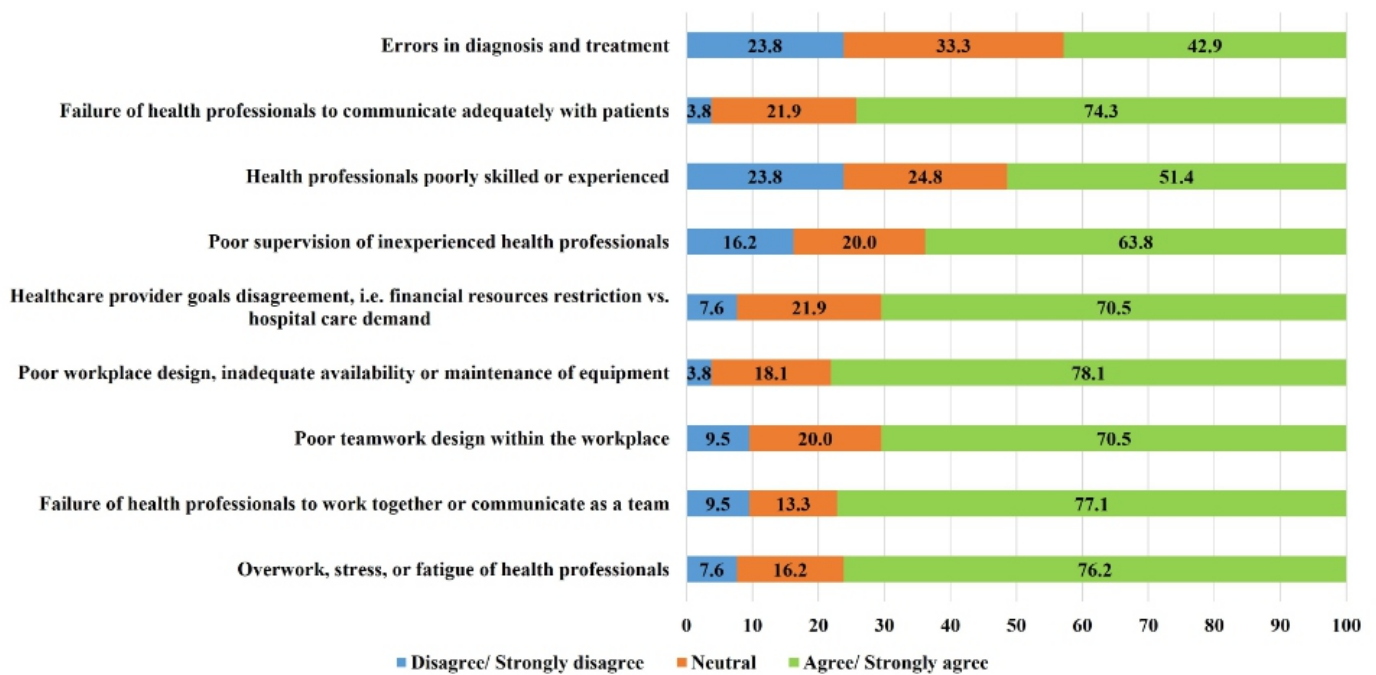


Figure 4. Perceived causes of medical errors

The median knowledge score was 60% (range: 10-90). Although 96% (n=101) claimed to have heard about WHO safe surgery guidelines, only 72% (n=78) have read it and only 50% (n=52) were aware of the 10 essential objectives in the WHO's safe surgery guidelines. Approximately two thirds (65%, n=68) claimed to know the protocols of marking the surgical site and 44% (n=46) about the timing of administering prophylactic antibiotics. Approximately 40% (n=43) knew about the ASEPSIS score in surgical site infection while 59% (n=62) were aware of the methodical wound exploration in preventing count discrepancies. Approximately 61% (n=64) claimed to know about the protocols for minimizing adverse drug reactions. Figure 1 summarises the perception of trainees regarding evidence-based methods for reducing medical errors and the actions that should be taken following the recognition of a medical error.

Median SAQ score was 74% (151/205) (range 57%-95%). Only 53% (n=56) believed that medical errors were handled appropriately in their clinical area and less than a third (31%, n=33) believed that the work environment was favourable to discuss these errors. Only 54% (n=57) had received appropriate feedback about their performances. Most of the participants responded favourably to job satisfaction (87%) and stress recognition (77%) components of SAQ. However, the favourable responses on safety climate (46%), teamwork climate (50%) and perception of management (45%) were suboptimal (Figure 2).

The summary of the responses received in the Time Out Survey questionnaire is shown in Figure 3. The response received regarding the use of the WHO checklist was generally favourable. However, only 52% stated that the WHO checklist was performed very often during their training. Furthermore, preparation for the wrong procedure, the experience of uncertainty about the operating site before surgery and wrong positioning before surgery were observed very often among 47%, 27% and 5% respectively. Around 30% claimed that they observed a wrong patient being brought into the theatre very often. Regarding perceived causes of medical errors, most of the participants believed that poor workplace design/ maintenance (78%), poor communication among professionals/ lack of teamwork (77%), overwork, stress and fatigue (76%), poor communication with patients (74%) were the major contributors (Figure 4).

### Discussion

This study has shown considerable lapses in knowledge and practices on patient safety among the current Sri Lankan surgical trainees. Although the attitudes regarding the usefulness of the WHO safety checklist were favourable, the implementation of the checklist was suboptimal. The perceptions of safety practices among the surgical trainees were also suboptimal. The large volume of clinical contacts and procedures performed throughout the surgical training period allows ample opportunities to enhance patient safety. Failing to address these issues related to patient safety in the

early parts of surgical training is a missed opportunity.

Several studies from many countries have analysed perceptions and practices on patient safety among surgical trainees. An analysis of 612 surgical trainees in the United Kingdom revealed that around 36% had witnessed or were involved in an adverse patient safety event. Furthermore, around 83% had seen a 'near-miss' incident. However, only around 13% had reported an adverse patient safety incidence at some point during their training [12]. This shows that adverse patient events are still very common even in developed countries despite all efforts and policies implemented to safeguard and prioritize patient safety [9, 12]. These adverse incidents include 'near misses' and 'never events', which have been observed to be more common among interventional specialities such as surgery, radiology and cardiology. The increase in such incidents may indicate an improvement in reporting rather than a true increase. A cross-sectional study from Norway including surgeons, nurses and anaesthetists evaluated the patient safety culture in the theatre setting [10]. Before a surgical procedure, the uncertainty of patient identity and the surgical site was experienced by 38% and 81% of participants respectively. Further, around 60% had prepared for the wrong surgery. Around 90% supported a time out protocol before the operation. As these studies have indicated, gaps in patient safety procedures are a universal issue that requires recognition and interventions to minimize adverse patient outcomes.

The data on patient safety issues in Sri Lanka is very limited. A descriptive study from Sri Lanka has reported on the attitudes and utility of the WHO surgical safety checklist among a group of doctors and nurses who worked in surgical theatres (Ref). Only 79% of doctors were aware of the checklist and the utility was found to be suboptimal. Approximately 50% believed that maintaining a checklist was cumbersome during the busy surgical practice. Only 9% were trained in using the checklist [7]. This study has shown major lapses in the patient safety-related culture in the Sri Lankan setting.

In our study, only 53% believed that medical errors were handled appropriately in their clinical area and only 31% believed that the work environment was favourable to discuss medical errors. Furthermore, only 54% felt that they received appropriate feedback about their performances. This suggests that the practice related to the identification and reporting of medical errors needs improvement. The work environment should be modified to welcome discussions and feedback regarding medical errors and issues related to patient safety.

Furthermore, only a minority of the participants had favourable views regarding the safety climate (46%) and teamwork climate (50%). Poor workplace design/maintenance, poor communication among professionals, overwork, stress and fatigue and poor communication with patients were identified as major contributors to medical errors.

In Sri Lanka, there is no formal education or workshop regarding patient safety practices, especially targeting the surgical trainees. We propose to introduce the patient safety concept to the surgical postgraduate curriculum preferably before the commencement of training. Formal teaching and training programs should also be implemented for all doctors, nurses and orderlies working in the surgical care setting. Furthermore, conducting similar studies among other specialities, especially the interventional specialities may help gain a better insight into patient safety practices. Regular audits and reporting of adherence to patient safety practices and adverse patient safety incidents should also be implemented at a national level with regular monitoring of the progress.

This was a cross-sectional study among a small convenience sample of surgical trainees from Sri Lanka. Therefore, the study may not be generalizable to all Sri Lankan surgical trainees or surgical practice in general. Furthermore, the majority of the responses received were subjective thus, involves bias. As there is no consensus on acceptable standards or cut-off points on patient safety scores, it is not possible to compare the Sri Lankan scores against a reference point. However, the present standards as shown in this study can be deemed suboptimal as there is considerable room for improvement. This is the first analysis that has been performed among surgical trainees and despite the above limitations, considerable concerns related to patient safety have been identified.

### **Conclusion**

Overall, the patient safety culture among surgical trainees was found to be suboptimal. Formal teaching sessions, workshops and local guidelines may help improve knowledge and attitudes on patient safety among surgical trainees. Furthermore, working conditions need to be improved to encourage discussion of medical errors and allow frequent feedback. Regular audits and reporting of adherence to patient safety practices and adverse patient safety incidents should be implemented at a national level with regular monitoring of the progress. Similar studies among the other interventional specialities are also recognized as a necessity.

### Additional Information and Disclosures

Ethics approval and consent to participate: Ethical clearance for the study was obtained from the Ethical Review Committee of the National Hospital of Sri Lanka. Informed written consent was obtained from the participants before recruiting to the study.

Availability of data and material: Not applicable

Competing interests: The authors declare that they have no competing interests.

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All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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