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Patient Safety Leaders' Perception of Patient Safety Practices in Eight Asia-Pacific Countries: Survey Based on the Global Patient Safety Action Plan Framework

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Introduction: This study aim was to assess patient safety leaders' perception of patient safety practices in the Asia-Pacific region based on Strategic Objectives of the Global Patient Safety Action Plan (GPSAP) Framework.

Methodology: A self-assessment survey tool with quantitative and qualitative components was sent to patient safety leaders from 25 healthcare facilities in 17 countries participating in the Global Action for Leaders & Learning Organizations on Patient Safety (GALLOPS) initiative, the majority of which were from LMICs in the Asia-Pacific region. The survey, based on the GPSAP's 7 strategic objectives, covered 35 patient safety areas. Each area was rated on a scale from 1 (not established) to 5 (strongly established with good practices). The mean score of each strategic area, strategic objective, and overall strategic objective establishments were calculated. Good and sub-optimal practices of GALLOPS-participating countries were identified and tabulated according to GPSAP-defined patient safety strategies.

Results: A total of 15 self-rated responses were received from patient safety leaders of 8 GALLOPS-participating Asia-Pacific countries' healthcare facilities. The overall mean scores of the establishment level of all self-assessed strategic objectives were: Singapore (3.84), Malaysia (3.66), South Korea (3.56), India (3.20), Sri Lanka (3.09), Indonesia (2.48), Nepal (2.12), Maldives (1.94). The total mean score of the establishment level of all healthcare facilities' strategic objectives was 2.99. Strategic Objective 3 - Safety of clinical processes had the highest mean score of 3.41, while Strategic Objective 4 - Patient and family engagement and Strategic Objective 7 - Synergy, partnership and solidarity had 2.60 and 2.72, having two lowest mean scores for all countries' healthcare facilities, respectively.

Conclusion: Our study revealed substantial differences in perception of patient safety practices across healthcare facilities of Asia-Pacific countries and across the strategic objectives. This helped to establish a baseline of patient safety landscape in Asia-Pacific and represented opportunities for promoting equity and sustainability in healthcare as well as improving patient safety system and culture.

Keywords: self-assessment, survey tool, GALLOPS, best practices, baseline, healthcare

Introduction

The discipline of patient safety is centered around preventing errors and adverse outcomes that can occur during healthcare procedures, with the overarching aim of reducing harm to patients. The World Health Organization (WHO) defines patient safety as "the absence of preventable harm to a patient during the process of healthcare".[1]

Despite significant advancements of patient safety in recent years, concerns regarding global patient safety outcomes remain widely prevalent. At the primary and outpatient level, approximately 4 in 10 patients globally experience healthcare associated harm, with 80% of these incidents being preventable.[2] Historically, the concept of safe care has not received as

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much attention in low- and middle-income countries (LMICs), leading to poorer patient safety outcomes.[3,4] More than 130 million adverse effects occur in LMIC hospital care settings, with 2.6 million deaths occurring annually.[2] Even in high-income countries, where patient safety standards are relatively high and healthcare equipment is readily available, approximately 1 in 10 patients still suffer from adverse effects during care.[3]

The Asia-Pacific region has seen significant advancements in healthcare over the past few decades, but patient safety practices in some of the countries in the region still have room for improvement. Fragmented healthcare quality in Asia-Pacific calls for closing the gaps of discrepant areas of practice to achieve enhanced patient safety. While several Asia-Pacific countries have acquired notable healthcare systems, a number of economically transitioning countries of the Asia-Pacific still face dire patient safety challenges.[5,6] Studies have indicated that several economically transitioning Asian countries' patient safety preparedness levels ranged from low to moderate, while economically developed Asian countries comparatively ranked higher.[6] It is important to identify good and sub-optimal practices to promote equity across the region and improve the quality of care provided.

WHO has identified patient safety as a global health priority for its member states through the adoption of resolution WHA72.6, a call to action for patient safety announced during the World Health Assembly held in 2019.[7,8] Further, the WHO Director General led the development of the Global Patient Safety Action Plan (GPSAP) that encapsulates strategies and guidelines for health facilities, member state organizations, private sector, and other relevant stakeholders.[7,8] The plan aimed at improving patient safety around the world, with a vision of a "world in which no patient is harmed in healthcare, and everyone receives safe and respectful care, every time, everywhere".[9] Recently launched, the "Global Patient Safety Action Plan 2021–2030: Towards Zero Patient Harm in Health Care" or GPSAP is a WHO flagship initiative that outlines key strategies for reducing the incidence of harm in healthcare settings and achieving the goal of zero patient harm.[8]

Under the GPSAP, WHO developed a framework for patient safety (Table 1) to highlight particular strategies and practices deemed important to ensure all areas of patient safety practices are adequately addressed and can be applied to health functioning units.[8,10] The framework comprises 35 distinctive strategies of patient safety grouped into 7 strategic objectives. The 7 strategic objectives needed to be addressed to improve patient safety are: 1) Policies to eliminate avoidable harm in healthcare; 2) High-reliability system; 3) Safety of clinical processes; 4) Patient and family engagement; 5) Health worker education, skills and safety; 6) Information, research and risk management; 7) Synergy, partnership, and solidarity.[8] 5 strategies mapped to each of the 7 strategic objectives are constituted by a series of action recommendations for relevant partnering sectors, such as governments, healthcare facilities and services, stakeholders, and the WHO secretariat.[8] With specific strategic objectives and strategies to achieve the goal of GPSAP 2021–2030, stakeholders in action are able to accelerate their understanding and capability of addressing patient safety issues across different contexts.[8] A common global framework for Asia-Pacific countries and its underlying healthcare facilities will enhance collaborative action in sharing best practices and identifying areas that need improvement in patient safety practices, thereby more efficiently providing optimal patient safety practices across its region.

As an active partner of WHO, SingHealth Duke-NUS Institute for Patient Safety & Quality (IPSQ), a patient safety institute in the largest Academic Medical Centre (AMC) in Singapore, initiated the Global Action for Leaders & Learning Organizations on Patient Safety (GALLOPS) program to enhance patient safety standards in the Asia-Pacific.[11] GALLOPS is an initiative aimed at enhancing patient safety by promoting learning organizations and leadership development in health organizations through sharing of good patient safety practices.[11] With the support of WHO, the GALLOPS program started on October 21, 2021, with participants from different healthcare organizations of Asia-Pacific, sharing their experiences and insights on good and sub-optimal patient safety practices and ways to improve the quality of care in healthcare organizations.[11]

The aim of this study was to assess patient safety leaders' perception patient safety practices in the Asia-Pacific region based on based on patient safety strategic objectives and strategies of the GPSAP Framework.

Methods

To evaluate patient safety practices in the Asia-Pacific region, a self-assessment survey was used, targeting healthcare facilities from Asia-Pacific countries. IPSQ developed the survey form using the WHO's Global Patient Safety Assessment Tool, which is based on the strategic objectives and strategies outlined in the GPSAP Framework by

Table 1 Framework for Action - The 7×5 Matrix

Strategic Objective 1 Policies to eliminate avoidable harm in health care	**Strategy 1.1** Patient safety policy, strategy and implementation framework	**Strategy 1.2** Resource mobilization and allocation	**Strategy 1.3** Protective legislative measures	**Strategy 1.4** Safety standards, regulation and accreditation	**Strategy 1.5** World Patient Safety Day and Global Patient Safety Challenges
Strategic Objective 2 High-reliability systems	**Strategy 2.1** Transparency, openness and No blame culture	**Strategy 2.2** Good governance for the health care system	**Strategy 2.3** Leadership capacity for clinical and managerial functions	**Strategy 2.4** Human factors/ ergonomics for health systems resilience	**Strategy 2.5** Patient safety in emergencies and settings of extreme adversity
Strategic Objective 3 Safety of clinical processes	**Strategy 3.1** Safety of risk-prone clinical procedures	**Strategy 3.2** Global Patient Safety Challenge: Medication Without Harm	**Strategy 3.3** Infection prevention and control & antimicrobial resistance	**Strategy 3.4** Safety of medical devices, medicines, blood and vaccines	**Strategy 3.5** Patient safety in primary care and transitions of care
Strategic Objective 4 Patient and family engagement	**Strategy 4.1** Co-development of policies and programmes with patients	**Strategy 4.2** Learning from patient experience for safety improvement	**Strategy 4.3** Patient advocates and patient safety champions	**Strategy 4.4** Patient safety incident disclosure to victims	**Strategy 4.5** Information and education to patients and families
Strategic Objective 5 Health worker education, skills and safety	**Strategy 5.1** Patient safety in professional education and training	**Strategy 5.2** Centres of excellence for patient safety education and training	**Strategy 5.3** Patient safety competencies as regulatory requirements	**Strategy 5.4** Linking patient safety with appraisal system of health workers	**Strategy 5.5** Safe working environment for health workers
Strategic Objective 6 Information, research and risk management	**Strategy 6.1** Patient safety incident reporting and learning systems	**Strategy 6.2** Patient safety information systems	**Strategy 6.3** Patient safety surveillance systems	**Strategy 6.4** Patient safety research programmes	**Strategy 6.5** Digital technology for patient safety
Strategic Objective 7 Synergy, partnership and solidarity	**Strategy 7.1** Stakeholders engagement	**Strategy 7.2** Common understanding and shared commitment	**Strategy 7.3** Patient safety networks and collaboration	**Strategy 7.4** Cross geographical and multisectoral initiatives for patient safety	**Strategy 7.5** Alignment with technical programmes and initiatives

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WHO. To enable a deeper understanding of the varying degrees of establishment of patient safety strategies, the assessment scale of original tool was expanded from 3-points to 5-points. The survey participants comprised leads of healthcare facilities in the Asia-Pacific region who were members of the GALLOPS network, serving as representatives for their respective countries. These individuals, who were designated as patient safety leads, possessed expertise in their facilities' patient safety standards and practices. A total of 25 healthcare facilities from 17 countries in the GALLOPS network were invited to participate in the survey. The survey was open to patient safety leads from different healthcare facilities within the same country. Patient safety leads of GALLOPS came from various occupations, such as physicians, health scientists, directors of patient safety, and quality assurance managers.

The survey was designed in the form of an excel spreadsheet with both quantitative and qualitative components to evaluate good and sub-optimal patient safety practices (Appendix A). The survey employed GPSAP Framework's 7 distinct strategic objectives, which were stratified into 35 areas of patient safety strategies. The quantitative component of the survey allowed each of the 35 strategies to be numerically scored on a scale from 1 to 5. A score of 1 indicated that the strategy was "not established"; a score of 2 indicated that the strategy was "minimally established"; a score of 3 indicated that the strategy was "somewhat established"; a score of 4 indicated that the strategy was "fully established" while a score of 5 indicated that the practice was "strongly established with good practices". Under the qualitative component, responding patient safety leads were asked to provide examples of good and sub-optimal patient safety practices (practice areas for improvement), within their healthcare facilities, in relationship to their numeric score for the establishment of individual strategies.

In October 2021, email invitations on the intent of the survey and call for participation were sent to the group of regional patient safety leaders from IPSQ GALLOPS network, representing 25 healthcare facilities across 17 countries. While the participants came from a range of income groups, the majority were from LMICs, reflecting the region's diversity in terms of healthcare systems and resources for patient safety initiatives. The email outlined the study's objectives and intent in detailed, and by participating in the survey, the participants were giving informed consent for the data to be shared for learning purposes with those beyond their institutions. To encourage participation, regular email reminders were sent. Additionally, IPSQ provided virtual assistance via Zoom to those who required help with the survey, including clarification of the intent, the survey questions and the rating scale in self-assessing the patient safety strategies and sharing of practices. The study and informed consent process were reviewed and approved by the ethical review board at SingHealth Centralised Institutional Review Board (CIRB), ensuring that all ethical guidelines and procedures were followed.

The survey consisted of 3 parts: 1) Characteristics of participating healthcare facilities; 2) Quantitative assessment of the maturity of the establishment of patient safety practices; and 3) Qualitative description of good and sub-optimal patient safety practices.

The survey assessed the maturity of the establishment of patient safety practices for the 35 strategies within the 7 strategic objectives of the GPSAP Framework. Survey participants were required to rate their healthcare facilities' practice standards on a scale of 1 to 5 for each strategy. In the survey, for each of the strategic objective, participants were allowed to identify and describe their good and sub-optimal patient safety practices in their healthcare facilities. In the first section, participants were asked to identify and describe the top three patient safety practices that were deemed exemplary within their healthcare facility. The second section required participants to choose and describe three areas of patient safety practices that were sub-optimal and needed improvement within their healthcare facility. As the responses were directly mapped to the respective GPSPA Strategic Objectives, thematic analysis was not performed. This structured mapping ensured alignment with the GPSAP framework and facilitated the identification and sharing of best practices. At the end of the survey data collection, the raw data of each survey response was stored in Microsoft Excel version 16.68 and stored in a secure hard drive, accessible only to the study team. For the quantitative assessment component of completed surveys, mean scores reflecting the establishment level were calculated at 3 different levels for all participating healthcare facilities in each country: for each strategy, for each strategic objective, and for all 35 strategies. The scores were then tabulated into a matrix and color-coded to highlight the differences in the maturity of the establishment of patient safety practices at 3 levels across the Asia-Pacific region. Responses from completed surveys

were collated based on the 7 strategic objectives. Patient safety practices matched to strategic objectives, and strategies were consolidated, identified, and shared for cross-learning and insights for improvement.

Results

A total of 15 self-rated survey responses were received from 15 different healthcare facilities from 8 countries of the Asia-Pacific, namely, India, Indonesia, Nepal, Malaysia, Maldives, South Korea, Singapore, and Sri Lanka (Table 2 and Table 3). This represented a response rate of 60.0% (15 out of 25 healthcare facilities). One survey response each from one healthcare facility was received from India, Nepal, Malaysia, Indonesia, Maldives, and South Korea. Three survey responses from 3 different healthcare facilities were received from Sri Lanka. Six survey responses from 6 different healthcare facilities were received from Singapore.

All health organization types were healthcare facilities of Asia-Pacific countries, except for one organization type being Ministry of Health from Sri Lanka. Department types represented were as follows: obstetrics and gynecology, clinical anatomy, nursing, healthcare quality and safety, quality improvement, dermatology and venereology, health management, safety and risk management, clinical audit, improvement science, and clinical governance. Patient safety leads that represented their healthcare facilities varied in their designation: director at various levels, associate professor, clinical nurse, medical superintendent, doctor, senior manager, principal specialist, and assistant manager.

Years of service within the participating patient safety leads' role also varied: two participating patient safety leads at 1–5 years of service, six participating patient safety leads at 6–10 years of service, four participating patient safety leads at 11–15 years of service, two participating patient safety leads at 21–25 years of service, and one participating patient safety leads at 16–20 years of service, and 26–30 years of service. A total of five survey participating healthcare facilities were members of the Global Patient Safety Network (GPSN), while 10 survey participating healthcare facilities were not members of the GPSN. Capacity levels for all participating healthcare facilities differed: 13 were at healthcare facilities level (12 general hospitals and 1 specialty care center for eyes), one was an organization level (associations, networks, care service providers), and one was a government level.

Singapore's healthcare facilities (3.84) had the highest overall mean score of the establishment level of strategic objectives, followed closely by Malaysia's healthcare facilities (3.66) and South Korea (3.56). India's healthcare facility (3.20) and Sri Lanka's healthcare facilities (3.09) had middle overall mean scores, followed by Indonesia's healthcare facility (2.48), which had a slightly lower overall mean score in comparison (Table 4). In contrast, Nepal's healthcare facility (2.12) and Maldives' healthcare facility (1.94) had comparatively lower overall mean scores of the establishment level of strategic objectives, indicating greater opportunities for improvement (Table 4). The total mean score of the establishment level of strategic objectives for all 8 countries' healthcare facilities was 2.99, with none of the healthcare facilities' ratings exceeding 4.0 (Table 4).

Several differences were observed among different healthcare facilities of Asia-Pacific, with notable trends in the differences of the maturity of the establishment of patient safety practices between LMICs and economically developed countries. The healthcare facilities in Nepal and Indonesia (both LMICs), generally exhibited low mean scores across all 7 strategic objectives, suggesting a greater potential for improvement of patient safety practices in these institutions.[4] In contrast, healthcare facilities from Sri Lanka and India (also LMICs) demonstrated a moderate level of established patient safety practices across all strategic objectives, when compared to the other LMICs.[4] Economically developed countries like Singapore, South Korea, and Malaysia have shown higher overall mean scores across all strategic objectives, reflecting higher level of establishment of patient safety practices in these regions. An exception is the Maldives, which has the lowest mean scores across all strategic objectives, even though it is classified as an UMIC country due to its tourism-driven economy. The country's dispersed geography also presents challenges in establishing and maintaining consistent patient safety practices.[12]

The study revealed variations in the combined mean scores of the establishment level of healthcare centers across all countries for the 7 strategic objectives of the GPSAP Framework. Strategic Objective 1 - Policies to eliminate avoidable harm in health care, Strategic Objective 2 - High-reliability systems, and Strategic Objective 3 - Safety of clinical processes, exhibited relatively higher combined mean scores for healthcare facilities across countries, while Strategic Objective 4 - Patient and family engagement, Strategic Objective 5 - Health worker education, skills and safety, SO6 -

Table 2 Self-rated survey responses of patient safety leaders from 15 healthcare facilities in Asia-Pacific region - By strategic objectives

GPSAP 7x5 Matrix Strategic Objectives	Maldives	Nepal	Indonesia	Sri Lanka 1	Sri Lanka 2	Sri Lanka 3	India	South Korea	Malaysia	Singapore 1	Singapore 2	Singapore 3	Singapore 4	Singapore 5	Singapore 6
Overall average of all strategies	1.94	2.12	2.48	3.51	2.77	2.97	3.20	3.56	3.66	4.00	3.43	3.66	4.09	3.29	4.60
1) Policies to eliminate avoidable harm in healthcare	2.00	2.00	2.80	3.60	2.80	3.60	3.60	4.00	3.80	4.20	3.40	4.00	4.00	3.20	5.00
2) High-reliability systems	2.20	2.60	2.60	3.80	3.00	4.20	3.00	4.00	3.80	4.60	3.20	4.00	4.20	4.00	5.00
3) Safety of clinical processes	2.40	2.75	3.20	4.00	3.80	3.00	3.00	3.80	4.00	4.00	4.00	4.40	4.80	4.00	5.00
4) Patient and family engagement	1.60	2.20	2.50	3.00	2.20	2.20	3.80	2.40	2.80	3.00	2.60	2.40	4.00	2.80	3.40
5) Health worker education, skills and safety	1.40	1.40	2.00	3.60	2.60	3.60	3.00	3.80	4.20	4.20	4.00	3.80	4.40	3.20	4.20
6) Information, research and risk management	2.00	2.00	2.40	3.20	2.40	2.20	3.00	4.60	3.00	4.00	3.40	3.80	3.40	2.80	4.60
7) Synergy, partnership and solidarity	2.00	2.00	1.75	3.40	2.60	2.00	3.00	2.40	4.00	4.00	3.40	3.20	3.80	3.00	5.00

Legend

- Strongly established with good practices
- Fully established
- Moderately established
- Minimally established
- Not established

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Table 3 Self-rated survey responses of patient safety leaders from 15 healthcare facilities in Asia-Pacific region - By strategies

GPSAP 7x5 Matrix Strategic Objectives	Maldives	Nepal	Indonesia	Sri Lanka 1	Sri Lanka 2	Sri Lanka 3	India	South Korea	Malaysia	Singapore 1	Singapore 2	Singapore 3	Singapore 4	Singapore 5	Singapore 6
Overall average of all strategies	**1.94**	**2.12**	**2.48**	**3.51**	**2.77**	**2.97**	**3.20**	**3.56**	**3.66**	**4.00**	**3.43**	**3.66**	**4.09**	**3.29**	**4.60**
Strategies															
1.1) Patient safety policy, strategy and implementation framework	2.0	2.0	3.0	4.0	3.0	3.0	3.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0
1.2) Resource mobilization and allocation	2.0	2.0	3.0	3.0	2.0	3.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0
1.3) Protective legislative measures	2.0	2.0	3.0	3.0	2.0	4.0	4.0	5.0	3.0	4.0	4.0	5.0	5.0	4.0	5.0
1.4) Safety standards, regulation and accreditation	2.0	2.0	4.0	3.0	3.0	4.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	4.0	5.0
1.5) World Patient Safety Day and global patient safety challenges	2.0	2.0	1.0	5.0	4.0	4.0	3.0	2.0	4.0	4.0	2.0	2.0	2.0	1.0	5.0
2.1) Transparency, openness and no blame culture	2.0	2.0	3.0	3.0	2.0	4.0	3.0	4.0	3.0	5.0	3.0	3.0	5.0	4.0	5.0
2.2) Good governance for the health care system	2.0	3.0	4.0	4.0	3.0	4.0	3.0	N/A	4.0	5.0	3.0	4.0	5.0	4.0	5.0
2.3) Leadership capacity for clinical and managerial functions	2.0	3.0	2.0	5.0	4.0	5.0	3.0	3.0	4.0	5.0	3.0	4.0	4.0	4.0	5.0
2.4) Human factors/ergonomics for health systems resilience	2.0	3.0	2.0	3.0	3.0	4.0	3.0	5.0	4.0	4.0	3.0	4.0	3.0	3.0	5.0
2.5) Patient safety in emergencies and settings of extreme adversity	3.0	2.0	2.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	5.0	4.0	5.0	5.0
3.1) Safety of risk-prone clinical procedures	3.0	3.0	4.0	4.0	4.0	3.0	3.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0
3.2) Global Patient Safety Challenge: Medication without harm	2.0	N/A	1.0	4.0	4.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0
3.3) Infection prevention and control & antimicrobial resistance	2.0	3.0	4.0	4.0	4.0	3.0	3.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0
3.4) Safety of medical devices, medicines, blood and vaccines	3.0	3.0	4.0	5.0	4.0	3.0	3.0	5.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0
3.5) Patient safety in primary care and transitions of care	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0
4.1) Co-development of policies and programmes with patients	1.0	2.0	N/A	2.0	2.0	2.0	4.0	2.0	2.0	3.0	2.0	2.0	4.0	2.0	3.0
4.2) Learning from patient experience for safety improvement	2.0	2.0	3.0	3.0	2.0	3.0	5.0	3.0	3.0	3.0	3.0	2.0	4.0	3.0	3.0
4.3) Patient advocates and patient safety champions	1.0	2.0	1.0	3.0	1.0	1.0	3.0	2.0	3.0	2.0	2.0	2.0	4.0	2.0	3.0
4.4) Patient safety incident disclosure to victims	2.0	2.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	3.0	5.0
4.5) Information and education to patients and families	2.0	3.0	4.0	4.0	4.0	2.0	4.0	2.0	3.0	4.0	3.0	3.0	4.0	4.0	3.0
5.1) Patient safety in professional education and training	2.0	2.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0
5.2) Centres of excellence for patient safety education and training	1.0	1.0	1.0	5.0	4.0	3.0	3.0	3.0	4.0	4.0	4.0	3.0	5.0	4.0	5.0
5.3) Patient safety competencies as regulatory requirements	1.0	1.0	1.0	3.0	2.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	2.0	3.0
5.4) Linking patient safety with appraisal system of health workers	1.0	1.0	1.0	2.0	1.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0	2.0	3.0
5.5) Safe working environment for health workers	2.0	2.0	3.0	4.0	3.0	4.0	3.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0	5.0
6.1) Patient safety incident reporting and learning systems	3.0	1.0	4.0	3.0	3.0	4.0	3.0	5.0	4.0	4.0	3.0	4.0	5.0	3.0	5.0
6.2) Patient safety information systems	2.0	2.0	3.0	3.0	1.0	3.0	3.0	5.0	2.0	4.0	4.0	4.0	3.0	3.0	5.0
6.3) Patient safety surveillance systems	2.0	3.0	3.0	3.0	2.0	2.0	3.0	5.0	4.0	4.0	4.0	3.0	3.0	3.0	5.0
6.4) Patient safety research programmes	1.0	2.0	1.0	3.0	3.0	1.0	3.0	4.0	3.0	4.0	3.0	3.0	3.0	2.0	3.0
6.5) Digital technology for patient safety	2.0	2.0	1.0	4.0	3.0	1.0	3.0	4.0	2.0	4.0	3.0	5.0	3.0	3.0	5.0
7.1) Stakeholders engagement	2.0	2.0	N/A	4.0	3.0	3.0	3.0	2.0	4.0	4.0	4.0	3.0	1.0	2.0	5.0
7.2) Common understanding and shared commitment	2.0	2.0	4.0	3.0	3.0	3.0	3.0	1.0	4.0	4.0	3.0	2.0	5.0	3.0	5.0
7.3) Patient safety networks and collaboration	2.0	2.0	1.0	4.0	2.0	2.0	3.0	1.0	4.0	4.0	4.0	4.0	5.0	4.0	5.0
7.4) Cross geographical and multisectoral initiatives for patient safety	2.0	2.0	1.0	3.0	3.0	1.0	3.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	5.0
7.5) Alignment with technical programmes and initiatives	2.0	2.0	1.0	3.0	2.0	1.0	3.0	4.0	4.0	4.0	3.0	4.0	5.0	3.0	5.0

Legend

- Strongly established with good practices
- Fully established
- Moderately established
- Minimally established
- Not established
- N/A — Not applicable or I don't know

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Table 4 Consolidated self-rated survey responses of patient safety leaders from healthcare facilities of 8 countries in Asia-Pacific region - By strategic objectives

GPSAP 7x5 Matrix Strategic Objectives	Maldives	Nepal	Indonesia	Sri Lanka	India	South Korea	Malaysia	Singapore	Total Average Score
Overall average of all strategies	1.94	2.12	2.48	3.09	3.20	3.56	3.66	3.84	2.99
1) Policies to eliminate avoidable harm in healthcare	2.00	2.00	2.80	3.33	3.60	4.00	3.80	3.97	3.19
2) High-reliability systems	2.20	2.60	2.60	3.67	3.00	4.00	3.80	4.17	3.24
3) Safety of clinical processes	2.40	2.75	3.20	3.60	3.00	3.80	4.00	4.37	3.41
4) Patient and family engagement	1.60	2.20	2.50	2.47	3.80	2.40	2.80	3.03	2.60
5) Health worker education, skills and safety	1.40	1.40	2.00	3.27	3.00	3.80	4.20	3.97	2.88
6) Information, research and risk management	2.00	2.00	2.40	2.60	3.00	4.60	3.00	3.67	2.91
7) Synergy, partnership and solidarity	2.00	2.00	1.75	2.67	3.00	2.40	4.00	3.73	2.72

Legend

- Strongly established with good practices
- Fully established
- Moderately established
- Minimally established
- Not established

Information, research and risk management and SO7 - Synergy, partnership and solidarity, had lower mean scores in comparison. Strategic Objective 3 (3.41) recorded the highest combined mean score, followed by Strategic Objective 2 (3.24) and Strategic Objective 1 (3.19), all above the 3.0 rating threshold (Table 4). Conversely, Strategic Objective 6 (2.91), Strategic Objective 5 (2.88), Strategic Objective 7 (2.72), Strategic Objective 4 (2.60) fell below the 3.0 rating threshold (Table 4). Regardless of a country's economic status, Strategic Objective 4 indicated varying degrees of challenge in establishing good practices across all surveyed healthcare facilities in the Asia-Pacific region (Table 4).

Of the 35 patient safety strategies in the GPSAP Framework, Strategy 3.4 - Safety of medical devices, medicines blood, and vaccines and Strategy 3.3 - Infection prevention and control and antimicrobial resistance, received comparatively higher mean scores of establishment level at 3.8 and 3.5, respectively (Table 5). However, none of the strategies were at or above 4.0, indicating that patient safety practices across some healthcare facilities in the Asia-Pacific region were not fully established.

Among the comparatively lower mean scores of establishment level for the 35 patient safety strategies, Strategy 4.3 - Patient safety advocates and patient safety champions was the lowest at 2.0. Other strategies, including Strategy 4.1 - Co-development of policies and programs with patients, Strategy 5.3 - Patient safety competencies as regulatory requirements, and Strategy 7.3 - Patient safety networks and collaboration, also had lower mean scores of 2.2, 2.4, and 2.5,

Table 5 Consolidated self-rated survey responses of patient safety leaders from healthcare facilities of 8 countries in Asia-Pacific region - By strategies

GPSAP 7x5 Matrix Strategic Objectives	Maldives	Nepal	Indonesia	Sri Lanka	India	South Korea	Malaysia	Singapore	Total Average Score
Overall average of all strategies	1.94	2.12	2.48	3.09	3.20	3.56	3.66	3.84	2.99
Strategies									
1.1) Patient safety policy, strategy and implementation framework	2.0	2.0	3.0	3.3	3.0	5.0	4.0	4.2	3.3
1.2) Resource mobilization and allocation	2.0	2.0	3.0	2.7	3.0	4.0	4.0	3.8	3.1
1.3) Protective legislative measures	2.0	2.0	3.0	3.0	4.0	5.0	3.0	4.5	3.3
1.4) Safety standards, regulation and accreditation	2.0	2.0	4.0	3.3	5.0	4.0	4.0	4.7	3.6
1.5) World Patient Safety Day and global patient safety challenges	2.0	2.0	1.0	4.3	3.0	2.0	4.0	2.7	2.6
2.1) Transparency, openness and no blame culture	2.0	2.0	3.0	3.0	3.0	4.0	3.0	4.2	3.0
2.2) Good governance for the health care system	2.0	3.0	4.0	3.7	3.0	N/A	4.0	4.3	3.4
2.3) Leadership capacity for clinical and managerial functions	2.0	3.0	2.0	4.7	3.0	3.0	4.0	4.2	3.2
2.4) Human factors/ergonomics for health systems resilience	2.0	3.0	2.0	3.3	3.0	5.0	4.0	3.7	3.3
2.5) Patient safety in emergencies and settings of extreme adversity	3.0	2.0	2.0	3.7	3.0	4.0	4.0	4.5	3.3
3.1) Safety of risk-prone clinical procedures	3.0	3.0	4.0	3.7	3.0	4.0	4.0	4.5	3.6
3.2) Global Patient Safety Challenge: Medication without harm	2.0	N/A	1.0	3.7	3.0	3.0	4.0	4.2	3.0
3.3) Infection prevention and control & antimicrobial resistance	2.0	3.0	4.0	3.7	3.0	4.0	4.0	4.7	3.5
3.4) Safety of medical devices, medicines, blood and vaccines	3.0	3.0	4.0	4.0	3.0	5.0	4.0	4.5	3.8
3.5) Patient safety in primary care and transitions of care	2.0	2.0	3.0	3.0	3.0	3.0	4.0	4.0	3.0
4.1) Co-development of policies and programmes with patients	1.0	2.0	N/A	2.0	4.0	2.0	2.0	2.7	2.2
4.2) Learning from patient experience for safety improvement	2.0	2.0	3.0	2.7	5.0	3.0	3.0	3.0	3.0
4.3) Patient advocates and patient safety champions	1.0	2.0	1.0	1.7	3.0	2.0	3.0	2.5	2.0
4.4) Patient safety incident disclosure to victims	2.0	2.0	2.0	2.7	3.0	3.0	3.0	3.5	2.6
4.5) Information and education to patients and families	2.0	3.0	4.0	3.3	4.0	2.0	3.0	3.5	3.1
5.1) Patient safety in professional education and training	2.0	2.0	4.0	3.7	3.0	4.0	4.0	4.5	3.4
5.2) Centres of excellence for patient safety education and training	1.0	1.0	1.0	4.0	3.0	3.0	4.0	4.2	2.6
5.3) Patient safety competencies as regulatory requirements	1.0	1.0	1.0	2.7	3.0	3.0	4.0	3.5	2.4
5.4) Linking patient safety with appraisal system of health workers	1.0	1.0	1.0	2.3	3.0	4.0	4.0	3.3	2.5
5.5) Safe working environment for health workers	2.0	2.0	3.0	3.7	3.0	5.0	5.0	4.3	3.5
6.1) Patient safety incident reporting and learning systems	3.0	1.0	4.0	3.3	3.0	5.0	4.0	4.0	3.4
6.2) Patient safety information systems	2.0	2.0	3.0	2.3	3.0	5.0	2.0	3.8	2.9
6.3) Patient safety surveillance systems	2.0	3.0	3.0	2.3	3.0	5.0	4.0	3.7	3.3
6.4) Patient safety research programmes	1.0	2.0	1.0	2.3	3.0	4.0	3.0	3.0	2.4
6.5) Digital technology for patient safety	2.0	2.0	1.0	2.7	3.0	4.0	2.0	3.8	2.6
7.1) Stakeholders engagement	2.0	2.0	N/A	3.3	3.0	2.0	4.0	3.2	2.8
7.2) Common understanding and shared commitment	2.0	2.0	4.0	3.0	3.0	1.0	4.0	3.7	2.8
7.3) Patient safety networks and collaboration	2.0	2.0	1.0	2.7	3.0	1.0	4.0	4.3	2.5
7.4) Cross geographical and multisectoral initiatives for patient safety	2.0	2.0	1.0	2.3	3.0	4.0	4.0	3.5	2.7
7.5) Alignment with technical programmes and initiatives	2.0	2.0	1.0	2.0	3.0	4.0	4.0	4.0	2.8

Legend

	Strongly established with good practices
	Fully established
	Moderately established
	Minimally established
	Not established
N/A	Not applicable or I don't know

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respectively (Table 5). A summary chart of the each of the 7 strategic objectives, strategic objectives of the countries, and individual strategies was created. This served as a comprehensive chart of each patient safety strategies according to each of the 7 strategic objectives (Table 4 and Table 5).

The good and sub-optimal patient safety practices shared by survey respondents were used to support the numerical ratings of their patient safety strategies for each of the 7 strategic objectives outlined in the GPSAP Framework. The information collected was then collated according to the strategic objectives and compiled in a reformulated context. At the end of the study, 13 out of 15 participating healthcare facilities across 8 countries provided their qualitative examples of good and sub-optimal practices. We collected 29 examples of self-selected patient safety practices based on the 35 patient safety strategies of GPSAP Framework. Similarly, we collected 29 examples of self-selected sub-optimal examples based on the 35 patient safety strategies.

All 58 examples of qualitative descriptions for different strategic objectives were archived in supplementary appendices for further review (Appendixes B and C). While healthcare facilities' names were not revealed for confidentiality purposes, their country affiliation and commentary of their good and sub-optimal patient safety practices were shared. Overall, the qualitative descriptions of good and sub-optimal patient safety practices by various healthcare facilities across Asia-Pacific provided various successful and sub-optimal examples of patient safety practices.

Discussion

This study highlights the varying levels of establishment level of patient safety practices among healthcare facilities across the Asia-Pacific region, revealing valuable opportunities for cross-learning, collaboration and enhancement. Healthcare facilities with lower overall mean scores (eg, Maldives: 1.94) exhibited a lower level of maturity in establishing patient safety practices, highlighting greater opportunities for improvement in these areas (Table 5). By channeling resources and support toward these facilities, improvements can be fostered that will ultimately strengthen the overall safety culture. Conversely, healthcare facilities with higher overall mean scores (eg, Singapore: 3.84) demonstrated a greater level of maturity in establishing patient safety practices, indicating a greater capacity to share good practices (Table 5). The results of this study can help to establish a baseline for understanding the landscape of both good and sub-optimal patient safety practices within healthcare facilities across the Asia-Pacific. This baseline data serves to inform stakeholders of patient safety practices and encourages healthcare facilities in the region to share effective strategies, promoting equity in patient safety standards.

This study demonstrated that healthcare facilities in LMICs like Nepal (2.12) and Indonesia (2.48) present valuable opportunities for improvement in establishing effective patient safety practices across the 7 strategic objectives when compared to economically developed countries, with the exception for the Maldives (1.94), which is classified as an UMIC.[4] The assessment of Maldives' healthcare facility offered a unique perspective, showcasing the diverse landscape of patient safety practices and emphasize the need for a detailed understanding of the factors that impact performance across different countries in the region. While all strategic objective mean scores for the aforementioned countries were below 3.0, Indonesia healthcare facility achieved a notable score (3.20) for Strategic Objective 3 - Safety of clinical processes (Table 4). Strategic Objective 5 - Health worker education, skills and safety showed particularly low mean scores among the healthcare facilities of Nepal (1.40), Indonesia (2.00), and the Maldives (1.40) within the 7 strategic objectives (Table 4). Additionally, healthcare facilities of the LMIC regions rated Strategies 5.2 - Centres of excellence for patient safety education and training, 5.3 - Patient safety competencies as regulatory requirements, and 5.4 - Linking patient safety with appraisal system of health workers at 1.0, indicating the need to focus on patient safety practices in these strategies (Table 5). Based on the quantitative data from this study, it appears that the healthcare facilities in the Asian LMIC regions have only minimal implementation of almost all the patient safety strategies recommended for establishment by the WHO. The findings of this study align with existing literature which emphasizes the importance of LMICs shifting their focus towards enhancing patient safety standards.[13,14] This is necessary to promote awareness and facilitate equitable care for all patients globally.

Asian LMICs face challenges such as limited access to medical equipment, inadequate health infrastructure, insufficient health training, and a shortage of healthcare workers due to low incentives.[15,16] In 2015, the Regional Strategy for Patient Safety in the WHO South-East Asia Region report (2016–2025) highlighted patient safety challenges

in Southeast Asian countries including Maldives, Nepal, and Indonesia. These challenges included 1) limited access to health infrastructure, medical equipment, drugs, waste management systems, clean water, and sanitation; 2) minimal establishment of safety culture for both patients and health providers; 3) lack of patient-centered empowerment; 4) lack of transparency in cases of adverse events; 5) increased distrust in doctor-patient relationship; 6) shortage of skilled healthcare workers; 7) Regulation of medical-based private sector growth.[17] WHO has partnered with these countries to implement long-term strategy building to strengthen health systems and infrastructure to enhance the aforementioned patient safety challenges.[17]

Our study shows that, although there are efforts to enhance patient safety in these countries, healthcare facilities across the Asian LMIC regions still require more efforts and resources in implementing good patient safety practices when compared with economically developed Asian regions. Additional investigation and the extensive augmentation of data collection regarding patient safety practices are imperative to serve as guide to improving the maturity of patient safety practices in LMIC countries. It is crucial to prioritize the implementation of optimal patient safety practices and build more resilient healthcare systems in these countries' healthcare centers to raise global quality of patient safety standards.

Healthcare facilities from high-income countries like Singapore (3.84) and South Korea (3.56) showed relatively higher mean scores of the establishment level of strategic objectives and strategies compared to LMICs (Table 4 and Table 5). The strategic objective mean scores of Singaporean healthcare facilities were all above 3.0, indicating that either all patient safety strategies were established to some extent, or none were minimally established. The Global Patient Safety Report 2024 featured several good practices from Singapore, such as Strategy 2.1 - Transparency, openness and no blame culture (4.2), Strategy 1.4 - Safety standards, regulation and accreditation (4.7) and Strategy 7.3 - Patient safety networks and collaboration (4.3) (Table 5).[18] In Strategy 2.1, a contextualized psychological safe program, TeamSPEAK^{TM}, was introduced to empower staff with the necessary strategies and tools to speak up on unsafe acts or situations, thereby promoting a culture of open communication and accountability. For Strategy 1.4, Singapore adopted a continuous improvement standard assessment program, Ensure Safer Systems, as a national guiding framework to enhance patient safety and improve healthcare systems across various healthcare facilities, referencing international standards or bodies to ensure alignment with best practices and continuous improvement in patient safety measures. For Strategy 7.3, focusing on patient safety networks and collaboration, active patient engagement is essential for cultivating a robust patient safety culture and fostering innovation in quality care. The largest public healthcare cluster in Singapore established the SingHealth Patient Advocacy Network (SPAN) in 2017, an organizational patient-led network for patients, caregivers and healthcare professionals to exchange ideas, best practices and experiences, with the shared goal of enhancing patient safety through collaborative efforts.[19] This is an ongoing effort with areas for opportunities as evidenced by the lower Strategic Objective 4 - Patient and family engagement with mean score of 3.03 compared to other strategic objective mean scores. Strategies 4.1 - Co-development of policies and programmes with patients (2.70) and 4.3 - Patient advocates and patient safety champions (2.5) were notably low, suggesting that there is insufficient establishment of practices in engaging with patients in the co-creation of health policies and programs, and in appointing advocates and champions for patient safety (Table 5). Qualitative feedback also suggested a need for further research and attention towards strengthening patient–provider relationships and empowering patients. Overall, Singaporean healthcare facilities exhibited higher maturity in patient safety practices compared to other Asia-Pacific healthcare facilities, but there were still some areas of established patient safety practices that needed improvement.

Though the overall mean scores of the establishment level of all strategic objectives were comparable to Singaporean healthcare facilities', South Korean healthcare facilities showed strengths in some strategic objectives while suggesting areas needed for improvement in other strategic objectives. Particularly, Strategic Objective 6 - Information, research and risk management (4.60) had the highest mean score, with Strategic Objective 1 - Policies to eliminate avoidable harm in health care, Strategic Objective 2 - High-reliability systems, Strategic Objective 3 - Safety of clinical processes and Strategic Objective 5 - Health worker education, skills and safety indicating several fully established patient safety practices (Table 4). In contrast, Strategic Objective 4 - Patient and family engagement (2.40) and Strategic Objective 7 - Synergy, partnership and solidarity (2.40) were drastically lower in its mean scores, suggesting not much emphasis on the maturity of patient safety practices related to hospital's engagement with patient and families, along with synergistic

partnership and solidarity was established to maintain optimal practice standards (Table 4). The South Korean healthcare facility specifically indicated the absence of establishment of Strategies 7.2 - Common understanding and shared commitment and 7.3 - Patient safety networks and collaboration, underscoring the urgent need to prioritize a shared commitment to patient safety and to broaden patient safety networks by engaging both internal and external stakeholders (Table 5).

Several studies indicate high burnout rates among health staff of HICs like South Korea and Singapore, a critical factor to diminishing patient safety.[20–22] Sustained burnout rate among health staff can deteriorate solidarity among the team. Lack of synergistic and multidisciplinary teams for providing integrated care can severely diminish healthcare providers' meaning in providing care.[23] Encouraging collaborative care and participating in patient safety networks for the South Korean healthcare facility may be crucial to enhancing its area of need in patient safety.

Though an upper-middle country according to the World Bank, Malaysia and its healthcare facility (3.66) also indicated comparatively higher mean scores of the establishment level of strategic objectives for patient safety practice compared to the strategic objective mean scores of LMIC countries.[4] Particularly, Strategic Objective 3 - Safety of clinical processes (4.0), Strategic Objective 5 - Health worker education, skills and safety (4.20), and Strategic Objective 7 - Synergy, partnership and solidarity (4.0) showed fully established patient safety practices, suggesting Malaysian healthcare facility's maturity in establishing secure clinical procedures, providing patient safety training for healthcare professionals, and fostering cooperative partnerships to improve patient safety standards (Table 4). On the contrary, Strategic Objective 4 - Patient and family engagement (2.80) had a relatively lower mean score, similar to most healthcare facilities in the Asia-Pacific region. This suggests that patient and family engagement is the least developed aspect of patient safety practices. Similar to other healthcare facilities, Strategy 4.1 - Co-development of policies and programmes with patients (2.0) was rated low, indicating that regardless of their economic status, they face challenges in involving patients in the co-creation of policies and programs within their institutions (Table 5).

The health outcomes of a population are linked to factors such as increased equity, a more inclusive social welfare system, greater political engagement and education, availability of employment, housing, access to safe water and a clean environment.[24] High-income countries are more likely to offer such goods to a larger number of people than LMICs.[25] Our study revealed that economically developed Asian countries were likely to have a higher level of maturity in implementing effective patient safety practices, highlighting the importance of transferring feasible best practices to LMICs to address their specific areas of improvement. Further investigation is required to contextualize the enhancement of patient safety measures in LMICs and to identify methods for promoting collaboration among economically diverse Asian nations in sharing effective patient safety practices.

Overall, Strategic Objective 1 - Policies to eliminate avoidable harm in health care (3.19), Strategic Objective 2 - High-reliability systems (3.24), and Strategic Objective 3 - Safety of clinical processes (3.41) had higher mean scores compared to Strategic Objective 4 - Patient and family engagement (2.60), Strategic Objective 5 - Health worker education, skills and safety (2.88), Strategic Objective 6 - Information, research and risk management (2.91), and Strategic Objective 7 - Synergy, partnership and solidarity (2.72), expressing variations in the level of development of existing patient safety measures, as well as the prioritization of specific patient safety practices over others, throughout the Asia-Pacific region (Table 4). Almost all healthcare facilities indicated comparatively less established patient safety practices in Strategic Objective 4, signifying their reluctance to broaden the membership of decision-making teams to patient groups in a bustling organization with competing priorities and agendas. This finding aligns with the lack of patient involvement in the process of care provision for Asia-Pacific countries regardless of economic status.[26,27]

Among all the healthcare facilities that participated in the survey, Strategy 4.3 - Patient advocates and patient safety champions (2.0) had the lowest mean score of establishment level among the 35 patient safety strategies (Table 5). This indicates that there is a lack of patient safety advocates and champions in these facilities. Despite being extensively promoted, patient safety champions and advocates are not sufficiently developed and represented in healthcare services.[27] As literature has pointed the crucial role of champions in effectively implementing patient safety practices, it is imperative for all healthcare facilities in the Asia-Pacific region to address this need.[28,29]

Our study results have limitations in terms of generalizability. The data we used to assess patient safety practices across Asia-Pacific was based on perception of patient safety leaders of 15 healthcare facilities from 8 countries, making

it less representative for the Asia-Pacific region. The results from 6 Singaporean healthcare facilities, which provided survey responses that were combined to obtain the overall mean score for the establishment of strategic objectives, as well as the mean score for each strategic objective and strategy, may be more representative of patient safety practices compared to data from healthcare centers in other countries.

In addition, healthcare facilities included in the survey were selected participants for GALLOPS program which in general would exhibit greater implementation of patient safety measures compared to the overall population of healthcare facilities in their respective countries. Such limitations may overestimate the overall standard of patient safety with respective countries. However, we have noticed similar findings across all six Singaporean hospitals' responses, showing consistency of high standards of patient safety practices for Singapore. Though not fully representative, our current dataset helps to provide insights into good and sub-optimal practices in survey-participating healthcare facilities of Asia-Pacific countries' maturity in patient safety practices establishment.

As the existing data on patient safety practices in Asia-Pacific healthcare facilities is limited due to self-assessed responses from a small number of facilities, there is a need for more comprehensive data from a broader range of healthcare facilities across different regions within each participating country. This highlights two potential implications for further research. Firstly, more efforts should be made to invite participation from a wider range of health facilities in each country to provide information on both good and sub-optimal practices, which would result in a more comprehensive understanding of the current state of patient safety practices' establishment in the Asia-Pacific region. Secondly, expanding data collection process to more Asia-Pacific countries would continue to strengthen generalizability of our patient safety data repository. Collecting patient safety data from diverse regions in the Asia-Pacific could facilitate more detailed analyses of patient safety practices based on factors such as geographic location, size of healthcare facilities centers, and its demographic's economic conditions.

Conclusion

Our study revealed perceived notable differences in the maturity of establishment of patient safety practices and culture across healthcare facilities of Asian countries. Our quantitative assessment suggests that Asian LMIC healthcare facilities are less established in their patient safety practices compared to the economically developed Asian countries. Based on our qualitative descriptions, we identified instances of effective and sub-optimal patient safety measures that are either present or absent in the Asia-Pacific region. This study helped form a baseline of good and sub-optimal patient safety practices in Asia-Pacific, though more research and data-collection are needed to ensure more representation of healthcare facilities is covered across its countries. Strengthening this baseline will help to serve as a reference point for a comprehensive overview for evaluation.[30]

To "Err is Human" is not an overstatement, and there needs robust sharing of good practices for healthcare facilities across Asia-Pacific.[31] To enhance patient safety standards across the Asia-Pacific region, sharing platforms like GALLOPS can facilitate the exchange of best practices and promote collaboration among patient safety leads and healthcare facilities. By fostering stronger relationships between healthcare facilities across national boundaries, the prioritization of effective patient safety measures will become more streamlined, resulting in more equitable and improved patient safety practices throughout the region, irrespective of economic status.

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Disclosure

The authors report no conflicts of interest in this work.

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