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Assessment of Medical Error Reporting Practice and Associated Factors among Obstetrics and Gynecology Residents, Fellows, and Consultants in Teaching Hospitals of Addis Ababa, Ethiopia: A Cross-Sectional Study

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Article

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Abstract

Background

An understanding of the approach healthcare professionals take toward medical errors and their reporting is central to achieving greater transparency, higher quality, and a safer healthcare sector. Reduction in adverse events and medical errors typically occurs with the development of a safe health sector. In most fields of medicine, such as diagnosis, surgery, and treatment of patients, medical errors are a common occurrence that leads to mortality and added expenses to individuals and health systems.

Objective

To assess medical error reporting practice and associated factors among obstetrics and gynecology residents, fellows, and consultants in teaching hospitals of Addis Ababa, Ethiopia.

Methods

An institution-based cross-sectional study design was employed, and all Obstetricians, Gynecologists and residents at Tikur Anbessa Specialized Hospital, Seniors at Zewuditu Memorial Hospital, Ghandi Memorial Hospital and Yekatit 12 hospital were included in the study. A self-administered structured questionnaire written in English was used to collect data. The data was entered, cleaned, and analysed using SPSS version 25. Descriptive statistics for categorical data will be presented in terms of frequency, and variables with a p-value less than 0.20 from the univariable logistic regression analysis were included in the final multivariable analysis model. An adjusted odds ratio (AOR) with a 95% confidence interval and a P-value of 0.05 will be used as statistically significant for the outcome variable.

Results

Only 20% of participants demonstrated good error reporting practices. Among the ten dimensions of patient safety culture assessed, non-punitive response to error had the highest positive response (78.4%). Conversely, the frequency of events reported had the lowest positive response (20%), and the report rules content and staffing were also poorly rated. Multivariate analysis revealed that female healthcare providers were substantially more likely than men to report mistakes (AOR = 5.2, 95% CI: 2.24–12.09, $p < 0.001$), and a positive teamwork culture was associated with a higher likelihood of reporting (AOR = 2.7, 95% CI: 1.11–6.76, $p = 0.03$).

Conclusion

Healthcare organizations should put a high priority on creating a psychologically safe workplace by encouraging open communication, enforcing a non-punitive response to errors, and bolstering a culture of teamwork in order to improve medical error reporting.

1. Introduction

1.1 Background

Ensuring and improving the quality of care is a priority for all health systems, and patient safety is a key element of health quality. The Institute of Medicine defines patient safety as " the freedom from accidental injury caused by medical care or medical errors" and, in particular, that "responsible care is care which reduces the risk of avoidable injury to patients" (1-2).

Understanding how health professionals perceive medical errors and how they report them is crucial for making health care safer, more transparent, and better (3). Reporting errors often reminds us that it is not about improving care but about making the environment more secure, and health care providers should know that they are not making individual errors, but they are dealing with systemic weaknesses (3). As such, healthcare providers should be aware that reporting mistakes is not only about making care better but also about making the environment safer; it is a frequent reminder that medical errors should not be considered individual mistakes, but as a reflection of systemic deficiencies in the healthcare system, but not always practiced by healthcare providers (4).

An error occurs when a planned action is not completed or when the wrong plan is executed to achieve a goal. They may occur in practice, products, procedures, and systems (5–6). Medical error is "an act of omission or commission in planning or execution that contributes or could contribute to an unintended result" (7). It is a major public health issue that could put patients at risk. At this time, lowering medical mistakes is a global issue. (8).

Medical errors are a widespread problem in many areas of medicine, diagnostics, surgery, and care worldwide. They increase the number of fatalities and place a greater financial strain on health systems. Additionally, it is a frequent occurrence that poses a serious risk to patient safety and is a major public health concern. According to a 2016 study, medical error is the third leading cause of death in the US, after cancer and heart disease (9).

and, like all other practices, there will be errors and inaccuracies in the medical field; however, many authorities have been working to find ways to reduce and even eliminate human error and its potentially dangerous consequences (10–11). Medical errors can lead to a decline in the health of the patient as well as adversely affect the treating physician (12–13). This can be catastrophic for performance, emotions, and mental health, and it is critical to identify solutions that may help solve this problem (14).

First, disclosure of medical errors builds trust in physicians, the healthcare system, and the doctor-patient relationship; second, it is consistent with the ethical principles of respect for persons and truth-telling (15). Several factors identified in various studies as barriers to reporting, such as fear of legal consequences, guilt, lack of training, fear of damaging the reputation of the doctor, and fear of causing anxiety or loss of confidence in the doctor, were considered as barriers. For these reasons, the publication of medical errors has not yet become a common practice in general (16-17). The error reporting system is an effective way of improving patient safety and is considered to be the norm in the hospital accreditation system (18).

One of the most frequently identified obstacles to reporting medical errors is the lack of an efficient reporting system for medical incidents (19). The criteria and requirements for the establishment of an error reporting system depend on a number of factors such as the political and social, cultural, economic and technological infrastructure of the country (20).

1.2 Statement of the Problem

Medical errors are thought to be the third leading cause of death in the US (21), caused by both human error and systemic failures which could jeopardise public safety (22). In addition, medical errors account for 251 000 deaths every year - 9.5 per cent of all US deaths (23). Although health organisations work to combat all types of error, they still occur in health care settings and affect patients and other staff, despite various efforts to eradicate them (24). Medical errors remain a major cause of morbidity and mortality around the world (25).

Reporting clinical events to colleagues, supervisors, parents, and sometimes even children is an ethical obligation (26). Risky behaviors, near misses, minor injuries, serious injuries and deaths in healthcare settings are the categories into which errors may be classified (27). Furthermore, depending on the severity and the proximity of the error to the patient, the consequences of errors may range from no or temporary inconvenience to permanent disability or death (28). However, a study found that 96 per cent of medical errors are not assessed, and between 50 and 96 per cent are not reported (29).

Reduced motivation or willingness, unclear unit values, lack of systematic error analysis, workload overload, lack of teamwork, fear of blame and disciplinary measures are some of the factors that have been shown in several studies to be barriers to reporting of medical errors (30-32). Improving the culture of patient safety in organizations requires a pragmatic approach to error reporting, frequency and impact (33). Moreover, instead of blaming others, focus on the successes and shortcomings of the process (34). Such reports will also help to learn from incidents or errors in order to identify the root causes and improve safety practices (35).

In Ethiopia, medication errors were widespread, with at least one medicinal product prescribed and administered incorrectly in at least one out of every two cases (36). This has been caused by health systems in which people work and interact, not only by human error (36). Therefore, any efforts to reduce medical errors need to take into account systems and processes as a whole and not only at the individual level (37).

Reporting of safety incidents in line with the Ethiopian Hospital Reform Implementation Guideline (EHRIG) is one of the many initiatives to improve the quality of health care that Ethiopia has tried as part of its healthcare reform. One of the patient safety incidents that falls within the scope of the safety event is a medical error. Healthcare professionals and patients did not report medical errors despite the existence of national guidelines on reporting of medical errors and safety events (EHRIG). The purpose of this study is therefore to determine how residents, fellows, gynaecologists and obstetricians consult in the teaching institutes of medicine in Addis Ababa.

1.3 Significance of the Study

Understanding how and why medical errors are reported is essential to advancing patient safety, so it is important to study the practice of reporting medical errors and contributing factors. By encouraging the open reporting of errors, hospitals and clinics can identify common errors, identify what causes them, and implement ways to prevent them from occurring again, thus reducing the number of adverse events and improving the care of patients. The processes for reporting errors create a culture of accountability and continual learning in the medical profession; they want healthcare professionals to admit and report errors without fear of punishment.

Obstetricians and gynecologists address several factors influencing the reporting of errors. Policies and support systems to help professionals cope with reporting system problems can be developed in light of an understanding of these factors. This information can also contribute to the development of training materials and training programs for consultants, fellows and residents, to help prepare them better for the real-world challenges of medicine. Although this study is specific to obstetrics and gynecology, the error reporting principles apply to all areas of medicine, and the lessons learnt can contribute to improving medical practice and patient safety in all areas.

Although the study is specific to obstetrics and gynecology, the principles guiding the reporting of errors are applicable to other areas of medicine, and the findings can be used to improve medical practice and patient safety in general. The complex medical situations specific to obstetrics and gynecology, such as pregnancy, labor, and delivery, are a driving force for this research; the risk of life-threatening conditions for mothers, fetuses, and newborns due to medical errors is high in this field and needs to be better reported and managed.

2. Literature Review

Medical error is deviation from expected practice, consisting in using an incorrect method to achieve the desired result, and medical errors are a major threat to patient safety and a major public health issue problem. The number of complaints and lawsuits regarding medical errors and medical malpractice is

increasing, which is a concern for health professionals and the public alike, and medicine is a profession. For example, if a doctor does not show the skills and care that are expected of someone with comparable experience and qualifications, it may lead to a patient being harmed or injured (54).

2.1 The Practice of Medical Error Reporting

The majority of nurses (64.7%) reported that they encounter medical errors every day or every week, while only 1.6 per cent said that they had not encountered any in the last year. Nineteen per cent did not report that they had consistently found errors in their work during this period. As regards error reporting, only 44.1 per cent of nurses reported errors 'often or always' and 6 per cent admitted not having reported any errors at all. Moreover, only 16.9 per cent of nurses thought they reported all medical errors to management. Respondents found that while the majority of head nurses preferred to report errors to hospital management, 27.4 per cent corrected errors without reporting them. As regards the reporting of errors by doctors, nurses reported that the head nurses in their wards reported only 24.7 percent of their doctor's errors to the hospital. There was a significant negative correlation between the incidence of errors and the error reporting rate ($r = -0.34$, $p<.001$). Migrants from the former Soviet Union rated their level of error reporting ($M = 3.23$, $SD = 0.67$) as good (58).

The health care system and the provision of healthcare differ across countries; therefore, the perceived barriers to reporting medical errors are also expected to differ. For example, fear of repercussions is more widespread in East Asian and Middle Eastern countries than in the US. In the US, however, workplace culture is more often cited as a barrier to entry. In a systematic review carried out in 2019, seven common obstacles to reporting medical errors were identified. These include fear of consequences, lack of feedback, poor understanding of medical errors and the importance of reporting, work environment and culture, and lack of a sense of accountability (38).

A study of the association of perceived medical errors with resident distress and empathy found that 34 per cent of respondents reported having made at least one major medical error during the survey period. Each quarter, 14.7 per cent of the participants reported that they had made a medical error during the previous three months. Self-reported medical errors were associated with a decrease in self-reported well-being in all burn areas ($P = .002$ for each) and a subsequent decrease in quality of life ($P = .02$). The probability ratio of screening positive for depression at the next time point was 3.29 (95-CI 1.90–5.64) for self-reported errors. In addition, the increased likelihood of self-reported error over the next 3 months was associated with decreased empathy and increased burnout in all areas ($P = .001$, $P = .01$ and $P = .02$, respectively, emotional and cognitive empathy) (40).

According to the study on the practice of reporting medical errors, 61 per cent of doctors reported that they had not reported an error in the previous 12 months, 21 per cent had reported one or two errors, 8 per cent had reported three to five errors, 7 per cent had reported six to ten errors, and one respondent had reported more than 20 errors. Compared with doctors who worked more hours, those who worked from 20 to 39 hours were statistically more likely to report fewer errors. Overall, residents, specialists, consultants and general practitioners reported only a few errors on their own. Compared to other groups, residents had a higher reporting rate. The most frequent errors reported by obstetricians (38.9%) were compared with the least reported by surgeons (18.2%) ($P = 0.019$) 41).

A study on the reporting of medical errors by healthcare professionals in a tertiary-level hospital in Kenya found 265 (70.9 per cent) of the participants knew that KNH had a management error rate (MIR) system. Nurses, on the other hand, were more aware than doctors, with 186 (79.5) compared with 54 (47.4) (42).

According to the study on the disclosure of medical errors by doctors, doctors choose to disclose medical errors because they would like to be treated in the same way as patients (p-value = 0.103, 95.4 and 87.8 per cent, respectively). Disclosure of medical errors may help individuals to feel less guilty ($p = 0.121$; 66.7 per cent and 45.5 per cent, respectively). Physicians who received training were more likely to report errors based on whether they perceived it as beneficial or harmful to patients (72.7 and 57.6 per cent, p-value = 0.032). Physicians felt obliged to share the responsibility for medical errors in relation to professional relationships (76.4 vs. 62.5, $p = 0.24$). Doctors in both groups identified at least one colleague as someone who could help them if needed (94.5 vs. 78.8, $p = 0.064$). Learning to share experiences with peers (89.1 per cent vs. 78.8 per cent, p-value = 0.149), learning from mistakes (85.5 per cent vs. 75.8 per cent, p-value = 0.256), and gaining support and understanding (89.1 per cent vs. 78.8 per cent vs. p-value = 0.256) were all reasons for sharing, reduction of workload (67.3 and 51.5 per cent, $p = 0.280$) and improvement of professional relations with the team (63.6 and 51.5 per cent, respectively). They considered that reporting of medical errors has more advantages than disadvantages for those who do (67.3 and 66.7 per cent, p value = 0.290, respectively). However, compared to 66.7 per cent of doctors not trained, 85.5 per cent of doctors knew how to report medical errors to the institution ($p = 0.02$). In addition, according to the Institution's observations, individuals who received training reported more medical errors than those who did not (85.2 vs. 56.3, p-value = 0.003). Concerns about malpractice litigation (58.2% vs. 59.4%, respectively, p-value = 0.042), blame from colleagues (60.0% vs. 50.0%, respectively, p-value = 0.584), professional discipline (59.3% vs. 67.7%, respectively, p-value = 0.720), reputational damage (61.8% vs. 56.3%, respectively, p-value = 0.842), unfavourable reaction from patients or their families (58.2% vs. 75.6%, respectively, p-value = 0.089), and negative publicity in the news media (58.2% vs. 65.6%, respectively, p-value = 0.564) were among the concerns of medical error disclosure (43).

The qualitative study carried out at the University Teaching Hospital of Mizan and Tepi identified the following factors as the main challenges in reporting medical errors: lack of a good reporting system, punitive measures, perceived lack of confidentiality, fear of loss of acceptance, lack of a culture of error education, information asymmetry, media coverage of medical errors, avoidance of conflict and attitudes of health professionals (48).

A study conducted on the reporting behaviour of patient safety incidents and related factors among healthcare workers in the Hadiya area of Ethiopia shows that the overall reporting behaviour of healthcare workers on patient safety incidents was 28.7 percent. It was found that being a nurse practitioner (AOR: 5.48), having a background in nursing (AOR: 2.87), being part of a team (AOR = 2.79), being open to communication (AOR = 2.78) and supporting management (AOR = 2.8) were all significantly related to reporting of patient safety incidents (50).

A study conducted at the Dessie Comprehensive Specialized Hospital on clinical incident reporting behavior and related factors among healthcare professionals found that the proportion of healthcare professionals reporting clinical incidents was 12.4%. The clinical incident reporting behavior of health professionals was found to be significantly influenced by training (AOR = 3.6), incident reporting reducing errors (AOR = 2.8), fear of legal penalties (AOR = 0.3), and lack of feedback (AOR = 0.3) (61).

A study conducted on patient safety culture and related factors found that overall patient safety culture was 46.7 per cent, working time per week (β = -0.06), number of adverse events reported (β = 3.34), and good communication (β = 2.0), teamwork within the hospital (β = 1.91), staff levels (β = 1.32), error feedback (β = 1.37) and participation in the patient safety program (β = 1.3) were all factors that were significantly related to the culture of patient safety (62).

2.2 Determinant factors for the practice of medical error reporting

2.2.1 Fear of Consequences

A qualitative study at Mizan Tepi hospital showed that patients expect perfection from healthcare professionals. They have shown zero tolerance for any kind of error, whether intentional or unintentional. Because of this fear of consequences, many may be reluctant to disclose medical errors reported by colleagues. Moreover, if the public knew about hospital deaths caused by medical mistakes, it could seriously damage the reputation of the hospital. While it is helpful to learn from mistakes, the potential consequences lead me to choose not to reveal another nurse's reactions (48).

The study on the culture of health workers found that a large majority of respondents, 178 (84,4 per cent) expressed negative views of hiding or denying errors that were reported. By contrast, 138 respondents (65.4 per cent) considered it important to make errors public. More than half of the respondents (53) reported that they were held accountable by their peers for a mistake, while 92 respondents (43.6) reported that they had never been held accountable for a mistake. In addition, 112 respondents (53.1 per cent) thought that the disclosure of a mistake might make a colleague feel ashamed. In addition, 93 respondents (44 per cent) believed that health professionals should not make any errors. The results showed that the main barrier to reporting an incident was fear of getting into trouble, reported by 128 respondents (60.7%), followed by concern of potential legal action (125, 59.2%). Respondents were also concerned about disciplinary measures (49.3%), which they found to be a deterrent to reporting errors. Other perceived barriers included the fear of being wrongly accused of an incident (48.3%), the reporting system being too time-consuming (36.3%) and the lack of feedback after the submission of the report (36.3%).

On the other hand, 136 respondents (64.5 percent) disagreed with the statement that they were not sure who was responsible for reporting. After stratification by occupation, significant differences in reporting barriers were found between doctors, nurses and allied health workers. Concerns included unjustified blame (p-value 0.05), humiliation for reporting negative events (p-value 0.05), forgetting to report due to hectic work schedules (p-value 0.03), and concerns about confidentiality (p-value 0.03) (39).

2.2.2 Lack of feedback.

Both the lack of feedback from the administration and the negative feedback were associated with the under-reporting of incidents. While some studies highlight the negative effects of insufficient feedback, others highlight the benefits of constructive feedback. In a separate study carried out at Dessie Comprehensive Hospital, the rate of reporting of clinical incidents by healthcare workers was only 12.4 per cent. Factors influencing this behavior included training (adjusted odds ratio [AOR] = 3.6, 95 per cent confidence interval [CI], 1.15–11.45), and the belief that reporting of incidents would help to reduce errors (AOR = 2.8, 95 per cent CI, 1.29–6.02) (47).

2.2.3 Work climate/culture.

The approach of the administration to medical errors and the overall working environment plays a critical role in the impact of errors on reporting. The observation shows that when hospital administrators focus on individual rather than systemic causes of medical errors, the reporting rate decreases. In addition, a lack of a safety culture and of programs to prevent errors is associated with a lack of reporting. Conversely, work environments characterized by strong teamwork and psychological security of employees are likely to have a higher reporting rate of medical errors.

In this context, a study on incident reporting behavior in public hospitals in Addis Ababa found that 20.4 per cent of the participants never reported an incident. Key factors identified as significant predictors of incident reporting behavior among healthcare professionals included hospital management support (p = 0.001, 95% CI: 0.206, 0.389), non-punitive responses to errors (p = 0.001, 95% CI: 0.168, 0.292), openness in communication (p = 0.001, 95% CI: 0.062, 0.249), supervisory actions that promote safety (p = 0.001, 95% CI: 0.211, 0.439), and feedback on reported errors (p = 0.005, 95% CI: 0.041, 0.237) (46).

2.2.4 Poor understanding and the importance of reporting ME.

The lack of clarity on what constitutes a medical error is a major obstacle to reporting. Several studies have shown that health care providers often struggle with the lack of a clear definition of medical errors and a clearly defined incident reporting protocol. In addition, a lack of understanding of the importance of reporting medical errors is also a barrier to reporting efforts (59).

Insufficient knowledge of clinical ethics by healthcare providers is one of the main factors contributing to the lack of reporting of errors. A literature review including 96 studies identified various obstacles to ethical education for residents and recommended the introduction of regular case-based ethics courses. However, the impact of undergraduate and postgraduate ethics education on the knowledge of trainees, in particular on ethical issues encountered and their impact on clinical practice, is still not clear (50).

Another study carried out in the US showed a potential gap between the attitudes and the actual practice of error reporting. Although doctors were willing to report hypothetical errors that caused minor or major harm to patients, only 17.8 per cent admitted to having ever reported a real minor error, and only 3.8 per cent reported a real major error. In addition, 16.9 per cent of respondents admitted not having reported a minor error and 3.8 percent a major error. This suggests that if a significant number of doctors do not report errors, efforts to improve patient safety are likely to be jeopardised (44)

Literature from Saudi Arabia on the knowledge and practice of doctors in reporting medical errors found that around 40 per cent of doctors felt that they were unfairly treated by the staff who reported the errors. In addition, 49 per cent said that they would not report an error if it did not cause any harm, and only 56.4 per cent thought that reporting medical errors would lead to positive changes in patient safety and in the health care system (45).

2.2.5 Time-consuming.

Busy work schedules and heavy workloads are important factors that contribute to under-reporting. The reporting process itself is often time-consuming and cumbersome, irrespective of whether the reporting system is paper-based or electronic (59).

The majority of respondents (92.2) correctly identified the first responders (those closest to the event) as being responsible for completing the medical error report (MER). By contrast, only 7.9 percent of those surveyed believed that hospital management should complete the MER form. Among these respondents, 2.75 percent considered that the patient safety unit staff should be responsible for the forms, and 5.15 percent considered that the team leader should be in charge of the reporting (42).

2.2.6 Lack of the Reporting System

The lack of a reporting system is expected to constitute a significant obstacle to reporting incidents. Numerous studies, mainly in an international context, have identified the lack of a reporting system as one of the main obstacles. In addition, several studies have shown that electronic reporting systems facilitate better reporting than traditional paper-based methods (59).

Error feedback was found to have the greatest positive impact on error reporting in the following groups: all hospital staff (β = 0.47, 95% CI = 0.39–0.54), management (β = 0.44, 95% CI = 0.35–0.53), and clinical staff (β = 0.37, 95% CI = 0.30–0.44). Following error correction, the next most important effect on error reporting was organizational learning in both the management (β = 0.20, 95% CI = 0.09–0.31) and clinical groups (β = 0.14, 95% CI = 0.06–0.23) (56).

The lack of a reporting system was identified as a major problem for both the reporting of errors and the organization's learning. Participants pointed out that the error reporting mechanism lacked confidentiality and anonymity. They noted that there was no established format for reporting medical errors, which could facilitate anonymous reporting by healthcare providers and employees and enable organizations to learn from such incidents.

The qualitative findings showed that a confidential error reporting mechanism would allow for discussion of errors without revealing the individuals involved. Participants mentioned that the two-week meetings allow them to discuss errors that are not made by the individual care provider, but are made by the institution, and that if the errors were not reported and followed up promptly, they could cause severe harm to the institution and the public.

Another respondent emphasized that they thought that talking about the medical errors and learning from them would reduce the likelihood of further errors. However, they stressed that the lack of a reporting system and format within their health centre remains a significant obstacle (57).

2.2.7 Personal factors

Several personal factors influence the reporting of medical errors. Younger and less experienced nurses are less likely to report ME. Conversely, employees with longer tenure are more likely to be able to report errors to the system. In addition, personal experience with ME has a significant impact on the frequency of reporting (59).

Most healthcare workers, totalling 252 (74.3%), correctly identified patient safety nurses as a group, although they exhibited a slightly higher rate of incorrect responses (16.7%) compared to physicians (7.6%). Nurses were three times more likely than doctors to have ever submitted a medical error report (MER), with an odds ratio of 3.26 (95% CI: 1.82, 5.94), which was statistically significant at $p < 0.001$. In addition, those who knew about the existence of structured forms of MER were 8 times more likely to report a submission than those who did not (OR 6.126, 95% CI: 3.21–12.46), also statistically significant at $p < 0.001$. Participants who had encountered an MER in the previous two years were six times more likely to report a medical error compared to those who had not encountered one, with a p-value of < 0.001 (95% CI: 3.65, 11.8) (42)

2.3 Conceptual Framework

The conceptual framework for this study is shown in Fig. 1.

Figure 1. The conceptual framework was adopted by the author from the literature.

3. Objectives

3.1 General objective

To assess medical error reporting practice and associated factors among obstetrics and gynecology residents, fellows, and consultants in teaching hospitals of Addis Ababa, Ethiopia.

3.2 Specific Objectives

1. To assess the frequency of medical error reporting among Obstetrics and Gynecology residents, fellows, and consultants.

2. To identify the associated factors affecting the practice of medical error reporting among Obstetrics and Gynecology residents, fellows, and consultants.

4. Methods

4.1 Study area and period

The study was conducted from February to April 2025 in Addis Ababa, Ethiopia. Health professionals from the Yikatit-12 Medical College (Y12HMC), Ghandi Memorial Hospital (GMH), Zewuditu Memorial Hospital (ZMH) and Tikur Anbessa Teaching Hospital (TANH) were also present. In 1998, the federal health department moved the largest referral hospital in the country, Tikur Anbessa Specialized Hospital (TASH), to the school. It has since developed into a teaching hospital of the university. TASH is a major teaching hospital for preclinical and clinical training in a wide range of medical specialties. It provides specialized clinical services not available in other public or private institutions in the country. Yekatit 12 Governmental Hospital in Arada, Addis Ababa, provides both inpatient and outpatient services in several wards. It also serves as a teaching and research center. Under the auspices of the Addis Ababa City Health Bureau, GMH and ZMH provide standard medical services in and manage referrals from the city of Addis Ababa.

4.2 Study Design

An institutionally based quantitative cross-sectional design of the study was used.

4.3 Source and Study Population

The study population included all obstetrics and gynecology residents, fellows, and consultants at Tikur Anbessa Specialized Hospital (TASH), Yikatit-12 Hospital Medical College (Y12HMC) and Ghandi Memorial Hospital (GMH).

4.4 Inclusion and Exclusion Criteria

4.4.1 Inclusion Criteria

All residents, fellows and consultant who agreed to participate and were available during the period of data collection have been included.

4.4.2 Exclusion Criteria

Residents who have stayed less than 6 months in this unit have been excluded from the study.

4.5 Sample Size Determination

The study included all eligible members of the target population, obstetrics and gynecology residents, fellows and consultants at the University of Addis Ababa and Yekatit 12 Hospital.

In order to ensure a comprehensive understanding of the procedures for reporting medical errors and the factors involved, we have encouraged maximum participation. To achieve this, we invited all individuals in the designated population to participate in the study by means of non-probability sampling. Using this method, we can produce a rich data set representing a variety of views and experiences on patient safety and reporting practices.

4.6 Sampling technique

In this study, the sample size was determined by using the single population proportion formula, taking 14.7% reported medical error (40), with 5% marginal error, 95% CI.

$$n = \frac{Z\left(\frac{1}{2}\right)^2 P(1-P)}{d^2}$$

Therefore

$n = (1.96)^2 * 0.147(1-0.147)/0.05)^2 = 193$

Then, after adding a 10% non-response rate, the final sample size became 212.

4.7 Data Collection Tools and Techniques

Data were collected using a self-administered questionnaire adapted from the AHRQ Hospital Survey on Patient Safety Culture (HSOPSC) of the Agency for Health Research and Quality. This original tool was validated in US hospital settings (62) and is widely used for assessing the perception of hospital staff on patient safety, medical errors and incident reporting in a number of countries, including Ethiopia (63–66). The questionnaire shall include socio-demographic variables and patient safety culture dimensions. A similar tool was used for both fields. Previous reliability analyses have shown satisfactory internal consistency with Cronbach's alpha of 0.77.

The tool was modified for this study according to the AHRQ guidelines. For example, a staff item on the use of temporary staff for patient care was not included as it was not relevant for Ethiopia. Other changes included the addition of items on gender, the reporting environment and reporting rules and content. In this study, only eight of the 12 dimensions of culture were selected for assessment.

The assessment tool evaluates participants' perceptions of safety components using a variety of scales. Agreeing to statements is measured by a Likert scale range from strongly disagree to strongly agree, frequency is assessed on a scale from Never to Always, and is graded from Excellent to Failing. The questionnaire was tested in a different context with 5% of the sample to determine whether it was clear before implementation.

The data collection process was facilitated by a team of three data collectors, including two residents with expertise in the subject and one principal investigator. We received the verbal informed consent of the participants before we started the data collection. In order to reach all potential respondents, the heads of the facilities provided contact details and access to participants was arranged by telephone and e-mail. Through this strategy, we were able to answer any questions that the participants might have.

The email inviting participants to complete the survey explained the purpose of the study, the steps involved in collecting the data and that the replies would be kept confidential. In order to preserve anonymity and to avoid any personal information, each response was given a unique identifier (for example, participant 001, participant 002). The print and Google Sheet versions of the survey were available by e-mail and Telegram. To differentiate between sites, each hospital was given a unique number of the printed questionnaires (for example, form 1, form 2 or form 3).

All the information collected for this study has been kept absolutely private and secure. In order to anonymise responses and ensure that no personal data is attached to them, each participant was assigned a unique identifier. The paper-based surveys were completed and sent immediately to sealed envelopes in order to protect confidentiality, which made it impossible for the data-gathering agents to identify which replies belonged to specific participants. The identification code of each participant was stored in a secure, separate file, which could only be accessed by authorised personnel.

Whether printed or submitted online, the responses of all participants were entered in an electronic database for further investigation. Publications and reports of the study summarized and anonymized data. Participants were told that their answers would be stored in a secure location and would be used only for research purposes. To encourage participation, reminders were sent at regular intervals, for example one week and three days before the end of the survey. In order to reduce the number of unanswered questions, off-peak data collection hours were also foreseen. The entire process of data collection and analysis, supervised by the lead investigator, was strictly confidential.
4.8 Study variables

4.8.1 Dependent variable

Practice of Medical Error Report

4.8.2 Independent variable

- Socio-demographic characteristic

1. Age
2. Sex
3. Marital Status
4. Professional level
5. Working hours per / week
6. Work experience

- Enabling Factor

1. Management Support
2. Supervisor Support
3. Communication Openness
4. Non-Punitive Response to Errors
5. Staffing Level

- Enacting Factor

1. Teamwork Within Unit
2. Teamwork Across Units

- Elaborating Factors

1. Organizational Learning

2. Error Feedback
3. Work Climate
4. A reporting system

- Personal Factors

1. Time-consuming
2. Poor understanding
3. Fear consequence

4.9 Operational definitions

Patient safety incidents (medical Errors) are a well-known challenge in health care and are classified by the International Classification for Patient Safety, initiated by the World Health Organization (2009), as an event or circumstance that could have resulted, or did result, in unnecessary harm to a patient (62)

Event: is defined as any error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm. (62)

Patient safety is defined as the avoidance and prevention of patient injuries or adverse events resulting from healthcare delivery processes. (62)

Error reporting: reporting an error to the hospital or health care organization.

Ways of error reporting: These systems often allow anonymous reporting and are designed to collect detailed information about the incident, including the type of error, contributing factors, and potential harm to the patient.

A safety culture composite or dimension is a set of inquiries designed to evaluate a particular aspect of a hospital's safety (62).

Safety culture items: a single question in a composite that assesses specific safety-related features of a hospital. (62)

Definitions were taken from To Err is Human: Building a Safer Health System (53).

Per cent positive is the percentage of positive responses (Agree, strongly agree/ Most of the

time, Always) to positively worded items or (Disagree, strongly disagree/ Rarely, Never) to

negatively worded items (63).

Area of strength: For an item to be considered as having an area of strength, it must be answered in favor by at least 75 percent of respondents (62,63).

Area requiring improvement: items which received a positive response from fewer than 50 percent of respondents (62,63).

4.10 Data Quality Management

The data collection tool was deployed around the world. It was first set up by the HSOPSC AHRQ (62). The reliability of this instrument was assessed by scholars, including some from Ethiopia (63-65). The reliability and acceptable internal consistency of the tool have been demonstrated by its Cronbach's alpha value of 0.77 (63) according to the Ethiopian Patient Safety Culture Study in Public Hospitals. All changes made during the adaptation were in accordance with the recommendations of the AHRQ. Collectors of data were trained and informed about the subject of the study to help respondents in case of need for clarification. The completeness of the tool was checked immediately after completion.

4.11 Data Analysis Plan

A Google Sheet was used to enter the data. Positively phrased items, like "When one area in this unit gets really busy, others help," shall be categorized as follows in accordance with AHRQ standards (62): Strongly Disagree = 1, Disagree = 2, Agree = 4, and Neither Agree nor Disagree = 5. Negatively framed questions, such as "It just happens by chance more serious mistakes don't happen here," will be reverse-coded as follows: Strongly Disagree = 5, Disagree = 4, Neither Agree nor Disagree = 3, Agree = 2, Strongly Agree = 1. The frequency scale was treated in the same way.

Following a completeness check, SPSS version 25 was used to enter, clean, and analyse the data. To make it easier to comprehend the results, the average positive score for each item was determined, in accordance with AHRQ and other studies (62, 63, 66). The percentage of positive answers (Agree, Strongly Agree / Most of the time, Always) for favourably phrased items and the percentage of negative replies (Disagree, Strongly Disagree / Seldom, Never) for negatively worded items was indicated by the percent positive. The number of items with non-missing values was divided by the sum of the elements in each composite scale to determine the composite scores.

The demographics and professional traits of the participants, patient safety culture composites, and error reporting procedures were all described using descriptive statistics. Variables associated with the frequency of error reporting, identified through bivariate analysis (with a p-value of ≤ 0.2), were included

in multivariable analysis, with p-values of < 0.05 in a 95% confidence interval considered statistically significant. Results were presented through statements, figures, tables, graphs, and charts.

4.12 Ethics approval and consent to participate

Ethical Approval and permission to conduct the study were obtained from the Department Research and Publication Committee of the Department of Obstetrics and Gynecology, College of Health Sciences, Addis Ababa University, and support letters were secured from the participating institutions. The study was conducted in accordance with the Declaration of Helsinki and relevant institutional and national ethical requirements. Participants received information about the purpose of the study, procedures, potential benefits, confidentiality protections, and their right to decline participation or withdraw at any time without penalty. Verbal informed consent was obtained from each participant before data collection. No names or direct personal identifiers were recorded on the questionnaire, and all data were handled confidentially and used only for research purposes.

4.13 Dissemination of results

The results of the study will be submitted to Addis Ababa University's College of Health Sciences, specifically the Department of Obstetrics and Gynecology, and the hospitals involved in the research, as well as any other interested parties. Findings will also be presented orally at various conferences and workshops. The study will be submitted to a peer-reviewed publication in recognition of the fact that scientific work is not regarded complete until it is published. The report will be emailed to participants who indicated interest in receiving the results, and their email addresses will be added to a different distribution list.

5. Results

5.1 Sociodemographic characteristics of the study participants

A total of 185 study participants participated in this study, resulting in an 87.3 per cent response rate. Most of the study participants were in the age group of 25-35 years, with a mean and standard deviation of 36.2±6.1. The majority of respondents were male, 71.4%(n=132), while 28.6% (n=53) were female. As regards marital status, 56.2 % (n=104) were married, and 43.8%(n=43.8) were single. A vast majority, 79.5%, had worked in their current unit for one to five years, while only 4.9% had experience of less than one year. Similarly, 73.5% of them had worked in their current hospital unit between one and five years, and 13% of them had less than one year of experience. The majority of respondents, 52.4%, reported working 80 to 99 hours per week, followed by 23.8% who worked 60 to 79 hours, indicating a high workload for the majority. Only 1.6% worked fewer than 20 hours per week. Regarding the number of employees, 73% were residents and 27% were consultants. Regarding experience in their current specialty or profession, 82.2% had between 1 and 5 years, while 8.1% had less than one year, and only a small percentage had more than 10 years.

The sociodemographic characteristics of the participants are presented in Table 1.

Table 1. The sociodemographic characteristics of the study participants among residents and seniors of obstetrics and gynecology units of Addis Ababa teaching hospitals, 2025.

Variable	frequency	Percent
Sex		
Male	132	71.4
Female	53	28.6
Age in years		
25-35	96	51.9
36-45	77	41.6
41-60	12	6.5
Marital status		
Married	104	56.2
Single	81	43.8
How long have you worked in this department?		
6 months-12 months	9	4.9
1 to 5 years	147	79.5
6 to 10 years	22	11.9
11 to 15 years	2	1.1
16 to 20 years	5	2.7
How long have you worked in your current hospital work area/unit?		
Less than 1 year	24	13
1 to 5 years	136	73.5
6 to 10 years	19	10.3
11 to 15 years	2	1.1
16 to 20 years	4	2.2
Typically, how many hours per week do you work in this hospital?		
Less than 20 hours per week	3	1.6
20 to 39 hours per week	29	15.7
40-59 hours per week	12	6.5
60 to 79 hours per week	44	23.8
80 to 99 hours per week	97	52.4
staff position in this hospital		
Resident	135	73
Fellows	6	3.2
Consultant	44	23.8
How long have you worked in your current specialty or profession?		
Less than 1 year	15	8.1
1 to 5 years	152	82.2
6 to 10 years	8	4.3
11 to 15 years	2	1.1
16 to 20 years	7	3.8
21 years and above	1	.5

5.2 Patient safety culture dimension

Figure 1 below shows the percentage of positive responses across 10 selected patient safety cultures of 185 participants. The highest positive response rate was observed in the dimension of "non-punitive response to error correction" with 78.4%. This was followed by "Teamwork within unit" (63.8%), "Organizational learning—continuous improvement" (60%), and "Feedback and communication about error" (60.5%). Moderate positive response rates were found for "Environment for reporting" (49.7%) and for the "Overall perception of patient safety" (36.8%). However, notably lower ratings were seen in "Communication openness" (31.9%), "Staffing" (25.4%), "Report rules and content" (23.8%), and "Frequency of events reported" (20%), as shown in the figure below.

5.3 Patient Safety Culture Items

An analysis of the patient safety culture dimensions revealed different levels of positive response for each item. Teamwork within units received a moderate to high level of positive responses, with the highest agreement (81.6%) on effective cooperation during high workloads, and the lowest level of agreement (39.5%) on support between busy areas. There was strong support for learning from the organization and for continuous improvement, especially in taking steps to improve patient safety (85.9%), while fewer respondents (42.2%) agreed that mistakes lead to positive change.

Overall, the patient safety perception was relatively low. Only 45.4% of the respondents did not agree that major errors are prevented more than by chance, and even fewer thought that the system effectively prevented them, 18.9 %. Feedback and communication on errors were ranked at 72.4%, although only 43.2% reported having received feedback on changes made in response to event reports.

In terms of openness to communication, less than half of the respondents (44.3%) felt comfortable raising the risks to patient care, and only 28.6% agreed that staff are free to ask questions if they feel uncomfortable, which suggests a significant gap in psychological security. Staffing was perceived as insufficient, with only 16.8% of respondents agreeing there were enough staff to cope with the workload, while 74.6% of respondents were not aware that working in a crisis. In the case of the non-punitive response to errors, while 58.9% believed the focus of incident reporting was the problem, not the individual, only 14.6% felt their mistakes weren't held against them. The reporting environment showed limited support, with low agreement on ease of reporting (15.7%), motivation (15.1%), and clarity (39.5%) of reporting. Similarly, reporting rules and content received the weakest scores, with only 7reporting that they had received training for reporting purposes and only 10.8 percent receiving training on how to complete an incident report.

The item-level patient safety culture responses are presented in Table 2.

Table 2. The characteristics of patient safety culture items.2

Composite items	Positive response score	Mean (SD)
Teamwork within the unit		
People support one another in this unit	100(54.1)	3.26(1
When a lot of work needs to be done quickly, you collaborate with the team to complete it	151(81.6)	3.87(0
In this unit, people treat each other with respect	80(43.2)	3.03(1
When one area in this unit gets really busy, others help	73(39.5)	2.93(1
Organizational learning and continuous improvement		
You are actively taking steps to improve patient safety	159(85.9%)	4.04(0
Mistakes have led to positive change here	78(42.2%)	2.97(1
After we make changes to improve patient safety, we evaluate their effectiveness	91(49.2)	3.21(1
Overall perception of patient safety		
It is just by chance that more serious mistakes don't happen here ®	84(45.4%)	3.08(1
Patient safety is never sacrificed to get more work done	77(41.6)	2.97(1
We have patient safety problems in this unit ®	39(21.1)	2.43(1
Our procedures and systems are good at preventing errors from happening	35(18.9)	2.30(1
Feedback and communication about errors		
You received feedback about changes implemented based on event reports	80(43.2)	3.08(1
We are informed about errors that happen in this unit	106(57.3)	3.28(1
We discuss ways to prevent errors from happening again	134(72.4)	3.64(0
Communication openness		
You feel comfortable speaking up if you see something that may negatively affect patient care	82(44.3)	3.05(1
You question the decisions or actions of those with more authority	74(40)	2.92(1
Staff feel free to ask questions when something seems wrong	53(28.6)	2.71(1
Staffing		
Do you have enough staff to handle the workload	31(16.8%	2.12(1
Staff in this unit work longer hours than is best for patient care®	38(20.5)	2.17(1
We work in crisis mode, trying to do much, to quickly®	138(74.6)	3.79(1
Non-punitive response error		
You feel that your mistakes are held against you®	27(14.6)	2.21(1
When an event is reported, it feels like the person is being written up, not the problem®	109(58.9)	3.53(1
Do you worry that records of your mistakes are kept in your personnel file®	43(23.2)	2.43(1
Environment for the report		
It is easy for healthcare professionals to make a report	29(15.7)	2.39(1
Staff have time to make a report	74(40)	2.83(1
Staff are absolutely clear on what needs to be reported	73(39.5)	2.89(1
Staff receive personalized feedback on progress and action resulting from their report	66(35.7)	2.91(1
Most staff are motivated to make Reports	28(15.1)	2.31(0
Staff are encouraged to make reports, and blame and disciplinary action are exceptional (i.e. only in cases of serious misconduct)	64(34.6)	2.76(1
Report rule and content		
There are clear criteria and definitions for what constitutes a patient safety incident	27(14.6)	2.26(0
There are clear rules for what kinds of Errors should be reported	24(13)	2.19(0
Staff are provided with training on the purpose of reporting	13(7)	1.96(0
Staff are provided with training on how to complete an incident report form, in terms of what information to include	20(10.8)	2.06(0

5.5 Overall grade of patient safety in the work area

Patient safety grades reported by respondents indicate a mixed safety perception in the clinical setting. The largest proportion, 44 %, rated patient safety as "acceptable", while 32 % rated it as "poor" and 4 % each rated it as "excellent" and "very good".

The overall patient safety grades assigned by participants are shown in Figure 3.

Figure 3. The overall patient safety grade given by the study participants.

5.4 composite Patient safety culture Items

The analysis of patient safety culture dimensions revealed variation in mean scores and internal consistency across the ten domains. The highest mean score was observed in the "Teamwork within units" dimension (mean = 2.18), based on 4 items and a Cronbach's alpha of 0.679. "Organizational learning and continuous improvement" (mean = 1.77, 3 items, α = 0.687) and "Feedback and communication about error" (mean = 1.73, 3 items, α = .679) also showed relatively favorable average scores and reliability. "Environment for reporting" had a slightly higher number of items (6), with a mean of 1.81 and an alpha of .669.

In contrast, lower mean scores were seen in "Report rule consent" (mean = 0.45, 4 items, α = .722), "Frequency of events reported" (mean = 0.97, 3 items, α = .723), and "non-punitive response to error" (mean = 0.97, 3 items, α = .744), suggesting limited cultural dimension of these aspects despite moderate to strong internal consistency. Similarly, "Staffing" (mean = 1.12, α = .759) and "Communication openness" (mean = 1.13, α = .689) demonstrated both lower means and consistent reliability across their 3 items. "Overall perception of patient safety" (mean = 1.27, 4 items, α = .709) fell in the lower-middle range. Overall, while internal consistency across all dimensions was acceptable (α ranging from .669 to .759).

The composite patient safety culture item results are summarized in Table 3.

Table 3. Composite patient safety culture items.

Variable	Numbers items	Mean	Cronbach's Alpha	Positive safety with 95%CI
Teamwork within units	4	2.18	.679	63.8% (56.8-70.8)
Organizational learning and continuous improvement	3	1.77	.687	60% (52.9-67.1)
Overall perception of patient safety	4	1.27	.709	36.8% (29.7-43.8)
Feedback and communication about errors	3	1.73	.679	60.5% (53.4-67.7)
Communication openness	3	1.13	.689	31.9% (25.1-38.7)
Staffing	3	1.12	.759	25.4% (19.1-31.7)
Non-punitive response error	3	0.97	.744	78.4% (72.4-84.4)
Frequency of events reported	3	0.97	.723	20% (14.2-25.8)
Environment for the report	6	1.81	.669	49.7% (42.5-57.0)
Report rules and content	4	0.45	.722	23.8% (17.6-29.9)

5.5 Error reporting practice

The majority of respondents (80%) reported poor practice of error reporting, while only a small portion (20%) indicated good practice, as shown in the figure below.

The overall practice of error reporting is shown in Figure 4.

Figure 4. The overall practice of error reporting.

The frequency with which the different types of error were reported varied between respondents. Errors that could have caused harm to patients but were not reported were reported most frequently, with an average score of 3.28 (SD = 1.26), and 42.7% of participants reported that they reported such incidents regularly. Errors that were caught and corrected before they affected the patient were less frequently reported, with a mean of 2.97 (SD = 1.25), and 28.1% of these events were reported. Similarly, errors that did not cause harm to patients were reported at an even lower rate, with an average of 2.82 (SD = 1.32) and 26.5% reporting of such incidents. These results show that staff are more likely to report errors perceived as more serious, while less serious errors or errors that have been caught may be under-reported

The frequency and characteristics of event reporting are presented in Table 4.

Table 4. The characteristics of event reporting.

Frequency of events reported(n=185)	N (%)	Mean (SD)
When a, mistake is made, but is caught and corrected before affecting the patient, how often is this reported	52(28.1)	2.97(1.25)
When a, mistake is made, but has no potential to harm the patients, how often is this reported	49(26.5)	2.82(1.32)
When a, mistake is made that could harm the patients, but does not, how often is this reported	79(42.7)	3.28(1.26)

5.6 Error report grading and the number of event reports

When asked how often they report patient safety when they are observed, only 24.9% of staff (those who answered often or always) reported that they did so consistently. Most of them,75.1%, said that they reported errors only occasionally, rarely or never, while 13 per cent said that they never reported such incidents. A notable 25.4 per cent of respondents reported no incidents at all last year, and 30.8 per cent reported only one or two incidents, meaning that more than half of the respondents (56.2) reported very few or no incidents. In the meantime, only a small proportion (20.5 per cent) reported 6 or more events.

Variable	frequency	Percent
Frequency of error report for patient safety when an error is observed		
Never	24	13.0
Rarely	52	28.1
Sometimes	63	34.1
Often	32	17.3
Always	14	7.6
Number of events reported in the past 1 year		
No event reports	47	25.4
1 to 2 event reports	57	30.8
3 to 5 event reports	43	23.2
6 to 10 event reports	18	9.7
11 to 20 event reports	9	4.9
21 event reports or more	11	5.9

5.7 The relation between patient safety culture dimension and demographic variable

The distribution of positive responses to various dimensions of patient safety culture, analyzed by profession and sex. Overall, the most positively perceived area is the non-punitive response to error, with 78.4%. This perception is especially strong among consultants (90.9%) and females (83%). Teamwork within units also received a high positive score (63.8%), particularly from consultants (77.3%) and males (70.5%). Feedback and communication about errors scored moderately well (60.5%), again with higher positivity among consultants and males.

Fellows consistently reported lower positivity across most domains—especially in organizational learning (33.3%) and frequency of events reported (0%). Residents showed slightly higher positivity than fellows but generally scored lower than consultants. Across gender, males tended to report more positively than females in most areas, particularly in teamwork, communication, and learning culture, while females showed slightly higher positivity in non-punitive response and event reporting.

Patient safety culture dimensions by profession and sex are summarized in Table 5.

Table 5. The relation between patient safety culture dimensions and demographic variables.

Variable	scored	Total (%)	Profession (n, %)			Sex (n, %)	
			Resident	Fellow	Consultant	male	Female
Teamwork within units	Positive	118(63.8)	81(60)	3(50)	34(77.3)	93(70.5)	25(47.2)
	negative	67(36.2)	54(40)	3(50)	10(22.7)	39(29.5)	28(52.8)
Organizational learning and continuous improvement	Positive	111(60)	80(59.3)	2(33.3)	29(65.9)	86(65.2)	25(47.2)
	negative	74(40)	55(40.7)	4(66.7)	15(34.1)	46(34.8)	28(52.8)
Overall perception of patient safety	Positive	68(36.8)	51(37.8)	3(50)	14(31.8)	50(37.9)	18(34)
	negative	117(63.2)	84(62.2)	3(50)	30(68.2)	82(62.1)	35(66)
Feedback and communication about errors	Positive	112(60.5)	79(58.5)	4(66.7)	29(65.9)	83(62.9)	29(54.7)
	negative	73(39.5)	56(41.5)	2(33.3)	15(34.1)	49(37.1)	24(45.3)
Communication openness	Positive	59(31.9)	35(25.9)	2(33.3)	22(50)	46(34.8)	13(24.5)
	negative	126(68.1)	100(74.1)	4(66.7)	22(50)	86(65.2)	40(75.5)
Staffing	Positive	47(25.4)	37(27.4)	1(16.7)	9(20.5)	37(28)	10(18.9)
	negative	138(74.6)	98(72.6)	5(83.5)	35(79.5)	98(72)	43(81.1)
Non-punitive response error	Positive	145(78.4)	100(74.1)	5(83.3)	40(90.9)	101(76.5)	44(83)
	negative	40(21.6)	35(25.9)	1(16.7)	4(9.1)	31(23.5)	9(17)
Frequency of events reported	Positive	37(20)	28(20.7)	0	9(20.5)	18(13.6)	19(35.8)
	negative	148(80)	107(79.3)	6(100)	35(79.5)	114(86.4)	34(64.2)
Environment for the report	Positive	92(49.7)	64(47.4)	2(33.3)	26(59.1)	72(54.5)	20(37.7)
	negative	93(50.3)	71(52.6)	4(66.7)	18(40.9)	60(45.5)	33(62.3)
Report rules and content	Positive	44(23.8)	25(18.5)	4(66.7)	15(34.1)	34(25.8)	10(18.9)
	negative	141(76.2)	110(81.5)	2(33.3)	29(65.9)	98(74.2)	43(81.1)

Note: negative means score above the *mean* and positive means scored above *mean*

5.8 The determining factors of error reporting practice

In the bivariate analysis, consultants were significantly more likely to report errors compared to residents (COR = 1.9; 95% CI: 1.48–4.06; p = 0.010). Female staff were also more likely to engage in error reporting than their male counterparts (COR = 3.5; 95% CI: 1.67–7.49; p = 0.001). In the multivariate analysis, the effect of professional position was no longer statistically significant (AOR = 1.8; 95% CI: 0.79–4.04; p = 0.158). However, sex remained a strong and independent predictor, with female staff significantly more likely to report errors than males (AOR = 5.2; 95% CI: 2.24–12.09; p < 0.001). Notably, a positive teamwork culture became significantly associated with error reporting in the adjusted model (AOR = 2.7; 95% CI: 1.11–6.76; p = 0.030).

Factors associated with medical error reporting practice in bivariate and multivariable analyses are presented in Table 6.

Table 6. Bivariate and multivariable analysis of factors associated with error reporting practice among study participants.

Variable	Error reporting practice		p-value	COR with 95%CI	P-value	AOR with 95%CI
	yes	No				
Position						
Resident	23	112	1		1	
consultant	14	36	0.010	1.9(1.48, 4.06)	0.158	1.8(0.79, 4.04)
Sex						
Male	18	114	1		1	
Female	19	34	0.001	3.5(1.67, 7.49)	0.000	5.2(2.24, 12.09)
Teamwork with the unit						
Negative culture	10	57	1		1	
Positive culture	27	91	0.197	1.7(0.76, 3.76)	0.030	2.7(1.11, 6.76)
Staffing						
Negative	25	113	1		1	
Positive	12	35	0.215	1.6(0.71, 3.40)	0.076	2.2(0.92, 5.15)

6. Discussion

The present study found that only a small portion of respondents (approximately 20%) reported good practice in error reporting, with the lowest positive replies being found for the topics of “frequency of reported events” (20%), “reporting rules and content” (23.8%), and “staffing” (25.4%). This suggests that the reporting of active errors by healthcare professionals is generally low. This is in line with the findings of other studies in Ethiopia. A study in the public hospitals in Addis Ababa showed that around 20.4% of the participants never reported an incident, which underlines a similar low reporting culture (46). Likewise, a study in Hadiya found that 28.7 % of patient safety incidents reported by healthcare professionals (50), and a study in the Dessie Comprehensive Specialized Hospital found only 12.4 % of reported patient safety incidents (61). Barriers to error reporting in Ethiopia are comparable to those reported internationally, including fear of punitive actions, lack of feedback, unclear reporting systems, and lack of training. This result was in line with a study at the Mizan-Tepi University Teaching Hospital, which found that punitive actions, lack of confidentiality, fear of losing acceptance, and lack of a learning culture were the main barriers (48). Other studies report fear of consequences and guilt as the primary inhibitors to reporting (39, 46, 48).

The results of the current study, with moderate to low scores for “communication openness” (31.9%) and “non-punitive response to error” (78.4%) despite a relatively high positive perception of the latter, indicate a rather complex dynamic. Although staff may feel that errors are not personally punished, psychological security to speak freely is still limited. This is consistent with the Ethiopian findings that fear of immutability and the lack of safe communication are the most common obstacles (39, 48).

Staff issues are an important determinant of reporting practices. Staffing adequacy and workload management had low positive response rates (25.4% and 22.7%, respectively), consistent with Ethiopian literature that often cites heavy workloads and insufficient staff as problems that decrease the time and motivation to report errors (46, 50).

Errors that could have caused harm to patients but did not (mean = 3.28) were reported most frequently, whereas errors that were caught or that did not result in harm were substantially underreported (means = 2.97 and 2.82), reflecting a selective reporting pattern in which the probability of disclosure increases with the seriousness of the event.

These results are in line with prior research that showed that doctors and residents under-reported minor or non-serious incidents: A study conducted in the United States found that only 17.8 % of doctors reported minor errors, and only 3.8 % reported major errors (44). Not reporting these errors also hampers efforts to learn from them so that hidden security threats can be addressed before they do real harm to the system.

The highest dimension was the non-punitive response to error (78.4%), indicating the perception that errors are handled through improving the system rather than blaming individuals; however, only 14.6% of respondents felt their mistakes were not held against them, indicating a contradiction and underlying culture of blame. This theme is consistent with other studies (48, 50). The most frequently cited barriers to open reporting were fear of punishment, job insecurity, and legal consequences.

The highest dimension was the non-punitive response to error (78.4%), indicating the perception that errors are handled through improving the system rather than blaming individuals; however, only 14.6% of respondents felt their mistakes were not held against them, indicating a contradiction and underlying culture of blame. This theme is consistent with other studies (48, 50). The most frequently cited barriers to open reporting were fear of punishment, job insecurity, and legal consequences.

Communication openness scores were low (mean = 1.13; α = 0.689), with teamwork within units scored high (mean = 2.18; α = 0.679), with a high degree of consensus on cooperation in situations of high workload (81.6%), but support between units was much lower (39.5%), indicating poor cooperation and communication. Research has shown that error-reporting behaviors can be enhanced by psychological security, trust, and peer support (46, 56).

For the dimension of feedback and communication, while 72.4% of the respondents agreed that mechanisms to discuss error prevention exist, only 43.2% felt that they received feedback after. A lack of feedback was consistently identified as the main deterrent to reporting, as it leads staff to feel that reporting efforts are unnecessary (47). Without visible changes at the system-level or confirmation of reported incidents, the motivation to report decreases. Only 44.3% of respondents felt comfortable talking up about risks, and 28.6% said that staff were open to questions when they had concerns. This lack of psychological safety severely limits the capacity of institutions to learn from first-hand experience. Literature confirms that the main obstacles to opening up dialogue are hierarchical structures, punitive management styles, and fear of professional embarrassment (48, 50).

Similarly, staff were perceived as being critically under-performing, with only 16.8% of respondents agreeing that the level of staffing was sufficient and 74.6% saying that they were not working in crisis mode. In addition, the busy environments make reporting feel secondary to the immediate clinical tasks, a finding that is in line with other studies, which identify workload and time constraints as the main obstacles (39, 59).

The reporting environment scored low in terms of both average value (1.81) and positive response rate (49.7%). Few respondents agreed that reporting an incident is easy (15.7%) or encouraged (15.1%). It is not worth noting that only 10.8% received training on how to complete incident reports, and 7% received training on the purpose of report. These findings are in line with the overall evidence that unclear procedures and a lack of formal training in reporting systems are a major obstacle to efficient reporting (42, 57). Without clearly defined reporting mechanisms and support systems, institutions cannot expect consistent reporting behavior from staff.

Rules and content about what should be reported had the lowest mean score (mean=0.45; α=.722), suggesting a lack of training or systematization in the reporting process because structured, anonymous, and well-publicized systems are much more likely to result in error-reporting behavior (57)

The findings of multivariate analysis indicated that gender and teamwork culture were significant factors in determining reporting behavior: Female workers were more likely to report errors (AOR = 5.2; 95% CI: 2.24–12.09) than male workers, which is consistent with other studies suggesting that female workers are more conscientiousness and more responsible (42), and a positive culture of teamwork was also found to be associated with better reporting (AOR = 2.7; 95% CI: 1.11–6.76), illustrating the influence of interpersonal dynamics in facilitating psychological safety and open communication (46). Notably, position (resident vs. consultant) was the strongest predictor in the bivariate analysis (COR = 1.9; p = 0.010), as is supported by the broader literature, wherein junior staff are often reluctant to report for fear of reprisal or backlash in hierarchical cultures (48, 50).

7. Conclusion

This study found that only one out of five participants had good reporting practices for medical errors, indicating a lack of practice among healthcare professionals. The frequency of reported incidents and psychological safety are two crucial factors that are still conspicuously absent, despite the positive perception of a non-punitive approach to mistakes. Although there is a strong sense of teamwork within the units, many employees are reluctant to raise concerns about safety or question procedures, which perpetuates a culture of silence. A multivariate analysis reveals a strong correlation between gender and a positive team culture, with women staffs and those with a supportive team culture reporting errors more frequently.

8. Strengths and limitations

Strengths:

To increase the generalizability of findings to the obstetrics and gynecology staff, the study included residents, fellows and consultants from several major teaching hospitals in Addis Ababa, and utilized a validated AHRQ hospital survey on patient safety culture to ensure reliable and comparable data with a high level of response (87.3), which also enhanced the reliability of the results. Bivariate and multivariate analyses were used to identify the factors that may contribute to the reporting of medical errors, which can be used to guide the improvement of the culture of patient safety and to encourage open, non-punitive reporting of errors.

Limitations:

It is not a cause-effect study because it is a cross-sectional study. Since the data were self-reported, there is a concern that responses may be subject to social desirability bias or memory bias. Because the study only included teaching hospitals in Addis Ababa, the results may not be generalizable to the rest of the health care sector in Ethiopia. Also, the study was limited to qualitative data, so the reasons for the attitudes towards reporting errors have not been explored.

9. Recommendation

According to the results, several recommendations were made to enhance the reporting of medical error and to foster a stronger patient safety culture. Although non-punitive environment is perceived to be relatively high, actual error reporting is low; thus, healthcare organizations need to focus on team-building exercises, communication training, and interprofessional collaboration platforms to create an environment that positively reinforces error reporting. Strategies for understanding and mitigating barriers faced by male providers in reporting should be developed. A barrier of lack of feedback was identified.

Declarations

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Consent for publication: Not applicable.

Ethics approval and consent to participate: Ethical approval was obtained as described above, and the study was conducted in accordance with the Declaration of Helsinki. Verbal informed consent was obtained from each participant before data collection.

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Figures

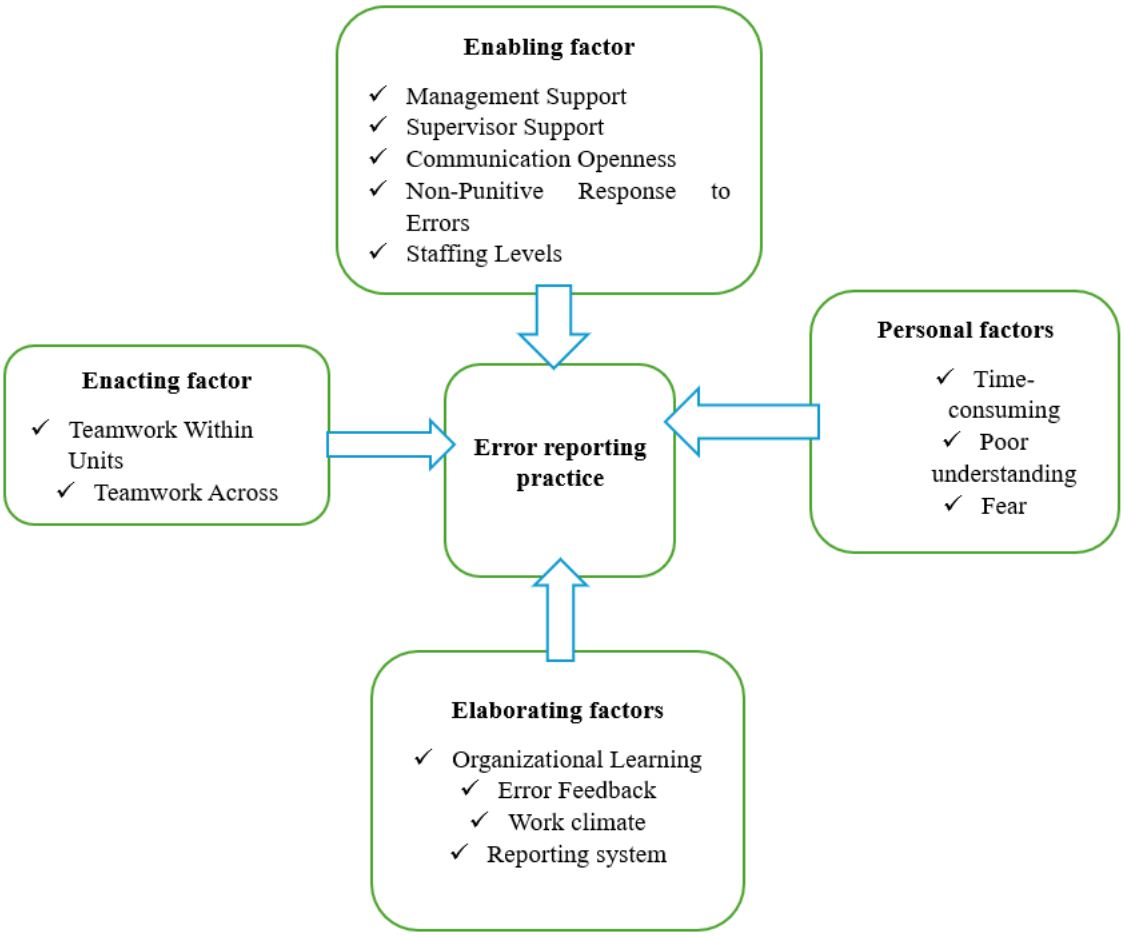


Figure 1

The conceptual framework was adopted by the author from the literature.

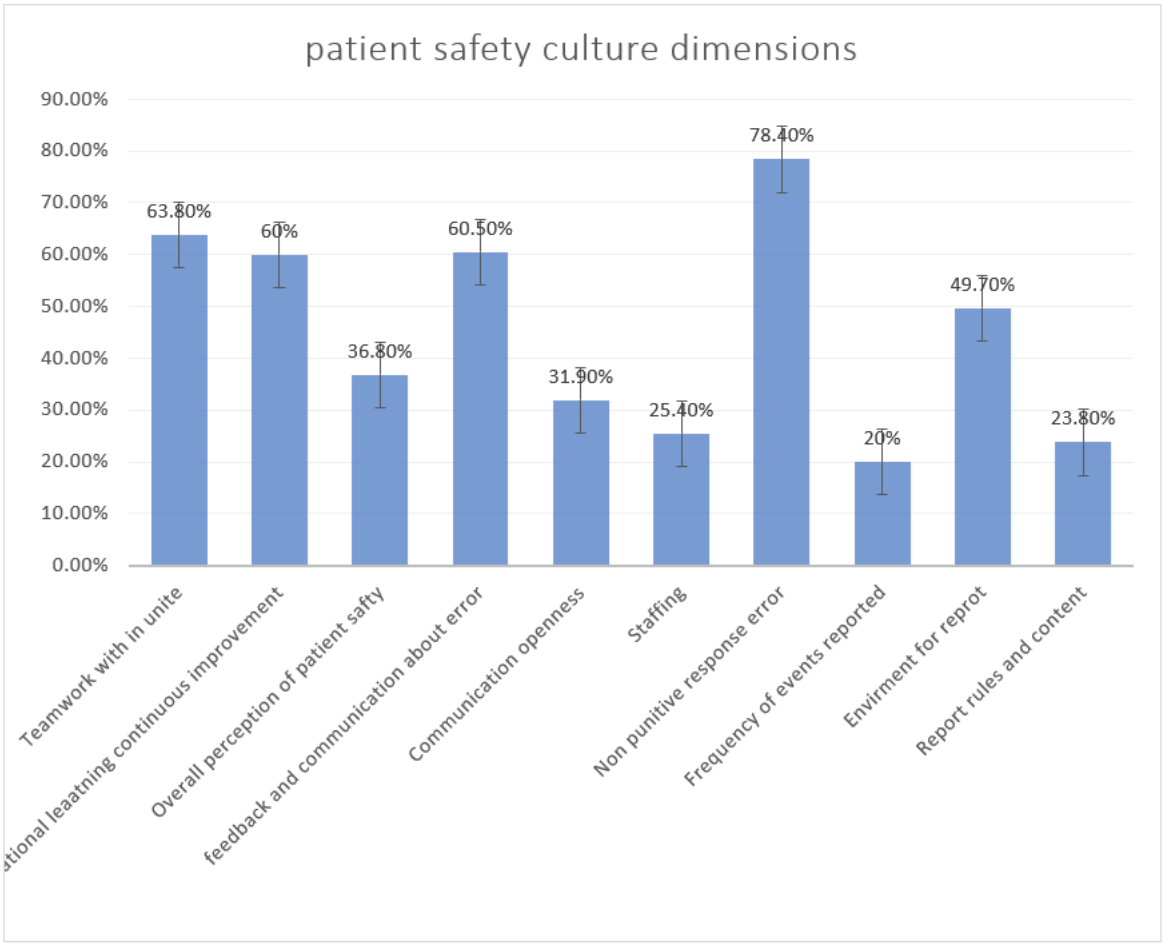


Figure 2

Percentage of positive response scores for ten safety culture dimensions among obstetrics and gynecology residents, fellows, and consultants in Addis Ababa teaching hospitals.

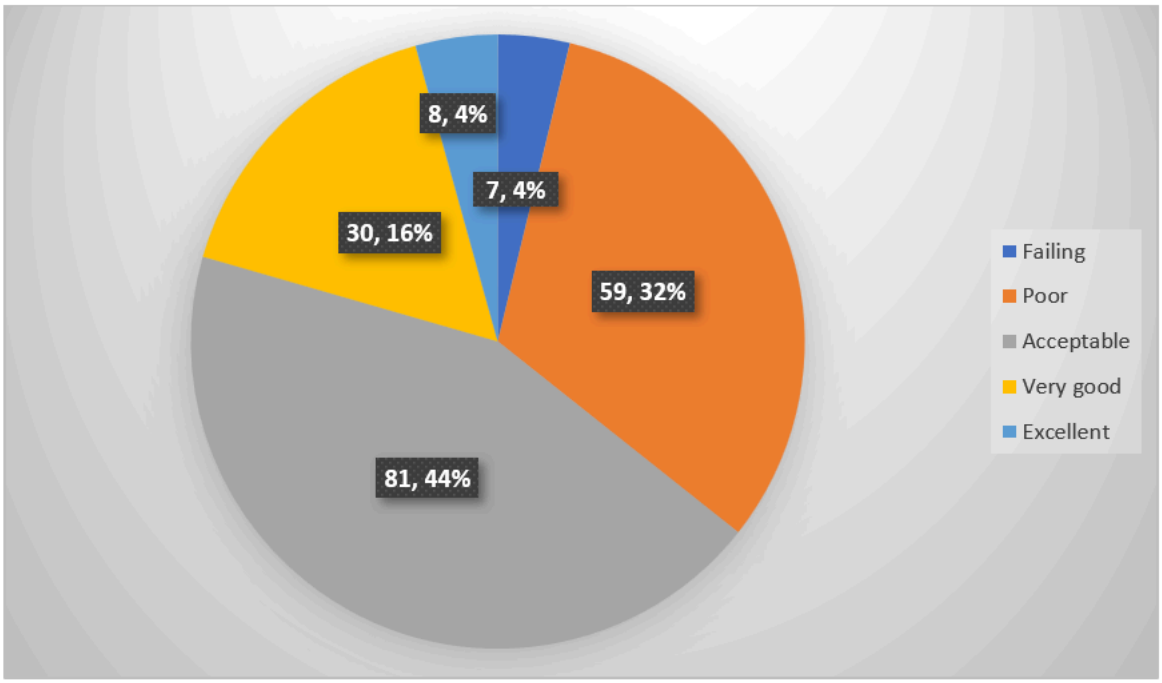


Figure 3

The overall patient safety grade given by the study participants.



Figure 4

The overall practice of error reporting.