

Research Letters

Cite this article: Krishnasamy K, Zakaria MI, Tan MP, Chinna K, Narayanan V, Hasnan N. Effects of COVID-19 on patient safety culture among staff at a teaching hospital in Malaysia. *Disaster Med Public Health Prep.* 17(e494), 1–3. doi: <https://doi.org/10.1017/dmp.2023.141>.


Keywords:

Safety culture; Safety Attitudes Questionnaire; COVID-19; Healthcare Workers

Corresponding author:

Mohd Idzwan Zakaria;
Email: idezwan@ummc.edu.my.

Effects of COVID-19 on Patient Safety Culture among Staff at a Teaching Hospital in Malaysia

Karthikayini Krishnasamy PhD¹ , Mohd Idzwan Zakaria MEmMed²,
Maw Pin Tan MD^{3,4,5}, Karuthan Chinna PhD⁶, Vairavan Narayanan FRCS⁷ and
Nazirah Hasnan PhD⁸

¹Department of Nursing, Universiti Malaya Medical Centre, Kuala Lumpur, Malaysia; ²Academic Unit Trauma and Emergency, Faculty of Medicine, Universiti Malaya, Kuala Lumpur, Malaysia; ³Ageing and Age-Associated Disorders Research Group, Department of Medicine, Faculty of Medicine, Universiti Malaya, Kuala Lumpur, Malaysia; ⁴Centre for Innovations in Medicine Engineering, Universiti Malaya, Kuala Lumpur, Malaysia; ⁵Department of Medical Sciences, Faculty of Healthcare and Medical Sciences, Sunway University, Bandar Sunway, Malaysia; ⁶Faculty of Business and Management, UCSI University, Selangor, Malaysia; ⁷Division of Neurosurgery, Department of Surgery, Faculty of Medicine, University Malaya, Kuala Lumpur, Malaysia and ⁸Department of Rehabilitation Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

Safety culture has been defined as “the product of individual and collective beliefs, values, attitudes, perceptions, competencies, and patterns of behavior of an organization’s commitment to quality and patient safety”¹ by the Joint Commission, 2017. The Coronavirus disease 2019 (COVID-19) which emerged in Wuhan, China, in December 2019, was subsequently declared a global pandemic by the World Health Organization led to unprecedented disruption to health-care systems worldwide.² Shortages in supplies of personal protective equipment, particularly at the beginning of the pandemic have in fact led to health-care workers (HCWs) feeling unsupported and exposed to unnecessary dangers due to supply chain and raw material issues. The International Council of Nurses³ reported in 2020 that more than 260 nurses worldwide succumbed to COVID-19, raising the crucial issue of HCWs risking their lives to save the lives of others. This study was conducted to determine the potential changes in patient safety culture during the COVID-19 pandemic compared with the prepandemic levels at a tertiary hospital in a middle-income country in Southeast Asia.

Methods

Study Setting and Sample Population

A survey-based study was carried out among HCWs at a 1300-bed teaching hospital in Kuala Lumpur, Malaysia. Eligible participants comprising all HCWs within the teaching hospital were approached in this study with self-administered online questionnaire during the COVID-19 pandemic, with available historical data collected the same way as a baseline in 2018.

Study Instrument

Demographic data with alongside information on vaccination, redeployment, and COVID-19 infection were collected alongside the Safety Attitudes Questionnaire (SAQ) to evaluate patient safety culture. The questionnaire was embedded within the staff portal in both the English and Bahasa Melayu languages as described in the previous study.⁴

The study was approved by the Ethics Committee of University Malaya Medical Centre (ID: 2018921-6702), informed consent was obtained, and participants could leave the study at any stage. Participation in this study was voluntary.

SAQ

The SAQ is a 36-item questionnaire assessing perceptions of safety across 6 domains: safety climate, teamwork, stress recognition, perception of management, working conditions, and job satisfaction.⁵ Scores of greater than 60% were considered as a satisfactory level of safety culture. The percentage of respondents who “agree slightly” or “agree strongly” for each of the items within a factor are charted as the positive percentage for each SAQ factor. The psychometric properties of the SAQ have been assessed across different countries, contexts, and settings with acceptable Cronbach’s α and internal consistency values. Construct validity had also exhibited a satisfactory model fit.⁵ The positive percentage responses for each domain were calculated and benchmarked against the 60% positive percentage agreement.

Table 1. Percentage agreement scores by job category pre-pandemic and intra-pandemic survey waves

Domain	Total	Occupation				
		Doctors	Nurses	Allied health	Ward attendants	Support staff/others
Teamwork						
2018	67.0	65.6	68.3	65.2	62.0	60.00
2021	66.5	68.8	65.4	68.2	62.3	68.2
Safety climate						
2018	66.2	63.6	67.8	65.0	62.3	60.3
2021	66.7	66.5	66.5	67.7	64.1	68.0
Job satisfaction						
2018	72.3	66.1	72.5	70.1	67.2	64.1
2021	71.3	70.0	70.6	74.5	68.3	73.5
Stress recognition						
2018	58.4	64.8	52.7	56.1	52.0	52.3
2021	58.0	73.4	55.8	60.2	50.0	56.0
Unit management perception						
2018	64.2	61.4	62.6	63.4	62.3	60.0
2021	64.3	65.7	62.0	66.7	64.0	66.4
Hospital management perception						
2018	64.0	60.1	62.1	63.0	62.7	60.0
2021	63.7	62.2	61.6	66.2	63.8	66.6
Working conditions						
2018	63.0	57.2	62.1	61.1	60.3	57.1
2021	61.2	61.3	60.0	64.5	62.0	64.4

Note: 2018, pre-pandemic; 2021, intra-pandemic.

Results

Respondent Characteristics

A total of 3175 responses were obtained during the 2021 survey period, in comparison to 5274 received in 2018. Respondents were mostly of the nursing workforce, while doctors accounted for 440 (13.9%) in 2021. A total of 1485 (46.8%) respondents had to self-quarantine due to exposure with COVID-19; 1679 (52.9%) were tested with nasopharyngeal swabs polymerase chain reaction tests, which were the only tests recognized at the time; 225 (7.1%) had been diagnosed with COVID-19; 1000 (31.5%) were redeployed from general wards to COVID-19 wards or other clinical areas; and 3042 (95.8%) had been vaccinated for COVID-19.

Comparison of Domain Scores by Survey Waves

Percentage agreement scores were highest overall for job satisfaction 72.3% and 71.3%, followed by teamwork, 67.0%, and 66.5% for both 2018 and 2021. Perception of unit management (64.2 vs 64.3%), perception of hospital management (63.9 vs 63.7%), working conditions (62.9 vs 61.2%), and stress recognition (58.4 vs 59.0%) comprised the domains with the lowest domain scores in both 2018 and 2021. Stress recognition consistently scored below the acceptable agreement level of 60% for both survey waves. There was a significant difference in domain scores; shown in Table 1 comparing SAQ scores among professions between prepandemic and intra-pandemic scores.

Individuals who had been infected and received treatment for COVID-19 had significantly poorer perceptions of unit management and working condition domain scores. Individuals who were redeployed had higher domain scores. Overall, there were differences in individual domain scores for all participants who

had responded to both pre-pandemic (2018) and intra-pandemic (2021) surveys (Table 2).

Discussion

There were overall changes in patient safety culture evaluated using the SAQ during the COVID-19 pandemic compared with scores obtained from HCWs from the same teaching hospital 2 y before the onset of the COVID-19 pandemic. Redeployment appeared to be associated with improvements across 5 of the 7 SAQ domains.

These unprecedented pressures on hospital staff were expected to affect morale negatively with a high level of burnout reported by numerous sources.⁵ However, despite these potential challenges faced by HCWs, this study was not able to detect any overall reduction in patient safety attitude.⁶ Significant improvements were observed in the SAQ domain scores of the doctors and support staff, while nurses did not record any difference in domain scores between the pre-pandemic and intra-pandemic surveys for overall domains. The rationale underlying the lack of improvement in scores among nurses compared with other HCWs could be attributed to the higher baseline scores among nurses.⁴ However, it was possible that nurses had a lower level of autonomy during the pandemic as redeployment among doctors were carried on a voluntary basis, while nurses were more likely to have been assigned to COVID-19 wards.

With regard to those with COVID-19, initial policies were to admit all those with positive test results regardless of the severity of illness, although during the third wave, hospitals had become too congested and those with no or mild symptoms were allowed to self-quarantine at home if their homes were deemed suitable and they did not fall within the high-risk groups. While negative safety attitudes could have led to an increased risk of becoming close

Table 2. Results from paired comparison and factors that predict change in SAQ dimensions from 2018 to 2021

SAQ	Overall n=1860		Quarantined as close con- tacts (n=894)		Infected (n=125)		Redeployed (n=581)		Vaccinated (n=1778)	
	Change	P-Value	Change	P-Value	Change	P-Value	Change	P-Value	Change	P-Value
TW	8.60±17.31	<0.001	8.79±16.93	<0.001	8.58±15.88	<0.001	7.53±16.39	<0.001	8.72±17.16	<0.001
SC	9.96±16.84	<0.001	10.20±16.51	<0.001	10.70±14.83	<0.001	9.26±15.89	<0.001	10.13±16.61	<0.001
JS	14.48±22.77	<0.001	15.22±22.84	<0.001	15.27±20.29	<0.001	14.04±20.53	<0.001	14.71±22.49	<0.001
SR	8.03±24.54	<0.001	9.42±24.57	<0.001	11.34±24.05	<0.001	7.85±23.25	<0.001	8.08±24.17	<0.001
UM	15.86±18.30	<0.001	16.27±16.90	<0.001	15.07±16.68	<0.001	16.11±16.60	<0.001	15.96±18.02	<0.001
HM	10.67±17.58	<0.001	11.08±16.79	<0.001	9.83±16.06	<0.001	10.09±16.79	<0.001	10.84±17.35	<0.001
WC	11.04±18.38	<0.001	11.05±17.79	<0.001	8.89±17.16	<0.001	10.01±17.42	<0.001	11.20±18.21	<0.001

Abbreviations: HM, perceptions on hospital management; JS, job satisfaction; SC, safety climate; SR, stress recognition; TW, teamwork; UM, perceptions on unit management; WC, working conditions.

contacts as well as developing COVID-19, negative experiences were also more likely to lead to reduction in morale and poorer mental health, which then adversely affected safety attitudes.⁷

Conclusions

Patient safety culture appeared to improve overall among HCWs during the COVID-19 pandemic compared with scores obtained pre-pandemic, although stress recognition remained unsatisfactory since 2018. Redeployment was associated with improvements in patient safety culture. Future studies should evaluate the use of pandemic simulation training as an intervention to address safety culture.

Acknowledgments. The authors thank the management of the University of Malaya Medical Centre, University of Malaya, and all respondents for providing the necessary support to carry out this research.

Author contributions. K.K., M.I.Z., V.N., N.H. and M.P.T. were responsible for the study conception and design. K.K., M.P.T., and K.C. conducted data analysis. All authors have read and approved the final manuscript.

Funding. None.

Competing interests. The authors report no conflicts of interest.

References

1. Yates GR, Bernd DL, Sayles SM, et al. Building and sustaining a systemwide culture of safety. *Jt Comm J Qual Patient Saf.* 2005;31(12):684-689.
2. Leite H, Lindsay C, Kumar M. COVID-19 outbreak: implications on healthcare operations. *TQM J.* 2021;33(1):247-256.
3. Kenny P. 90,000 healthcare workers infected with COVID-19: ICN. Anadolu Ajansi; 2020.
4. Krishnasamy K, Tan MP, Zakaria MI. Interdisciplinary differences in patient safety culture within a teaching hospital in Southeast Asia. *Int J Clin Pract.* 2021;75(8):e14333.
5. Sexton JB, Helmreich RL, Neilands TB, et al. The Safety Attitudes Questionnaire: psychometric properties, benchmarking data, and emerging research. *BMC Health Serv Res.* 2006;6(1):44.
6. Zakaria MI, Remeli R, Shahamir MFA, et al. Assessment of burnout among emergency medicine healthcare workers in a teaching hospital in Malaysia during COVID-19 pandemic. *Hong Kong J Emerg Med.* 2021;28(4):254-259.
7. World Health Organization. Regional strategy for patient safety in the WHO South-East Asia Region (2016-2025). 2015. Accessed August 24, 2023. <https://apps.who.int/iris/handle/10665/205839>