

Safety Culture Evaluation in Sarawak General Hospital: A Cross-Sectional Study Using Safety Attitude Questionnaire (SAQ)

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Background: Patient safety involves proactive and systematic efforts within healthcare settings to prevent harm to patients during medical care. Globally, healthcare organisations prioritise patient safety as a key factor in quality and safety initiatives.

Objective: This study aims to investigate the patient safety culture at Sarawak General Hospital (SGH), a tertiary referral hospital in Malaysia.

Methods: A cross-sectional study was conducted at SGH from May 2022 to August 2022 using the Safety Attitude Questionnaire (SAQ). The survey included 767 hospital staff members, such as doctors, nurses, pharmacists, and other clinical personnel, achieving a response rate of 84.2% (646 respondents). Statistical analysis was performed using Jamovi 2.3.28.

Results: The overall mean SAQ score was 65.8 ± 15.0 , with a positive response rate of 31.3%. Most domain scores were higher than benchmark scores (65.7% to 72.2%), except for the stress recognition domain. Among the domains, job satisfaction recorded the highest mean score (71.7 ± 23.3) and the highest positive response rate (53.4%), indicating high levels of contentment among healthcare workers. Conversely, the working condition domain demonstrates significant room for improvement.

Conclusion: Generally, the patient safety culture at SGH is satisfactory, with most domain scores exceeding benchmark levels.

Plain Language Summary: This study looked at how hospital staff at Sarawak General Hospital (SGH) in Malaysia feel about patient safety. Patient safety means making sure people do not get hurt while receiving medical care. It is an important part of healthcare quality around the world. The research team wanted to understand the safety culture at SGH, how staff think and act when it comes to keeping patients safe. To do this, they asked doctors, nurses, pharmacists, and other clinical staff to answer a survey called the Safety Attitude Questionnaire (SAQ). The survey starts from May to August 2022. A total of 646 staff took part, which was 84% of those invited. The results showed that the overall safety culture at SGH is fairly good. Most areas scored above average, especially job satisfaction. Staff who were happy with their jobs also tended to feel more positive about safety. However, one area, how staff handle stress, scored lower and could be improved. Working conditions also need attention. In summary, SGH has a generally healthy safety culture, but there are still some areas that could be made better to support staff and protect patients even more.

Keywords: safety attitude questionnaire, safety culture, patient safety, organisation supports

Introduction

Patient safety refers to the proactive and systematic efforts undertaken within healthcare settings to prevent harm to patients during the provision of medical care.¹ In addition, patient safety incidents are significant concerns in this domain because they encompass a wide range of issues, including medication errors, diagnostic errors, falls and surgical complications.² Each incident not only compromises patient well-being but also undermines trust in the healthcare system. Moreover, these

incidents can lead to substantial costs for both patients and the healthcare system.² The failure to uphold patient safety leads to a considerable escalation in healthcare expenses, alongside increased levels of morbidity and mortality.³

Throughout the years, healthcare organisations worldwide have consistently prioritised patient safety as their primary focus.⁴ In recent times, it has increasingly become a priority, as improving patient safety relies heavily on fostering a culture that encourages and supports healthcare workers to report errors or near misses without fear of repercussions. Since the American Institute of Medicine published “To Err Is Human” in 1999, there has been a surge in interest in patient safety research. This framework for patient safety encompasses a broad range of factors, including teamwork, safety climate, employee satisfaction, work environment, stress recognition, management perception, and attitude.^{5,6} In addition to these factors, previous research has concurred that, to enhance patient safety and elevate the standard of care, medical organisations must foster a robust patient safety culture.^{7–9}

According to the British Health and Safety Commission, patient safety culture is defined as the culmination of individual and collective values, attitudes, perceptions, competencies, and behavioral patterns within an organisation that influence its dedication to, and the manner and effectiveness of, safety management.¹⁰ Therefore, conducting safety culture assessments represents a primary strategic approach for enhancing the culture of patient safety. Consequently, it is critical to assess safety culture in order to identify predictor factors that influence patient safety outcomes. One effective method for this is through survey that employ safety culture assessment tools, such as the Safety Attitude Questionnaire (SAQ), which can assist healthcare leaders in understanding their organisations’ safety culture. The SAQ is a widely used tool designed to assess various dimensions of safety culture among healthcare professionals. Moreover, it has undergone comprehensive psychometric testing and has demonstrated good construct validity and internal consistency. The SAQ delves into six domains such as teamwork, safety climate, job satisfaction, stress recognition, management perceptions and working conditions.¹¹ Hence, by measuring these aspects, the SAQ provides valuable insights into both the strengths and weaknesses of an organisation’s safety culture. Consequently, healthcare institutions can utilise SAQ results to identify areas requiring improvement, implement targeted interventions, and cultivate a culture of safety that prioritises positive patient outcomes.

Despite the importance of assessing patient safety culture, there remains a lack of published investigations examining the level of patient safety culture among healthcare professionals in Malaysia. The Malaysian Patient Safety Goal (MPSG) was first launched in 2013, and in 2022, a more concise and implementable version, MPSG 2.0 was introduced, reflecting the Ministry of Health’s continued commitment to enhancing patient safety practices nationwide.¹² Therefore, it is essential to assess the level of safety culture among healthcare professionals and identify the factors associated with it. This study is the first SAQ study conducted in Sarawak General Hospital (SGH), located in Kuching, East Malaysia. A previous HSOPSC study at SGH² found that most of the scores related to its dimensions were lower than the benchmark score. Although both the HSOPSC and SAQ aim to measure patient safety culture, the SAQ includes specific domains not covered by the HSOPSC, such as stress recognition, job satisfaction, and working conditions. These domains are critical for understanding the holistic environment of patient safety and staff well-being. In contrast, the HSOPSC offers a broader range of safety culture dimensions but lacks some of the specific focus areas provided by the SAQ. Hence, SGH will benefit from this study’s baseline data for long-term ongoing assessment and a solid foundation for additional focused actions. Furthermore, it is important to note that in most hospitals, safety culture requires strengthening through intervention measures because it is not yet fully developed. Thus, to effectively implement the principle of “first, do no harm” across the entire healthcare organisation, it is essential to fully comprehend the meaning of a safety culture and its fundamental components. This includes emphasising the significant impact of human factors on patient safety, highlighting the significance of safety culture at every level of management, and continuously enhancing teamwork and communication both within and across teams. Therefore, this study was initiated to evaluate the status of safety culture in Sarawak General Hospital using the Safety Attitude Questionnaire (SAQ).

Methods

Study Design and Population

This cross-sectional study was conducted at Sarawak General Hospital (SGH), which is a tertiary hospital located in East Malaysia, from May 2022 to August 2022. In 2023, SGH had 1,007 beds, 63,876 inpatient admissions, 92,392

Emergency & Trauma Department attendances, and 320,444 outpatients. SGH is the largest hospital in Sarawak State with a total of 4,784 hospital staff providing 82 specialty and subspecialty services and receiving referrals from other healthcare facilities in the state.

Safety Attitude Questionnaire (SAQ)

The Safety Attitudes Questionnaire (SAQ) was developed by Sexton at the University of Texas in the year 2000.¹³ It is widely recognised as one of the most extensively validated instruments for assessing safety culture within healthcare settings.¹¹ A previous study conducted in Malaysia also employed the SAQ and concluded that the tool is acceptable, demonstrates good psychometric properties, and can be effectively utilised in Malaysia.¹⁴ In addition, the SAQ was employed to assess individuals' perceptions of safety across six safety culture domains, encompassing safety climate, teamwork, stress recognition, management perception, working conditions, and job satisfaction. Furthermore, the survey offers international benchmarking data, facilitating the comparison of safety cultures across healthcare organisations and countries.¹⁵

The distribution of the questionnaires based on the six domains is shown in [Appendix 1](#). The SAQ comprises 36 items, all of which are closed-ended questions, requiring respondents to indicate their level of agreement on a 5-point Likert scale, spanning from 1 (disagree strongly) to 5 (agree strongly).¹⁰ Additionally, items 14 and 33–36 are not part of the scales mentioned, while items 2, 11, and 36 are reverse scored. Besides, the demographic information of the respondents, including age, gender, years of service, occupation, and disciplines based on the organisation chart, were also collected. The departments were categorised into four disciplines: maternal and child, surgical, medicine, and clinical support. Specifically, the departments of pediatrics, obstetrics, and gynecology were merged into the maternal and child disciplines, while the surgical disciplines encompassed the departments of surgery, orthopedics, the emergency department, neurosurgery, anesthesiology, critical care, plastic surgery, otorhinolaryngology, ophthalmology, urology, pediatric surgery, and radiology. Furthermore, the medicine disciplines included the general medicine, other medical subspecialties, psychiatry and oncology, whereas the clinical support disciplines comprised the departments of pharmacy, radiology, pathology, and rehabilitation medicine.

Sampling Method

The study team approached the supervisors of each department to provide a briefing about the study, ensuring the information was subsequently disseminated to the hospital staff members, including doctors, nurses, pharmacists, and other clinical personnel. In addition, an online self-administered questionnaire with detailed information about the study was created using Google Forms and distributed electronically.¹⁶ Implied informed consent was obtained from participants prior to their completion of the questionnaire. On the initial page of the electronic survey link, a detailed participant information sheet was provided. Participants who voluntarily agreed to take part proceeded to answer the questionnaire. A stratified sampling method was used, whereby healthcare workers were recruited proportionally based on the number of staff in each department.¹⁷ This approach ensured that the sample was representative of all departments within SGH.¹⁷ Furthermore, the potential for response or social desirability bias was carefully considered during the planning of the study.

The sample size was calculated using a 95% confidence level, an expected proportion of 0.5, and a precision of 0.05,⁵ which led to a minimum required sample size of 384 participants. Hence, to accommodate for a possible 30% non-response rate, the sample size was adjusted to 550. Following this, questionnaires were distributed to healthcare workers at Sarawak General Hospital, and responses were collected immediately after completion. The estimated response rate was 70%; therefore, 550 hospital healthcare workers were selected for the study. Moreover, the stratified sampling method was used to select 550 samples based on the proportion of the total number of healthcare workers in each department. This approach aimed to ensure that recruitment reflected approximately the same percentage of subject from each department.

Participation in the study was entirely voluntary, responses were anonymised and kept confidential. Thus, the study team was unable to identify the subjects. Additionally, in the introductory page, subjects were being informed that not answering the questionnaire or opting out of the study would not affect their performance appraisal.

Data Collection Process

The data were collected from 12 May 2022 to 25 August 2022. The questionnaires were prepared in English because the majority of respondents were proficient in English. In addition, each participant was allocated a duration of 10–15 minutes to complete the questionnaires,^{10,11,13} which were promptly collected upon completion. Moreover, the questionnaires were successfully completed by 646 respondents.

Data Analysis

Descriptive statistics were used to analyse demographic data, including variables such as gender, years of working experience, occupation, and disciplines.¹⁸ Moreover, these methods were utilised to evaluate the mean scores for each domain within the questionnaire¹⁸ and the percentages of respondents who gave a positive response (≥ 75 ; agree slightly and agree strongly) for each safety culture domain. In addition, categorical variables were presented as frequencies and percentages, while numerical variables were expressed as means $\pm$ standard deviations to represent a normal distribution. Demographic data were displayed as frequencies and percentages in Table 1, whereas the scores for each domain were presented as means $\pm$ standard deviations in Tables 2 and 3. Furthermore, to determine the overall SAQ score, the mean scores from each domain were aggregated.

In the current study, all items were evaluated using a five-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.⁴ In addition, items 14 and 33–36 were not part of the scales mentioned, while items 2, 11, and 36 were reverse scored. Hence, to facilitate interpretation, the Likert scores were converted into percentile scores, where 1 corresponded to 0 (1 $\rightarrow$ 0), 2 to 25, 3 to 50, 4 to 75, and 5 to 100.⁴ Furthermore, a score of 50 or below was classified as requiring improvement, whereas a score of 75 or above indicated a positive safety attitude.⁴

Table 1 Demographics Profile of Respondents

Demographics		n = 646 (%)
Gender	Female	528 (81.7)
	Male	118 (18.3)
Working Experience (Years)	<6 months	21 (3.3)
	6–11 months	22 (3.4)
	1–2 years	46 (7.1)
	3–4 years	21 (3.3)
	5–10 years	211 (32.7)
	11–20 years	212 (32.8)
	> 21 years	113 (17.5)
Occupation	Doctor	138 (21.4)
	Nurse	419 (64.9)
	Pharmacist	21 (3.3)
	Allied Health	68 (10.5)
Disciplines*	Maternal & Child	120 (18.6)
	Medicine	153 (23.7)
	Surgical	294 (45.5)
	Clinical Support	79 (12.2)

Notes: Disciplines* were categorised based on the Sarawak General Hospital organisation chart.

Table 2 Comparing SAQ Domain Results Among Healthcare Professionals

Domain	Overall (100 Scale)	Allied Health Professional n = 68	Doctor n = 138	Nurses n = 419	Pharmacist n = 21	p-Value [‡]
Teamwork						
Mean ± SD	67.6 ± 20.5	59.0 ± 23.3	70.4 ± 25.7	68.1 ± 17.7	68.1 ± 20.0	0.016
Positive responses (≥75) (%)	42.9 [†]	30.9	57.2	40.6	33.3	
Safety Climate						
Mean ± SD	68.7 ± 18.5	66.1 ± 20.4	67.7 ± 23.1	69.4 ± 16.3	70.6 ± 20.0	0.544
Positive responses (≥75) (%)	43.0 [†]	39.7	45.7	42.7	42.9	
Job Satisfaction						
Mean ± SD	71.7 ± 23.3	75.5 ± 23.7	63.2 ± 28.1	74.5 ± 20.6	60.2 ± 23.4	<0.001
Positive responses (≥75) (%)	53.4 [†]	60.3	39.9	57.8	33.3	
Management Perception						
Mean ± SD	65.8 ± 19.4	64.6 ± 20.7	61.4 ± 22.3	67.6 ± 17.8	63.0 ± 21.6	<0.001
Positive responses (≥75) (%)	35.3 [†]	27.9	29.0	38.9	28.6	
Working Condition						
Mean ± SD	52.7 ± 19.5	51.1 ± 18.0	45.4 ± 21.5	55.5 ± 18.4	50.6 ± 20.2	0.026
Positive responses (≥75) (%)	17.0 [†]	17.6	9.4	19.3	19.0	
Stress Recognition						
Mean ± SD	68.3 ± 25.2	63.6 ± 27.9	81.3 ± 20.1	64.1 ± 24.7	81.5 ± 23.8	<0.001
Positive responses (≥75) (%)	50.2 [†]	42.6	73.9	42.0	81.0	
Overall SAQ score						
Mean ± SD	65.8 ± 15.0	62.7 ± 16.1	64.6 ± 18.2	66.8 ± 13.6	64.4 ± 15.2	0.168
Positive responses (≥75) (%)	31.3 [†]	27.9	34.8	30.8	28.6	

Notes: [†] Percent positive scores are computed as the per cent of participants who answered “agree slightly” or “agree strongly” on each of the items within a scale (ie 4 or 5 on the original 5-point Likert scale). [‡] Analysed using one-way ANOVA.

Table 3 Comparing SAQ Domain Results Among Discipline

Domain	Maternal & Child n = 120	Surgical n = 294	Medicine n = 153	Clinical Support n = 79	p-Value [¶]
Teamwork					
Mean ± SD	68.2 ± 18.5	70.5 ± 20.9	64.8 ± 18.4	61.9 ± 24.2	0.004
Positive responses (≥75) (%)	43.2 [§]	51.0	30.8	35.2	
Safety Climate					
Mean ± SD	69.7 ± 16.4	70.4 ± 19.2	65.5 ± 17.7	67.2 ± 19.7	0.042
Positive responses (≥75) (%)	48.4 [§]	46.6	31.2	44.3	
Job Satisfaction					
Mean ± SD	74.1 ± 22.7	72.1 ± 23.4	68.4 ± 23.8	73.0 ± 22.9	0.212
Positive responses (≥75) (%)	59.1 [§]	54.1	44.3	59.3	
Stress Recognition					
Mean ± SD	67.8 ± 25.5	69.3 ± 25.0	65.3 ± 24.2	71.2 ± 27.3	0.291
Positive responses (≥75) (%)	50.0 [§]	51.0	43.9	59.3	
Management Perception (Unit)					
Mean ± SD	69.8 ± 17.6	68.2 ± 20.7	63.7 ± 19.6	66.8 ± 22.1	0.047
Positive responses (≥75) (%)	47.3 [§]	45.3	33.3	40.7	

(Continued)

Table 3 (Continued).

Domain	Maternal & Child n = 120	Surgical n = 294	Medicine n = 153	Clinical Support n = 79	p-Value [¶]
Management Perception (Hospital)					
Mean $\pm$ SD	68.4 $\pm$ 17.0	64.3 $\pm$ 21.5	60.9 $\pm$ 20.4	65.1 $\pm$ 20.2	0.013
Positive responses (≥ 75) (%)	43.2 [§]	36.5	28.7	34.4	
Management Perception (Overall)					
Mean $\pm$ SD	69.1 $\pm$ 16.9	66.3 $\pm$ 20.2	62.3 $\pm$ 19.3	65.9 $\pm$ 19.6	0.024
Positive responses (≥ 75) (%)	44.1 [§]	35.7	29.5	31.7	
Working Condition					
Mean $\pm$ SD	53.9 $\pm$ 19.8	53.1 $\pm$ 20.5	51.5 $\pm$ 18.1	52.0 $\pm$ 18.1	0.719
Positive responses (≥ 75) (%)	19.4 [§]	18.4	14.3	13.9	
Overall SAQ score					
Mean $\pm$ SD	67.4 $\pm$ 12.9	66.8 $\pm$ 15.6	62.9 $\pm$ 14.6	65.3 $\pm$ 14.5	0.027
Positive responses (≥ 75) (%)	28.5 [§]	32.0	22.8	26.8	

Notes: [§] Percent positive scores are computed as the per cent of participants who answered “agree slightly” or “agree strongly” on each of the items within a scale (ie, 4 or 5 on the original 5-point Likert scale). [¶] Analysed using one-way ANOVA.

Lower scores indicate a less favorable perception of the items, while higher scores signify more favorable perceptions.¹⁹ Subscale scores were calculated by summing the scores of all items within the subscale and dividing by the total number of items, resulting in a range from 0 to 100.⁴ The mean of respondents who “agree” or “strongly agree” with a specific statement was used to calculate scores. Likewise, the same approach was applied to items phrased negatively. Furthermore, responses marked as “not applicable” or left blank were excluded from the analysis. The percentage of positive responses for each item was also determined, with 75% or higher indicating a positive attitude.¹⁰

Assumption testing for parametric tests is a critical step to ensure that the data analysis meets the necessary conditions for valid inference. Moreover, a parametric test such as One-Way ANOVA was used in inferential analysis²⁰ to assess statistical significance, which was defined as a p-value of 5% or less.²¹ In addition, One-Way ANOVA was employed to compare scores across multiple groups of healthcare professionals and disciplines. These tests were chosen when the assumptions of normality, homogeneity of variance, and independence of observations were met. Specifically, One-Way ANOVA test was performed to compare the mean scores of the SAQ domain and the statistical significance among healthcare professionals, as shown in Table 2, and to compare the mean scores of the SAQ domain across disciplines as portrayed in Table 3.²¹ Data were assessed prior to analysis to ensure that the assumptions of one-way ANOVA were met, including independence of observations, approximate equality of variances across groups, and sufficiently large sample sizes in each group ($n \geq 30$). Furthermore, logistic regression was performed to identify demographic factors associated with positive scores in the SAQ. All the statistical analyses were performed using Jamovi version 2.3.28.

Ethical Considerations

This research was cross-sectional and contained no extra interventions. Moreover, it was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and the Malaysian Good Clinical Practice Guideline. In addition, the study protocol was approved by the Medical Research and Ethics Committee of the National Medical Research Registry, Ministry of Health Malaysia (Approval number: NMRR-22-00409-EUW) on May 10, 2022.

Results

Socio-Demographic Characteristics of Respondents

The overall response rate for the SAQ was 84.2% (646 out of 767 distributed questionnaires). The study initially targeted 550 healthcare workers using stratified sampling to ensure departmental representation. However, due to the voluntary nature of the self-administered questionnaire, 767 individuals were ultimately approached. Therefore, to address uneven

response rates across departments, a second dissemination was conducted with the support of department supervisors. In total, 646 healthcare workers completed the questionnaire and were included in the final analysis. The respondents were primarily female (81.7%) and had worked for 11 to 20 years (32.8%). In terms of occupation, the majority respondents were nurses (64.9%), followed by doctors (21.4%), allied health professionals (10.5%), and pharmacist (3.3%). In addition, majority of the respondents were from surgical disciplines (45.5%), with smaller proportion from medical disciplines (23.7%), maternal and child disciplines (18.6%), and clinical support disciplines (12.2%) (Table 1).

Comparison of SAQ Domain Results Among Healthcare Professionals

The average SAQ score was 65.8 ± 15.0 , with 31.3% of respondents achieving positive responses (a score of $75 \geq$ on a 100-point scale). Additionally, job satisfaction obtained the highest rating, with a mean score of 71.7 ± 20.5 and 53.4% positive responses. On the other hand, the mean score for working conditions was the lowest at 52.7 ± 19.5 with only 17.0% of positive responses (Table 2).

A significant difference was observed across healthcare professionals in several SAQ domains, with notable variations in teamwork, job satisfaction, management perception, working conditions, and stress recognition. Doctors had the highest mean score in teamwork, while allied health professionals scored the lowest. Furthermore, pharmacists achieved the highest mean scores in both safety climate and stress recognition, whereas allied health professionals had the lowest scores in these domains. Job satisfaction was highest among allied health professionals, followed by nurses, while pharmacist scored the lowest. In terms of management perception and working conditions, nurses scored the highest, while doctors had the lowest in both domains. Moreover, stress recognition was notably higher among pharmacists and doctors compared to other groups. Although the overall SAQ score did not differ significantly, nurses achieved the highest score, while allied health professionals had the lowest (Table 2).

Comparison of SAQ Domain Results Among Disciplines

A notable variation was observed among the disciplines in terms of teamwork, safety climate, unit management, hospital management, and management perception ($p < 0.05$). The surgical disciplines achieved the highest average scores for both teamwork and safety climate. Additionally, the maternal and child discipline excelled in job satisfaction, unit management, hospital management, management perception, and working conditions. Conversely, the clinical support discipline recorded the lowest average scores for teamwork, while the medical discipline received the lowest scores in several areas, including safety climate, job satisfaction, stress recognition, unit management, hospital management, management perception, and working conditions. Moreover, the maternal and child discipline garnered the highest mean score in the SAQ assessment, with a value of 67.4 ± 12.9 , whereas the medical discipline recorded the lowest overall SAQ mean scores at 62.9 ± 14.6 (Table 3).

Comparing SAQ Domain Results Between Selected Hospitals in Malaysia and International Benchmark

In comparison to the international benchmark for inpatient care in the United States, Hospital Sultanah Bahiyah in Kedah, Sarawak General Hospital in the state of Sarawak, and public hospital in the state of Melaka scored notably higher mean scores across five of the six domains: teamwork, safety climate, job satisfaction, management perception, and working conditions (Table 4).

Demographic Factors Associated with Positive Scores in SAQ

Following the adjustment for gender, males employed at SGH demonstrate a 1.8-fold higher probability ($p = 0.021$) of achieving positive scores in overall safety attitude assessments. Moreover, employees at SGH who have been employed for less than six months have a 2.7 times greater likelihood ($p = 0.045$) of receiving positive ratings in evaluations of the overall safety attitude score, compared to those with 5 to 10 years of working experience. Employees who have been with SGH for 11 years or longer, including those with 11 to 20 years of experience and over 21 years, exhibit a 1.9-fold higher likelihood ($p = 0.045$) and a 4.9-fold higher likelihood ($p \leq 0.001$), respectively, of achieving positive scores in overall

Table 4 Comparing SAQ Domain Results Between Selected Hospitals in Malaysia and International Benchmark

	SAQ Safety Domain								
	Setting	Country	Teamwork Scale	Safety Climate Scale	Job Satisfaction Scale	Stress Recognition Scale	Management Perception Scale	Working Condition Scale	Overall SAQ Score
International Benchmark [ref:12] Mean±SD Positive responses (≥75) (%)	Inpatient	USA	64.3±16.6 N.A	60.5±16.0 N.A	59.6±20.5 N.A	74.4±20.2 N.A	38.3±18.7 N.A	49.2±19.5 N.A	57.7±N.A [#] N.A
Sultanah Bahiyah Hospital [ref:13] Mean±SD Positive responses (≥75) (%)	Healthcare Professionals	Malaysia (Kedah)	69.0±12.8 36.4	69.0±12.4 34.7	76.3±17.9 66.2	63.7±24.4 43.6	64.7±16.3 28.3	62.6±12.7 24.0	67.8±10.5 23.0
Sarawak General Hospital Mean±SD Positive responses (≥75) (%)	Healthcare Professionals	Malaysia (Sarawak)	67.7±20.5 42.9	68.7±18.5 43.0	71.7±23.3 53.4	68.3±25.2 50.2	65.8±19.4 35.3	52.7±19.5 17.0	65.8±15.0 31.3
Public Hospitals and Health Clinics [ref:10] Mean±SD Positive responses (≥75) (%)	Pharmacist	Malaysia (Melaka)	67.6±14.5 38.5	66.8±14.9 33.3	67.3± 19.4 46.2	73.0±20.4 58.1	62.2±14.0 29.9	54.8±17.4 15.4	65.6±11.0 20.5

Notes: [#]The journal does not contain data on the standard deviation.

Table 5 Demographic Factors Associated with Positive Scores in SAQ

Variables	Adj. OR	(95% CI OR)	p-Value
Gender			
Male	1.834	(1.096, 3.070)	0.021
Female (Ref)	1.000	–	–
Working experience (years)			
<6 months	2.706	(1.024, 7.152)	0.045
6–11 months	1.076	(0.367, 3.154)	0.893
1–2 years	1.701	(0.804, 3.600)	0.165
3–4 years	1.306	(0.430, 3.964)	0.638
5–10 years (Ref)	1.000	–	–
11–20 years	1.933	(1.220, 3.063)	0.005
≥21 years	4.909	(2.910, 8.279)	<0.001
Discipline			
Maternal and Child	1.125	(0.632, 2.001)	0.690
Surgical	1.641	(1.024, 2.630)	0.040
Clinical Support	0.933	(0.444, 1.962)	0.855
Medicine (Ref)	1.000	–	–
Occupation			
Allied health professionals	0.703	(0.363, 1.362)	0.296
Nurse (Ref)	1.000	–	–
Doctor	0.917	(0.537, 1.563)	0.749

safety culture assessments, than employees with 5 to 10 years of experience. Additionally, staff in surgical disciplines demonstrated a more positive attitude towards patient safety than staff in other disciplines (p-value=0.040) (Table 5).

Discussion

This study is the initial implementation of the SAQ within SGH to evaluate the patient safety culture. Evaluating and promoting safety culture is a prerequisite step to improve patient safety.²² The SAQ, utilised as a tool for assessing patient safety culture, enables SGH to gain a deeper understanding of the current state of patient safety culture and the associated factors by evaluating individuals' attitudes towards safety across six domains within the safety culture framework.

This study found an overall mean SAQ score of 65.8, which is higher compared to the international benchmark of 57.7, indicating that respondents in this study generally outperformed the international standard.¹³ Job satisfaction received the highest mean score (71.7±23.3) in this study, surpassing the international benchmark,¹³ suggesting that most healthcare workers are content with their jobs and have positive work experiences. This is supported by a significant proportion of participants expressing positive sentiments to the statement “I like my job” (77.9%) which ranked among the highest-scoring items in the SAQ. However, working conditions received the lowest mean score (52.7±19.5) in our study, although it still scored above the international benchmark.¹³ This suggests employees' dissatisfaction with aspects such as staffing levels and logistical support, as evidenced by low scores on “the staffing level in this clinical area is adequate to manage the number of patients” (26.4%), which is one of the five lowest mean scores in our SAQ. The shortage of staff, increased patient volume, and expanded clinical services contribute to heightened workload and potential risks to patient safety.¹¹

Despite perceived poor working conditions, a higher level of job satisfaction could be attributed to strong organisational support, in terms of recognition, career development opportunities, and interpersonal relationships. Organisational support refers to the extent to which employees perceive that their organisation values their contributions and cares about their well-being. Strong organisational support mitigates the negative effects of poor working conditions and promotes job satisfaction.²³ Recognition involves acknowledging employees' efforts and accomplishments, both formally and informally. This boosts morale, enhances motivation, and reinforces a sense of value among employees. Studies have

shown that recognition positively correlates with job satisfaction, as it fulfills the intrinsic need for appreciation and respect.²⁴ Moreover, opportunities for career growth, such as training programs, promotions, and skill development initiatives, contribute to job satisfaction. They indicate an organisation's investment in employees' future, fostering loyalty and reducing turnover intentions. Research highlights the role of career development in enhancing job satisfaction, particularly in challenging work environments.²⁵ Furthermore, positive relationships with colleagues and supervisors create a supportive work atmosphere, which is crucial for emotional well-being. Strong interpersonal bonds help in coping with workplace challenges and significantly contribute to job satisfaction. Studies have linked quality workplace relationships with higher employee engagement and satisfaction.²⁶ This perceived support could enhance overall job satisfaction, mitigating the negative impact of poor working conditions.²⁷

A comparison of SAQ domain results among healthcare professionals reveals that teamwork scores were higher among doctors compared to allied health professionals. Doctors, operating within a hierarchical system, often have significant authority and responsibility for patient care, which facilitates teamwork through close collaboration in medical decision-making and treatment planning.²⁸ In contrast, allied health professionals have diverse specialties and varying levels of autonomy, leading to challenges in achieving seamless teamwork due to differences in the scope of practice and communication across various disciplines and settings.²⁹ Moreover, the study showed higher job satisfaction among allied health professionals compared to pharmacists. Allied health professionals benefit from dynamic work environments offering continuous learning, career advancement, and exposure to diverse patient populations, thereby fostering a sense of professional growth.²⁹ In contrast, pharmacists, face challenges such as high workload, time pressures, and limited autonomy, which may potentially lead to lower job satisfaction than their allied health counterparts.³⁰

A comparison of SAQ domain results among different disciplines reveals that the observed disparity in teamwork scores between the surgical disciplines and clinical support disciplines can be attributed by task complexity. Surgical teams, often faced with high-stakes, complex procedures, require tight coordination and collaboration among team members to ensure patient safety and successful outcomes. This necessity for interdependence and clear communication fosters a strong sense of teamwork within the surgical department.³¹ Conversely, clinical support roles involve more independent tasks with less reliance on team collaboration, leading to lower perceived levels of teamwork. Moreover, the variance in safety climate scores between surgical and medical disciplines can be elucidated by inherent risks associated with surgical procedures. Surgical disciplines prioritise safety due to the high stakes and complexity of procedures, fostering a culture of adherence to safety protocols and heightened awareness. In contrast, medical disciplines perceive safety protocols as less central due to a greater focus on diagnostic processes and treatment plans.

The higher job satisfaction, unit management, hospital management, management perception, and work conditions in the maternal and child disciplines compared to the medical disciplines can be attributed to several factors. The maternal and child disciplines typically receive more attention and resources due to their critical role in ensuring the health and well-being of mothers and infants, leading to better unit and hospital management practices. Moreover, the perception of management effectiveness and the quality of work conditions are influenced by factors such as communication, support from supervisors, and access to necessary resources, which are better addressed in the maternal and child disciplines compared to the medical disciplines.³² Conversely, the medical disciplines face challenges such as high patient volume and demanding work schedules, which contribute to lower job satisfaction and perceived management effectiveness.²⁰ In light of these challenges, the medical disciplines should explore strategies to improve teamwork and safety climates.

A comparison of the SAQ domain results between selected hospitals in Malaysia and the international benchmark reveals that Malaysian hospitals such as Hospital Sultanah Bahiyah in the state of Kedah, Sarawak General Hospital in the state of Sarawak, and a public hospital in the state of Melaka surpassed the international benchmark in five out of six domains, except for stress recognition domain.^{10,13} These findings likely stem from robust leadership, better communication, greater safety awareness, and improvements in infrastructure.¹³ Moreover, Sarawak General Hospital achieved a comparatively higher score on management perception, indicating strong leadership despite challenges like resource constraints associated with working conditions. Interestingly, the dissonant finding of the stress recognition domain aligns with an earlier study, which found that this subscale of SAQ does not fit with the overall heuristic of the instrument and is not reflective of safety climate.²⁹

Demographic factors have been identified as significant factors associated with positive scores on the SAQ, with certain variables correlating strongly with fostering a positive patient safety culture. Additionally, it is interesting to note that male gender is more likely to report a higher SAQ score. Hence, it can be postulated that men and women interpret safety concerns in varying ways, and these distinctions are impacted by societal norms or professional backgrounds.³¹ Previous research suggests that males prefer independent learning while females favour collaborative learning. Consequently, women tend to perceive competitive learning environments as inhibiting confidence and voice.³² Furthermore, male-dominated roles within healthcare, particularly surgeons, may confer a sense of authority and control over safety-related decisions, thereby contributing to higher safety attitude scores among male staff members.⁸

Employees with less than six months of working experience reported a higher rating in safety attitude. This could be attributed to their fresh perspective on the workplace, leading to increased attention to safety protocols and procedures. Additionally, new employees often feel a greater sense of responsibility to make a positive impression and comply with safety standards, potentially resulting in higher scores on safety attitude.²⁷ Similarly, healthcare workers who have been with SGH for 11 years or longer reported a higher positive safety attitude score. This suggests that long-term employees are likely to develop a heightened awareness of safety protocols, a stronger commitment to adhering to them, and a deeper understanding of the importance of maintaining a safe work environment.

Individuals employed in surgery disciplines reported a favourable patient safety attitude score compared to other disciplines. Surgical discipline specialise in surgical procedures, making them particularly prone to patient safety issues. Given the potential medicolegal consequences of errors or incidents like incorrect surgeries, they possess a heightened awareness of the significance of upholding a safe workplace environment.¹⁰

This study has limitation whereby a causal relationship could not be established because of the cross-sectional nature of the study. In addition, data were collected via self-administered questionnaires, which are inherently subject to social desirability bias. To mitigate this risk, potential sources of bias were carefully considered during the planning of this study. Subjects completed the questionnaires anonymously, and no identifying information was collected, thereby ensuring confidentiality. Despite these efforts, the possibility of social desirability bias cannot be entirely ruled out.

Conclusion

This study offers SGH an improved insight into the perceptions and cultural dynamics of healthcare professionals concerning patient safety. While the overall safety culture is deemed satisfactory, evidenced by domain scores surpassing international benchmarks, certain domains, particularly working conditions, demonstrate significant room for improvement. Regular reassessments and targeted interventions are essential to address these gaps and sustain a robust safety culture. This study lays a strong foundation for future efforts to enhance safety outcomes and foster a positive safety culture.

Data Sharing Statement

The dataset used and/or analysed during the current study are available from the corresponding author upon reasonable request.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

The authors declare that they have no conflicts of interest in this work.

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