



**Faculty of Medicine and Health Science**

**Patient Safety Culture and Its Associated Factors Among Perioperative  
Staff in the Operating Theater at Sarawak General Hospital**

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Patient Safety Culture and Its Associated Factors Among Perioperative Staff  
in the Operating Theater at Sarawak General Hospital

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## DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.



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## ABSTRACT

Patient safety is a fundamental concern in healthcare, especially in high-risk settings such as operating theaters, where there is an increased likelihood of adverse events. Nonetheless, local studies within the operating theater setting remain limited, particularly those addressing the complex interplay between active and latent failures. This study examined the influence of organizational and individual factors, and the moderating effects of job position, gender, and years of experience toward patient safety culture among perioperative staff at Sarawak General Hospital (SGH) in Malaysia. A cross-sectional study was employed, involving 137 perioperative staff members, including both doctors and nurses, selected through convenience sampling. The Safety Attitude Questionnaire-Operating Room (SAQ-OR) and Hospital Survey on Patient Safety Culture (HSOPSC) was adapted in this study. The responses were analyzed via descriptive analysis and partial least square-structural equation modeling (PLS-SEM). Most respondents (67.2%) were registered nurses. The stress recognition dimension had the highest mean positive response rate at 73.0%, whereas the perceptions of management dimension had the lowest at 22.6%. The study findings revealed a significant positive relationship between individual factors and the perception of patient safety culture. In contrast, the association between organizational factors and the perception of patient safety culture was positive but not significant. The moderating effects of position, gender, and years of experience in a specialty were also non-significant. Overall, the perception of patient safety culture in the Sarawak General Hospital (SGH) operating theater was rated as good. The lowest positive response rate in the management dimension implies the need for the organization to address staffing shortage issues and improve workplace support to increase patient safety. Individual factors, such as job satisfaction and stress recognition, significantly influence these perceptions. Improving these aspects through

supportive policies and management interventions is necessary to enhance safety culture. With a coefficient of determination ( $R^2$ ) value of 42.6% in this structural model, additional influencing factors may be relevant. Future studies should explore influences such as government policies, budget allocation, and technological advancements to further enhance patient safety culture in operating theaters.

**Keywords:** Patient safety culture, individual factors, organizational factors, perioperative staff, Safety Attitude Questionnaire-Operating Room (SAQ-OR)

***Budaya Keselamatan Pesakit dan Faktor-Faktor Dalam Kalangan Kakitangan  
Perioperatif di Dewan Pembedahan di Hospital Umum Sarawak***

**ABSTRAK**

*Keselamatan pesakit adalah kebimbangan utama dalam penjagaan kesihatan, terutamanya bagi persekitaran berisiko tinggi seperti dewan bedah, di mana kemungkinan berlaku kejadian buruk adalah tinggi. Sehingga kini, kajian tempatan dalam persekitaran dewan bedah masih terhad. Kajian ini mengkaji pengaruh faktor organisasi dan individu, dan kesan penyederhanaan jawatan kerja, jantina, dan tahun pengalaman terhadap budaya keselamatan pesakit dalam kalangan kakitangan perioperatif di Hospital Umum Sarawak (SGH) di Malaysia. Kajian keratan rentas telah dijalankan, dengan melibatkan 137 orang kakitangan perioperatif termasuk doktor dan jururawat, dipilih melalui kaedah pensampelan kemudahan. Borang soal selidik Sikap Keselamatan-Bilik Pembedahan (SAQ-OR) dan Tinjauan Hospital mengenai Budaya Keselamatan Pesakit (HSOPSC) telah disesuaikan dalam kajian ini. Respons dianalisis melalui analisis deskriptif dan model persamaan struktur-kuasa dua terkecil separa (PLS-SEM). Kebanyakan responden (67.2%) adalah jururawat berdaftar. Dari segi aspek pengecaman tekanan memperoleh purata kadar tindak balas positif tertinggi iaitu 73.0%, manakala persepsi aspek pengurusan mempunyai purata kadar terendah iaitu 22.6%. Hasil kajian ini menunjukkan hubungan positif yang ketara antara faktor individu dan persepsi budaya keselamatan pesakit. Sebaliknya, hubungan antara faktor organisasi dan persepsi budaya keselamatan pesakit adalah positif tetapi tidak ketara. Kesan penyederhanaan jawatan kerja, jantina, dan tahun kepakaran juga tidak ketara. Secara keseluruhannya, nilai persepsi keseluruhan budaya keselamatan pesakit di dewan bedah Hospital Umum Sarawak (SGH) adalah baik. Kadar tindak balas positif terendah dalam persepsi aspek pengurusan menunjukkan keperluan untuk organisasi*

*menangani isu-isu kekurangan kakitangan dan meningkatkan sokongan tempat kerja untuk meningkatkan keselamatan pesakit. Faktor individu, seperti kepuasan kerja dan pengiktirafan tekanan, mempengaruhi persepsi ini dengan ketara. Penambahbaikan aspek ini melalui dasar sokongan dan pengurusan adalah perlu untuk meningkatkan budaya keselamatan. Dengan nilai pekali penentuan ( $R^2$ ) sebanyak 42.6% dalam model struktur ini, faktor pengaruh tambahan mungkin relevan. Kajian masa depan harus meneroka pengaruh seperti dasar kerajaan, peruntukan belanjawan, dan kemajuan teknologi untuk meningkatkan lagi budaya keselamatan pesakit semasa dalam dewan bedah.*

**Kata kunci:** *Budaya keselamatan pesakit, faktor-faktor individu, faktor-faktor organisasi, kakitangan perioperatif, Borang soal selidik Sikap Keselamatan-Bilik Pembedahan (SAQ-OR)*

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## LIST OF ABBREVIATIONS

AHRQ	Agency for Healthcare Research and Quality
AORN	Association of periOperative Registered Nurse
AVE	Average Variance Extracted
BM	Bahasa Malaysia
CFA	Confirmatory Factor Analysis
CGS	Centre for Graduate Studies
CMV	Common Method Variance
CR	Composite Reliability
CRICO	Controlled Risk Insurance Company
CRM	Crew Resource Management
EHR	Electronic Health Record
FRE	Frequency of Reporting Event
HRO	Highly Reliable Organization
HSOPSC	Hospital Survey on Patient Safety Culture
ICU	Intensive Care Unit
JS	Job Satisfaction
MER-S	Medication Error Reporting System
MOH	Ministry of Health
MREC	Medical Research and Ethics Committee
NMRR	National Medical Research Register
OECD	Organization for Economic Co-operation and Development
PDI	Power Distance Index

PIS	Patient Information Sheet
PLS-SEM	Partial Least Square-Structural Equation Modeling
PM	Perception of Management
SAQ	Safety Attitude Questionnaire
SAQ-OR	Safety Attitude Questionnaire-Operating Room
SBAR	Situation background Assessment Recommendation
SC	Safety Climate
SGH	Sarawak General Hospital
SOP	Standard Operation Procedures
SPSS	Statistical Package for the Social Sciences
SR	Stress Recognition
SSSL	Safe Surgery Saves Lives
TC	Teamwork Climate
TeamSTEPPS	Team Strategies and Tools to Enhance Performance and Patient Safety
UKMMC	Universiti Kebangsaan Malaysia Medical Centre
UNIMAS	Universiti Malaysia Sarawak
UP	Universal Protocol
U.S.	United States
VIF	Variance Inflation Factor
WC	Working Conditions
WHO	World Health Organization

# CHAPTER 1

## INTRODUCTION

### 1.1 Study Background

Patient safety is an essential component of healthcare quality. It can be defined as the state of a patient being free from any preventable harm during medical treatment (Ministry of Health, 2013). This global spotlight on patient safety is further intensified following the publications of the reports “To Err is Human: Building a Safer Health System” by the Institute of Medicine in the United States (U.S.) (Kohn et al., 2000) and “An Organisation with a Memory” in the United Kingdom (Department of Health, 2000). These reports revealed an approximate 10% error rate in hospital admissions. One of the primary causes of mortality and injury in the United States was preventable adverse events (Kohn et al., 2000).

In Malaysia, patient safety incidents remain a challenge. The data from the Ministry of Health (MOH) reported an increase in cases of wrong-site surgeries from 6 to 11 and the unintended retention of foreign objects in patients’ bodies from 27 to 32 between 2016 and 2018 highlight ongoing risks (Alifah, 2019). Adverse events can prolong hospitalization stays, incur legal costs, and undermine the reputation of healthcare institutions (Perjit, 2021). In the report ‘What You Do & What You Don’t on Medical Negligence, Trends & Challenges to the Medical Profession’, 113 medicolegal cases in Malaysia from 2005 to 2009 led to a total of RM6,664,248 in compensation (Puteri, 2015). In the Organization for Economic Co-operation and Development (OECD) countries, approximately 15% of hospital activities and expenditures are dedicated to addressing these adverse events (World

Health Organization, 2019). Hence, healthcare institutions must recognize the importance of error reporting and learning from adverse events to enhance patient safety.

Promoting a strong patient safety culture is essential, particularly in high-risk environments like operating theaters. Operating theaters are inherently high-risk environments that can present significant threats to patient safety due to their complex nature as well as human resource challenges (Association of periOperative Registered Nurses, 2017; WHO, 2019). Factors such as poor communication, unfavorable work conditions, and understaffing can threaten patient safety (Seyman and Ayaz, 2016). The Joint Commission Sentinel Event Data 2022 Annual Review, for example, revealed that unintended retention of foreign objects and wrong-site surgeries each contributed to approximately 6% of the reported sentinel events, often due to multiple factors including failures to follow standardized procedures, communication breakdowns and poor teamwork (The Joint Commission, 2023).

In the year 2004, the Joint Commission mandated the Universal Protocol (UP) to reduce surgical mistakes through guidelines that ensure correct patient identification and operative site verification (The Joint Commission, 2022). Through the World Alliance for Patient Safety and then the Global Patient Safety Collaborative, the WHO has ensured that the drive for delivering safe and quality health services is a global concern. These initiatives aim to provide practical tools and guidelines to support the development of national safety programs (Paisley, 2021). Essential endeavors include the Global Patient Safety Challenges, Global Patient Safety Summit Series, and World Patient Safety Day. The “Safe Surgery Saves Lives” (SSSL), introduced in the year 2008, is a global patient safety challenge, along with the WHO Surgical Safety Checklist (WHO, 2009).

In the ‘Guidelines on Safe Surgery Saves Lives Programme’, the SSSL program has been implemented in Malaysia since 2009, and the Safe Surgery Checklist was introduced to enhance surgical safety, with a focus on communication, informed consent, and ethical surgery (MOH, 2018a).

Despite these safety measures, patient safety incidents continue to occur, often arise from miscommunication, failure to follow hospital policies, and a lack of standardization procedures (Hempel et al., 2013). Fajemilehin et al. (2016) found that Nigerian nurses generally had good knowledge of safety practices but failed to comply with the surgical safety checklist. However, the reasons for non-compliance were not clearly identified, probably due to the influence of hospital management policies. In addition, the study discovered that age, years of experience, and seniority ranking were predictors of success in incorporating safety practices in the operating theater.

Pavlova et al. (2019) found that operating theater managers in the Czech Republic perceived surgical safety checklists as essential during perioperative procedures, but the implementation rate was low in the daily workflow process. However, the study did not delve into the associated factors, underlining the need for research on checklist implementation challenges and solutions across perioperative teams.

A number of past studies had explored the perceptions and attitudes toward patient safety among different categories of Malaysian healthcare staff in various settings (Nuaim et al., 2018; Mohd Said Nurumal et al., 2020; Salizar & Nur Ainun, 2020; Perjit, 2021). Findings from the studies showed that most healthcare staff had a positive perception and attitude toward the patient safety culture in their organizations (Mohd Said Nurumal et al., 2020; Salizar & Nur Ainun, 2020; Perjit, 2021).

Salizar and Nur Ainun (2020) found a significant association between the cultural dimensions of patient safety and specific working units within the Intensive Care Unit (ICU) in Pahang Hospital. However, the study did not examine the safety perceptions of nurses in other departments. Similarly, Nuaim et al. (2018) revealed differences in safety culture perceptions among different categories of healthcare staff, underscoring the necessity for nuanced safety attitude assessments. Specifically, different healthcare staff perceived certain domains like job satisfaction, working conditions, and safety climate differently, concluding that healthcare professions can be a factor affecting the Safety Attitude Questionnaire (SAQ) score. Importantly, Leong et al. (2022) contributed further insights by highlighting doctors' favorable attitudes toward stress recognition and nurses' higher positive attitudes regarding job satisfaction. Both professional groups exhibited comparatively lower scores in the perception of the management domain.

Notably, the first patient safety culture study conducted by Kim et al. (2019) at Sarawak General Hospital (SGH) identified that the level of patient safety culture was rated as acceptable across hospital staff. The study highlighted the need for further exploration into the risk factors contributing to medical errors, pointing to the evolving complexity of healthcare systems in ensuring patient safety.

Hence, this study emphasizes the roles of perioperative staff to ensure patient safety in the operating theater, a high-risk area for surgical mistakes. This study aims to determine both organizational and individual factors associated with patient safety culture among perioperative staff members. The study also aims to determine how job position, gender, and experience moderate the relationship between individual factors and the perception of patient safety culture among perioperative staff.

## 1.2 Problem Statement

WHO (2009) revealed that approximately 42.7 million adverse events are reported annually worldwide. Out of these cases, post-operative complications were a major contributing factor, accounting for 3 to 22% of the cases with a mortality rate of 0.4% to 0.8%. Notably, up to half of these cases may be preventable (2009). Despite efforts to enhance patient safety, patient harm still ranks as the 14<sup>th</sup> leading cause of mortality and morbidity globally (WHO, 2019).

Locally, there are limited studies conducted in Malaysia to address these critical aspects of patient safety. Concerns about adverse events in the healthcare system, strategies to rectify these events, as well as the influence of the work environment leading to unfavorable occurrences are among the significant issues. A recent study by Aniza and Siti (2022) using SAQ at a cluster hospital in Kedah, for example, revealed that only 23.9% of healthcare staff expressed positive perceptions of patient safety culture. In another study by Kim et al. (2019) conducted in SGH, although it was found that the overall patient safety culture was deemed acceptable, most of the assessed dimensions of patient safety culture in this study fell short compared to established international benchmarks.

Whilst past studies have examined the perceptions and attitudes toward patient safety among different categories of healthcare staff in various settings (Srima et al., 2015; Nuaim et al., 2018; Kim et al., 2019; Mohd Said Nurumal et al., 2020; Salizar & Nur Ainun, 2020; Perjit, 2021; Aniza & Siti, 2022); to date however, limited studies have been conducted within the operating theaters setting in Malaysia to address these critical aspects of patient safety. This highlights the need to determine how perioperative staff perceive patient safety culture in hospitals. Operating theaters, indeed, are highly intricate environments that depend

on multiple defense layers, including organizational structures, policies, staff training, and the working environment.

Furthermore, although recent studies demonstrated positive attitudes toward patient safety culture among healthcare staff, substantial improvement are still needed in several areas (Mohd Said Nurumal et al., 2020; Salizar & Nur Ainun, 2020; Perjit, 2021). For example, the study by Perjit (2021) shown that millennial healthcare professionals often face challenges in critical dimensions from an organizational perspective, including handoff and transition procedures, staffing levels, error reporting processes, and teamwork dynamics. Inevitably, human errors can rarely be attributable to a single root cause. Instead, they typically result from a complex interplay of active failures and latent failures within an organization. The Swiss Cheese Model explains how medical errors can occur when the layers of defenses or barriers are breached, forming a linear trajectory of error opportunity (Reason, 2000).

Given these findings, there is a compelling need for a comprehensive study of patient safety culture, focusing on both organizational and individual factors within the specific context of perioperative staff.

### **1.3 Research Questions**

- i. What is the level of perception of patient safety culture among perioperative staff?
- ii. What is the relationship between organizational factors and the perception of patient safety culture among perioperative staff?

- iii. What is the relationship between individual factors and the perception of patient safety culture among perioperative staff?
- iv. What is the moderating effect of job position, gender, and experience on the relationship between individual factors and perception of patient safety culture among perioperative staff?

#### **1.4 Research Objectives**

- i. To determine the level of perception of patient safety culture among perioperative staff.
- ii. To determine the relationship between organizational factors and the perception of patient safety culture among perioperative staff.
- iii. To determine the relationship between individual factors and perception of patient safety culture among perioperative staff.
- iv. To determine the moderating effect of job position, gender, and experience on the relationship between individual factors and the perception of patient safety culture among perioperative staff.

#### **1.5 Research Hypothesis**

H1: There are significant relationships between organizational factors and the perception of patient safety culture among perioperative staff.

H2: There are significant relationships between individual factors and the perception of patient safety culture among perioperative staff.