INTRODUCTION

Safety culture is a complex phenomenon that consists of subcultures such as leadership, teamwork, evidence-based practices, communication, learning, and patient-centered practices. Data show that fifty percent of adverse events in healthcare are preventable. OB/GYN involves a dual high risk of both maternal and fetal morbidity and mortality, and requires a sound safety climate to prevent adverse outcomes. Medical skills and knowledge, and communication, both within the healthcare team and between healthcare professionals and patients, are vital contributors to patient safety.

Doctors, especially doctors-in-training such as residents, make errors. By definition, they are at a higher risk of committing errors during the stage...
of developing medical competencies.\(^5,6\) Residents deserve particular attention because behaviors learnt early in practice are likely to persist later in professional life.\(^3,4\) They have to face consequences even though today’s approach to errors emphasizes systemic factors.\(^5\)

In his study, West noticed that self-perceived Patient Safety (PS) lapses were seen more when residents were stressed.\(^6\) In a study by Varjavand, it was seen that error disclosure and disclosure responsibility increased significantly over a decade when residents received formal training in PS.\(^7\) Causes for lapses in PS are multi-factorial. A comprehensive account of not only the documents and observers, but residents’ perceptions and perspectives should also be given due importance to gain full understanding of phenomenon.\(^8\) Furthermore, residents felt to be left alone in dealing with their first serious errors instead of a team management approach.\(^7\)

This study was conducted with the aim to provide in-depth analysis of experiences of female residents in OB/GYN about medical errors and barriers to PS. Few data on resident doctors’ awareness and perception on PS come mainly from surveys.\(^3,4\) Considering these studies with their quantitative approach to a complex problem, current study was carried out to gather in-depth data from our own working environment to better understand experiences of female residents regarding medical errors. Primary objective of study was to explore experiences of female residents of OB/GYN regarding lapses in PS while secondary objective was to explore factors hampering or favouring improvement of PS in OB/GYN department. Research question of study was: What were the PS lapses experienced by OB/GYN residents and how could they have been avoided?

**METHODS**

Study was started after approval from Ethical Review Committee (No 573/ERC/CMH/LMC dated 4-5-21). It was carried out for six months in the Department of OB/GYN of CMH Lahore from 1\(^{st}\) April to 30\(^{th}\) September, 2021. Fourth-year residents working in OB/GYN were included while male residents and residents not willing to participate were excluded from the study.

Fourth-year residents in OB/GYN department are team leaders of residents in CMH Lahore bearing responsibility of initial patient manage-
CMH Lahore. They had been working in the hospital since the start of their training. Three of them were married. Their ages ranged between 27-33 years, mean age being 28.6±1.8 (Table-I).

**Two main themes were identified.**

**Theme-1: Challenges in patient safety.**

Three sub-themes were recognized (Table-II). Residents felt that there were multiple personal and workplace challenges they had to face during the critical incidents recalled. A contextual similarity was noted in their narratives. Almost all incidents experienced happened to involve high-risk patients and situations arose at night time or early morning hours during the first year of residency. Residents felt that work schedules bearing long working hours (30 hours when doing on call duty) and exhaustive routine affected their ability in timely responding and coping with situations. Variable perceptions were found regarding the behavior of colleagues and seniors, with both positive and negative attitudes being witnessed by residents. Two residents voiced their concerns about the behavior of seniors who completely abandoned them and tried to put the blame on juniors. However, two residents appreciated the role and support of seniors. Residents experienced mental trauma and self-guilt following critical incidents. They felt that in addition to inexperience, lack of understanding the gravity of situation and poor communication with peers and seniors, logistic issues at the workplace and lack of continuity of care were also contributory. One resident attributed lapses to “lack of evidence-based practices and standardized protocols”. Interestingly, majority of residents were found to be unaware of importance of formal PS training, its lack at undergraduate and postgraduate level being at core of such lapses.

**Theme-2: Lessons learnt from experience.**

Two sub-themes were recognized (Table-II). Residents took incidents as an inciting factor to improve their competencies. Although initially they faced difficulty in overcoming mental trauma and self-guilt following critical incidents, they later used these as strength to improve themselves. They thought that team work was essential to avoid such lapses; colleagues and seniors being perceived as those who could help them in overcoming their deficiencies and improving their communication and procedural skills. Only one resident felt that PS culture should be created with standardized protocols, regular drills and training in various PS issues. Residents expressed their concerns about working conditions with improvement being needed in

![Initial thematic map developed with 3 main themes.](image)

Table-I: Demographic characteristics of participants*.

| S No | Name    | Age (Years) | Marital status |
|------|---------|-------------|----------------|
| 1    | Dr. Saira | 27          | Single         |
| 2    | Dr. Hira  | 29          | Married        |
| 3    | Dr. Zareen| 33          | Married        |
| 4    | Dr. Ifrah | 26          | Single         |
| 5    | Dr. Tania | 26          | Single         |
| 6    | Dr. Rania | 31          | Married        |

*Participants were given pseudonyms.
working hours and schedules. Residents thought that importance should be given to overall well-being of residents to keep them mentally at peace and ready to cope with any sort of emergency situation.

**DISCUSSION**

The study gained important insights into factors associated with lapses in PS. There was contextual similarity in incidents which typically occurred at night or early morning hours when residents were

| Themes                        | Sub-themes                        | Codes             | Representative Quotes                                                                 |
|-------------------------------|-----------------------------------|-------------------|---------------------------------------------------------------------------------------|
| I Challenges in PS            | Personal challenges               | Self-guilt        | “I was at end of 1st year training, and was on night call. A primigravida was in 2nd stage in labour room at about 0300 hrs in the morning for past 2 hrs.” (Zareen) |
|                               | Time Management                   |                   | “I felt guilty, terrible and cried for days.” (Hira)                                    |
|                               | Lack of experience                |                   | “An inquiry was held, ...and there I saw the blame game. First on call was lying to put the whole burden of situation on junior residents. I was told you should have called the first on call yourself.” (Rania) |
|                               | Role of seniors/colleagues        |                   | “My seniors scolded me for missing the CTG trace at 3am, making me feel like the whole mishap was my doing.” (Hira) |
|                               | Working hours                     |                   | “We trust more on the pass it down practices then evidence based practices.” (Ifrah) |
|                               | Lack of evidence based practices  |                   | “I always knew that counselling is a huge part of our job but that day, I was impressed with our consultants.” (Saira) |
|                               | Issues in logistics               |                   | “I tried to wake up my senior to make a decision for episiotomy or caesarean section but due to round the clock hectic routine since morning, she couldn’t wake up in time. Somehow, I did episiotomy and managed to deliver the baby, but mother developed 3rd degree perineal tears.” (Zareen) |
|                               | High risk patients                |                   |                                                                                       |
|                               | Irresponsible attitude            |                   |                                                                                       |
|                               | Communication gaps                |                   |                                                                                       |
|                               | Lack of PS training               |                   |                                                                                       |
| II Lessons learnt from        | Self-improvement                  | Overcoming guilt  | “It was one of the most mentally traumatic experience in the very start of my training life. I decided to work onwards in an organized manner, doing justice to myself and my profession with specified timings in hospital.” (Tania) |
| experiences                    |                                   | and trauma        |                                                                                       |
|                               |                                   |                   | “After that, I am very vigilant about patient safety before, during and after any surgical procedure.” (Ifrah) |
|                               |                                   | Self-directed learning about PS |                                                                                       |
|                               |                                   | Improving profession- |                                                                                       |
|                               |                                   | al competencies      |                                                                                       |
|                               |                                   | Role of team work    |                                                                                       |
|                               |                                   | Standardized protocols needed |                                                                                       |
|                               |                                   | Well-being of residents |                                                                                       |
exhausted after almost 24 hours long duty (Table-
II). Findings are comparable to a study carried out
by Kalmbach in which comparatively higher rate
of lapses in PS was found in residents sleeping <6
hours per night.12 Reduced sleep and long working
hours affect overall health and well-being of
residents, ultimately affecting their performance.12
The study conducted by Coffyn and Seinsukon
in 2020 also corroborated this when they studied
Doctor of Physical Therapy students.13
Half of the residents were married with
additional responsibilities of caring for their
families after working hours. However, they felt
that they were not being well looked-after and
were expected to be some super-humans, as Dr.
Hira explained, “Once you become a doctor you
are no more human who needs sleep, food and
self-care”.

Residents were of opinion that they tried to
support each other in this challenging field and
hectic schedule. Their working conditions should
be such that they can perform their best in a
favorable environment and are able to cope with
emergencies timely in a professional manner.14,15
In contrast, Beckman in 2012 found that well-being
of residents is not related to clinical performance
of residents.16 However, his study involved
assessment of knowledge and clinical performance
and not the real setting incidents.
Other important barriers to PS identified by
study included hesitancy and fear of seeking
advice from seniors. Instead, they relied on
their immediate senior resident for advice and
support which was not always available (Table-
II). This attitude depicts communication gap and
ineffective teamwork which resulted in medical
errors in two incidents reported by residents.
These findings are in line with a local study in
which inexperience and not seeking advice were
found to be among the significant factors affecting
PS climate.17 Residents also took responsibility of
managing high risk patients (which was out of
their domain) without informing seniors and this
irresponsible attitude later on resulted in harm to
patients. Handling of complex cases was also one
of the common causes of surgical errors in a local
study.17 Also, during the first year, the residents
were sometimes not fully aware of logistics
of hospital which resulted in undue delays in
emergency patient management.14
Residents expressed that colleagues and seniors
should be easily approachable and fully assess
situation in case of any untoward incident before
blaming the junior most residents. Tendency to
blame healthcare professionals unnecessarily
was also seen in a meta-synthesis of qualitative
studies on PS done in 2015.18 Such behavior
results in lowering morale of residents. In all
incidents, residents faced severe mental trauma
and feelings of self-guilt which took a long
time to heal (Table-II). Findings are comparable
to those of a qualitative study carried out on
internal medicine female residents.5 Similar
findings are seen in contemporary studies in
which the residents go through a complex
range of emotions after an adverse incident.17,19
However, after recovering from initial mental
trauma, eventually they were all able to use

APPENDIX A--- QUESTIONS

A-Personal experience regarding lapse in patient safety:
1. Could you describe this experience and explain how you were involved?
2. If you think again about that time, do you remember you felt?
3. How did your supervisors, colleagues and relatives react at that time?
4. Did you feel supported by your supervisors and colleagues?
5. Which were the main factors that contributed to this error?

B-Reflection:
1. Today, how do you feel about this error?
2. How did this error impact on your private and professional life?
3. Were there long-term consequences?
4. Which resources did you use to manage the error?
5. Could you have used other resources?
those incidences as life changing experiences and improved themselves through self-directed learning. They enhanced their time management, communication skills and procedural skills. All of them expressed that incidents had a major positive impact on their lives helping them to grow professionally. This is in contrast to the findings of White and Gallagher who found that the residents behave differently after an adverse event, and may even lose their self-confidence.19

Residents felt that lapses in PS can be reduced through effective team work (Table-II). Findings are comparable to those of a study done to explore factors associated with PS climate in which team work was identified as one of the major factors associated with improving PS culture.20 Another recent study carried out in Brazil also corroborated findings where teamwork was found to have a strong positive influence on PS.21 Overall, the study reflected lack of formal PS training of the residents to be a major cause of these incidents. It was surprising that none of them realized the need for PS training despite two participants mentioning need for standardized protocols. Results are in contrast to a local study regarding perceptions of medical students about PS where students were found to be highly in favour of PS teaching and training.22 A recent study carried out in Istanbul also stressed the importance of PS training in creation of PS culture.23 Efforts to improve PS climate through innovative training and standardized protocols in an obstetric unit also resulted in significant improvement over five years from 2004-2009.24

**Limitations:** The study was exploratory, qualitative research which is limited by small number of participants of a single gender to keep the data at a manageable level. It depended on information given by participants which could have been affected by their honesty and willingness and ability to recall and fully articulate their experiences. Results were not meant to be generalizable; rather they provide an in-depth exploration of perspective of female residents of a particular military hospital. To our knowledge, current study is the first qualitative study done to explore the phenomenon in our local context. Further larger scale, multiple source studies with comparison of both male and female residents working in different contexts (military, civil, and private hospitals) are needed in order to endorse the findings of present study.

**CONCLUSION**

Nurturing a PS culture helps not only in improving patient care but also benefits the institution by reducing expense due to medical errors and helps build trust with community.25 Results of this study could be used in formulating plans and Standard Operating Procedures (SOPs) to improve the training of postgraduate residents in responding and coping with medical errors. Improvement in PS will help in better patient care in department and the organization overall.

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**REFERENCES**

1. Dwyer L, Smith A, McDermott R, Bretnach C, El-Khuffash A, Corcoran JD. Staff attitudes towards patient safety culture and working conditions in an Irish tertiary neonatal unit. Ir Med J. 2018;111(7):786.
2. Klemene-Ketis Z, Maletic M, Stropnik V, Deilkas ET, Hofoss D, Bondevik GT. The safety attitudes questionnaire-ambulatory version: psychometric properties of the Slovenian version for the out-of-hours primary care setting. BMC Health Serv Res. 2017;17(1):36-39. doi: 10.1186/s12913-016-1972-7
3. Engel KG, Rosenthal M, Sutcliffe KM. Residents’ responses to medical error: coping, learning, and change. Acad Med. 2006;81:86-93. doi: 10.1097/00001888-200601000-00021.
4. Kroll L, Singleton A, Collier J, Rees Jones I. Learning not to take it seriously: junior doctors’ accounts of error. Med Educ. 2008;42:982-990. doi: 10.1111/j.1365-2930.2008.03151.x.
5. Mankaka CO, Waeger G, Gachoud D. Female residents experiencing medical errors in general internal medicine: A qualitative study. BMC Med Educ. 2014;14:140. doi:10.1186/1472-6920-14-140
6. West CP, Huschka MM, Novotny PJ, Sloan JA, Kolars JC, Habermann TM, et al. Association of perceived medical errors with resident distress and empathy: a prospective longitudinal study. JAMA. 2006;296:1071-1078. doi: 10.1001/jama.296.9.1071.
7. Varjavan N, Bachegowda LS, Gracely E, Novack DH. Changes in intern attitudes toward medical error and disclosure. Med Educ. 2012;46:668-677. doi:10.1111/j.1365-2923.2012.04269.x.
8. Jiang K, Tian L, Yan C, Li Y, Fang H, Peihang S, et al. A cross-sectional survey on patient safety culture in secondary hospitals of Northeast China. PloS One. 2019;14(3):e0213055. doi: 10.1371/journal.pone.0213055
9. Cresswell JW. Educational research, planning, conducting and evaluating quantitative and qualitative research. 4th ed. Upper Saddle River, NJ: Pearson Education Inc.; 2012: pp. 259-262.
10. Clarke V, Braun V. Commentary: Thematic analysis. J Posit Psychol. 2017;12(3):297-298. doi:10.1080/17439760.2016.1262613
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11. Creswell JW. Educational research, planning, conducting and evaluating quantitative and qualitative research. 4th ed. Upper Saddle River, NJ: Pearson Education Inc.; 2012: pp. 513-520.

12. Kalmbach DA, Arnedt JT, Song PX, Guille C, Sen S. Sleep disturbance and short sleep as risk factors for depression and perceived medical errors in first-year residents. Sleep. 2017;40(3):zsw073. doi: 10.1093/sleep/zsw073

13. Coffyn S, Siengsukon CF. Poor sleep hygiene is associated with decreased discrimination and inattention on continuous performance task in Doctor of Physical Therapy students: A cross-sectional study. J Phys Ther Educ. 2020;34(2):160-165. doi: 10.1097/jte.0000000000000135.

14. Parshuram CS, Amaral ACKB, Friedrich ND, Baker GR, Etchells EE, et al. Patient safety, resident well-being and continuity of care with different resident duty schedules in the intensive care unit: a randomized trial. CMAJ. 2015;187(5):321-329. doi: 10.1503/cmaj.140752

15. Ala SH. Safety attitudes in obstetrics and gynecology trainees in labour room practices: experience at Dow University of Health Sciences. Pak Armed Forces Med J. 2020;70(6):1645-1650.

16. Beckman TJ, Reed DA, Shanafelt TD, West CP. Resident physician well-being and assessments of their knowledge and clinical performance. J Gen Intern Med. 2012;27(3):325-330. doi: 10.1007/s11606-011-1891-6

17. Bari A, Khan RA, Rathore AW. Medical errors; causes, consequences, emotional response and resulting behavioral change. Pak J Med Sci. 2016;32(3):523-528. doi: 10.12669/pjms.323.9701.

18. Daker-White G, Hays R, McSherry J, Giles S, Cheraghil-Sohi S, Rhodes P, et al. Blame the patient, blame the doctor or blame the system? A meta-synthesis of qualitative studies of patient safety in primary care. PLoS One. 2015;10(8):e0128329. doi: 10.1371/journal.pone.0128329

19. White AA, Gallagher TH. After the apology-coping and recovery after errors. VM. 2011;13(9):593-600. doi: 10.1001/virtualmentor.2011.13.9.ccasl-1109.

20. Luiz RB, Simoes AL, Barichello E, Barbosa MH. Factors associated with the patient safety climate at a teaching hospital. Rev Lat Am Enfermagem. 2015;23(5):880-887. doi: 10.1590/0104-1169.0059.2627

21. Azami-Aghdash S, Ebadifard Azar F, Rezapour A, Azami A. Patient safety culture in hospitals of Iran: A systematic review and meta-analysis. Med J Islam Repub Iran. 2015;29(1):251-259.

22. Shah N, Jawaid M, Shah N, Ali SM. Patient safety: Perceptions of Medical Students of Dow Medical College, Karachi. J Pak Med Assoc. 2015;65(12):1261-1265.

23. Tunçer Unver G, Harmanci Seren AK. Defining the patient safety attitudes and influencing factors of health professionals working at maternity hospitals. J Nurs Manag. 2018;26(3):579-586. doi: 10.1111/jonm.12585

24. Pettker CM, Thung SF, Raab CA, Donohue KP, Copel JA, Lockwood CJ, et al. A comprehensive obstetrics patient safety program improves safety climate and culture. Am J Obstet Gynecol. 2011;204(3):216.e1-6. doi: 10.1016/j.ajog.2010.11.004.

25. Kho ME, Perri D, McDonald E, Waugh L, Orlicki C, Monaghan E. The climate of patient safety in a Canadian intensive care unit. J Crit Care. 2009;24(3):7-13. doi: 10.1016/j.jcrc.2008.05.002

Authors’ Contribution:

ST & JSK Conceived and designed the study and performed analysis and editing of manuscript and both are responsible and accountable for the accuracy and integrity of research.

ST, NM & RK: Did data collection and manuscript writing and all authors did review and final approval of manuscript.