

ORIGINAL ARTICLES

Preparedness for safety during COVID-19 pandemic among public hospitals in Vietnam

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ABSTRACT

Objectives: Hospitals at both central and local levels in Vietnam have had cross-infection of patients and healthcare workers especially during COVID-19 pandemic. Decision No. 3088/QĐ-BYT was issued by the Minister of Health (MOH) of Vietnam to promulgate the set of criteria for safe hospitals to prevent COVID-19 and other acute respiratory infections. This study aims to describe the implementation of criteria for safety to prevent COVID-19 among public hospitals in Vietnam in 2020.

Methods: A cross-sectional study, applied quantitative based on secondary data were extracted and analyzed from a recent survey of hospital safety conducted by MOH. Total of 1220 public hospitals were selected in this study. The study received ethics approval from the Hanoi Medical University.

Results: The proportion of public hospitals classified as “safe hospital” was 91.3%, “safe hospital with moderate level” was 7.8% and “unsafe hospital” was 0.9%. The rate of “safe hospital” was lowest in the ministerial hospital group (82.2%), followed by district hospital (89.9%) and regional hospitals (93.0%). The rate of “safe hospital” was highest in the central level group (96.1%), provincial hospital (94.2%) and specialized hospitals (93.1%).

Conclusions: Most hospitals in Vietnam had met the standards of safe hospitals according to Decision 3088/QĐ-BYT. This criteria was only one of the tools to help assess the ability of hospitals to prepare and respond to the COVID-19 pandemic. Ministry of Health should improve the criteria in Decision 3088/QĐ-BYT to be more suitable with the emerging new situation and threat of the pandemic and develop mechanisms and regulations that require hospitals to regularly report on disease preparation and response.

Keyword: Safety hospital, COVID-19, disease preparedness and responsiveness, Decision 3088/QĐ-BYT, Vietnam.

INTRODUCTION

With the rapid spread of the COVID-19 pandemic, several vaccinations have been used and proved the safety and effectiveness of preventing COVID-19 (1, 2). However, the vaccine imbalance and new variants of SARS-CoV-2 pose the greatest threat to the COVID-19 pandemic, especially in

developing countries. This puts a strain on the health system, especially the pressure that the health workforce would increase. Moreover, healthcare workers are a great chance of virus infection since they have to take care of patients or perform procedures that pose a risk of SARS-CoV-2 infection.

The rate of health staff infected by COVID-19 was various, such as China



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(33.3%), Iran (53.5%). The level of risk of COVID-19 infection was high in several countries such as the US (73%), Ethiopia (76%) (3-6). This percentage was higher than that of Vietnam (6%), which was informed in 2020 (6). However, with the rapid spread of a new virus variant, this number could not fully reflect the real situation in 2021. That means the infection of health workers from the fourth wave of COVID-19 in Vietnam could be higher. Therefore, proving a safe and secure environment for staff and patients during treatment is one of the main missions of health care institutions, especially during the COVID-19 pandemic.

“Safe hospital” was first used to mention all health care institutions which could fully access and operate before, during, and after a natural disaster. Meanwhile, the World Health Organization (WHO) defined “safe hospital” as health facilities at all levels are protected, and they could provide health services with a continuous supply of water, electric power, and telecommunications (1).

Decision No. 3088/QĐ-BYT was issued by the MOH of Vietnam to promulgate the set of criteria for safe hospitals to prevent COVID-19 and other acute respiratory infections (11). The Decision applied to state and non-state hospitals. The set of criteria provides tools and assesses the current situation of the hospital to prevent COVID-19 and acute respiratory infections. Besides, it orients the hospital to identify priority issues for safe medical examination and treatment, prevent infection of patients, and medical staff. Therefore, this study aims to describe the implementation of criteria for safety to prevent COVID-19 among public hospitals in Vietnam in 2020.

METHOD

Study design

The study was conducted between February and August 2021. This cross-sectional study applied quantitative approach based on secondary data were extracted and analyzed from recent surveys of hospital safety conducted by MOH (National-wide scale of public hospitals that participated in hospital safety assessment in COVID-19 online reporting system of Quality Management division, Ministry of Health).

Study subjects

The study subjects were public hospitals in Vietnam. Hospitals having sufficient data for analysis in the MOH 3088 databases (<https://covid19.chatluongbenhvien.vn/>) were included into the study. The exclusion criteria included: 1) Not having sufficient data for evaluation; 2) Not reporting in the databases.

Sample size and sampling technique

The quantitative research used reported data from all hospitals in the 3088 databases which met inclusion and exclusion criteria. Data of a total of 1220 public hospitals were included.

Study instrument and data collection

Researchers developed outline according to research objectives, contacted the Quality Management Division, collected information from necessary reports and data from online reporting system on the implementation of Decision 3088/QĐ-BYT by the MOH on safety of the hospitals in Vietnam in 2020.

The independence variable was “*Hospital Safety*”, identifying accordance with Decision 3088, the set of hospital criteria had 37 items, divided into 8 group criteria (1) Establishment of steering committee and formulation of prevention plan; 2) Training; 3) General precautions; 4) Screening and streamlining; 5) Infection prevention for some crowded

areas; 6) Management of safety of patients and patient families; 7) Healthcare worker safety management; 8) Hospital hygiene¹¹. Maximum points 150 points. Each subsection was scored as “pass” or “fail”. Each sub-category was given 1 point, 2 sub-categories was given 2 points. The score for each criterion was equal to the total score of the subsections. When no subsection was scored, the criterion score was 0. If the hospital did not have a criterion (eg. the sales counter), the criteria could not be scored. Therefore, the outcome of this study “*Hospital Safety*” was classified by 3 categories *Safe hospital*: total score was equal or more than 75% maximum and there was no * criterion at 0 point; *Hospitals with moderate safety*: the total score was ranged between 50% and <75% of the maximum score and there was

no criterion * got 0 point; *Unsafe hospital*: overall score was equal or less than 50% or any * criteria got 0 points (11).

Data management and analysis

The quantitative data was entered into standardized Excel worksheets, and analyzed using Stata 15.0 software. Mean, standard deviation, frequency and percentage were presented.

Research ethics: The study procedures were reviewed by the Internal Review Board of Institute for Preventive Medicine and Public Health, Hanoi Medical University.

RESULTS

General information of selected hospitals

Table 1. General information of selected hospitals

Type of hospital	Frequency (n)	Percentage (%)
Central	51	4.2
Regional	43	3.5
Provincial	154	12.6
District	623	51.1
Specialized	304	24.9
Ministerial	45	3.7
Total	1220	100.0

Table 1 presented the general information of selected public hospitals (n=1220). The percentage of hospitals in district level was the highest at 51,1%, following by specialized, provincial hospitals with 24,9% and 12,6% respectively. Hospitals in central

level were 4,2% and the rate of regional hospital and ministerial hospital were 3,5%, 3,7% respectively.

Implementation of Decision 3088/QĐ-BYT by the Minister of Health on safety of public hospitals in Vietnam in 2020

Table 2. Hospital's self-assessment on criteria 1-4

Contents	Central (n=51)	Regional (n=43)	Provincial (n=154)	District (n=623)	Specialized (n=304)	Ministerial (n=45)
	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)
Criterion 1. Establishment of steering committee and formulation of prevention plan						
1.1. Establishment and strengthening of steering committee (0-5 points)	4.9 (0.5)	5.0 (0.2)	4.9 (0.3)	4.9 (0.3)	4.9 (0.4)	4.9 (0.3)
1.2. Nosocomial outbreak response planning (0-5 points)	4.6 (0.8)	4.4 (0.7)	4.5 (0.8)	4.2 (0.9)	4.3 (0.9)	4.1 (1.0)
1.3. Sufficient planning for response to epidemic scenarios (0-7 points)	6.1 (1.4)	5.5 (1.5)	5.8 (1.5)	5.3 (1.5)	5.5 (1.5)	5.6 (1.4)
1.4. Procurement and stockpile of equipment (0-3 points)	2.5 (0.9)	2.3 (0.9)	2.3 (0.9)	2.4 (0.9)	2.2 (0.9)	2.4 (0.9)
1.5. Preparation of isolation area for healthcare workers (0-4 points)	3.8 (0.6)	3.7 (0.7)	3.6 (0.8)	3.7 (0.8)	3.7 (0.7)	3.7 (0.6)
Total score (0-24 points)	21.7 (2.7)	20.9 (2.9)	21.2 (2.7)	20.4 (2.7)	20.6 (2.8)	20.7 (3)
Criterion 2. Training						
2.1. Provision of training in epidemic prevention and control procedures (0-3 points)	2.9 (0.3)	2.9 (0.3)	2.8 (0.4)	2.7 (0.5)	2.7 (0.5)	2.6 (0.6)
2.2. Training of additional workers mobilized (0-3 points)	2.5 (0.8)	2.2 (1)	2.5 (0.9)	2.3 (1)	2.3 (0.9)	1.9 (1.1)
Total score (0-6 points)	5.4 (0.9)	5.1 (1.2)	5.3 (1.1)	5 (1.2)	4.9 (1.1)	4.6 (1.4)
Criterion 3. General precautions						
3.1. Regulations on use of face masks in hospital (0-3 points)	3.0 (0.2)	3.0 (0.2)	3.0 (0.0)	3.0 (0.2)	3.0 (0.1)	3.0 (0.2)
3.2. Level of compliance with regulations on use of face masks (0-5 points)	4.7 (0.6)	4.2 (0.9)	4.6 (0.8)	4.6 (0.8)	4.6 (0.7)	4.7 (0.7)
3.3. Hand hygiene in hospital (0-5 points)	4.5 (0.6)	4.2 (0.8)	4.1 (0.8)	4.1 (0.8)	4.0 (0.8)	4 (0.8)
Total score (0-13 points)	12.2 (1.2)	11.3 (1.3)	11.7 (1.2)	11.6 (1.2)	11.6 (1.2)	11.7 (1.0)
Criterion 4. Screening and streamlining						
4.1. Screening and streamlining signage (0-4 points)	3.5 (0.7)	3.5 (0.6)	3.6 (0.7)	3.5 (0.6)	3.4 (0.7)	3.3 (0.7)

Contents	Central (n=51)	Regional (n=43)	Provincial (n=154)	District (n=623)	Specialized (n=304)	Ministerial (n=45)
	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)
4.2. Reception and classification table (0-6 points)	5.7 (0.6)	5.7 (0.5)	5.7 (0.5)	5.7 (0.5)	5.7 (0.5)	5.6 (0.7)
4.3. Method for temperature checking for patient streamlining purpose (0-3 points)	1.7 (0.9)	1.1 (0.2)	1.3 (0.7)	1.2 (0.5)	1.1 (0.5)	1.1 (0.4)
4.4. Patient streamlining system (0-4 points)	3.7 (0.7)	3.7 (0.7)	3.6 (0.8)	3.7 (0.7)	3.7 (0.7)	3.5 (0.8)
4.5. Screening room (0-5 points)	4.0 (0.8)	4.0 (0.9)	3.9 (0.9)	3.7 (0.8)	3.7 (0.9)	3.8 (0.9)
4.6. Isolation rooms for suspected cases (0-3 points)	2.6 (0.6)	2.8 (0.4)	2.7 (0.6)	2.7 (0.5)	2.6 (0.6)	2.5 (0.7)
Total score (0-25 points)	21.2 (2.7)	20.7 (1.7)	20.9 (2.5)	20.4 (2)	20.2 (2.2)	19.7 (2.3)

Establishment of steering committee and formulation of prevention plan

The mean scores of the standards in criterion 1 “Establishment of steering committee and formulation of prevention plan” in hospitals of different groups were close to maximum, except for the standard “Sufficient planning for response to epidemic scenarios”. The mean score of criterion 1 was highest in central hospitals (mean=21.7, SD=2.7), followed by provincial hospitals (mean=21.2, SD=2.7). The average score of district hospitals was the lowest (mean=20.6, SD=2.8). Specifically, in standard 1.1. “Establishment and strengthening of steering committee”, the average score ranges from 4.9/5.0 – 5.0/5.0, with the highest score in the regional hospital group. In standard 1.2. “Nosocomial outbreak response planning”, the average score ranged from 4.1/5.0 (SD=1.0) in ministerial hospitals to 4.6/5.0 (SD=0.8) in central hospitals. In standard 1.3 “Sufficient planning for response to epidemic scenarios”, the average score was in the moderately high level when comparing to the total score, with a range of scores from

5.3/7.0 (SD=1.5) in district hospitals to 6.1/7.0 (SD = 1.4) at central hospitals. The mean score of the standard 1.4 “Procurement and stockpile of equipment” ranged from 2.2/3.0 (SD=0.9) in specialized hospitals to 2.5/3.0 (SD=0.9) in central hospitals. Meanwhile, in criterion 1.5. “Preparation of isolation area for healthcare workers”, the highest average score was in central hospitals (mean=3.8, SD=0.6).

Training

The mean score of criterion 2 “Training” was at moderately high, from 4.6/6 (SD=1.4) at ministerial hospitals to 5.4/6 (SD=0.9) at central hospital. However, in standard 2.2. “Training of additional workers mobilized”, the average score of ministerial hospitals was the lowest with 1.9/3 (SD=1.1), and the highest average scores were from central hospitals (mean=2.5/3, SD=0.8) and provincial hospitals (mean=2.5/3, SD=0.9).

General precautions

Regarding criterion 3 “General precautions”, the mean score was the lowest in the

regional hospitals (mean=11.3/13.0; SD=1.3) and the highest in the central hospitals (mean=12.2/13.0, SD=1.2) and private hospitals (mean=12.2/13.0, SD=0.8). Specifically, standard 3.1 “Regulations on use of face masks in hospitals” was well implemented by all hospital groups when the average score of all hospital groups was 3.0/3.0. In standard 3.2 “Level of compliance with regulations on use of face masks”, the mean score was lowest in regional hospitals (mean=4.2/5, SD=0.9) and highest in central and ministerial hospitals (mean=4.7/5.0, SD=0.6). In standard 3.3 “Hand hygiene in hospital”, the mean score in specialized hospitals was the lowest with 4.0/5.0 (SD=0.8), and the highest average score was in central hospitals (mean=4.5/5.0, SD=0.6).

Screening and streamlining

Regarding criterion 4 “Screening and streamlining”, ministerial hospitals had the lowest mean score of 19.7/25 (SD=2.3), and central hospitals had the highest average score of 21.2/25 (SD=2.7). Thus, in general, hospitals complied with this criterion at a moderately high level. Specifically, there was no difference between groups of

hospitals in terms of standard 4.2 “Reception and classification table” and 4.4 “Patient streamlining system”, when the average scores of all hospitals were high. However, there was a difference in the average scores for the remaining standards. In standard 4.1 “Screening and streamlining signage”, the average score was highest in the provincial hospitals group (mean=3.6/4.0, SD=0.7), while the lowest mean score was in ministerial hospitals group (mean=3.3/4.0, SD=0.7). In standard 4.3 “Method for temperature checking for patient streamlining purpose”, the average score was low in all hospital groups. The average score was lowest in regional hospitals, specialized hospitals and ministerial hospitals. The highest average score was in central hospitals (mean=1.7/3, SD=0.9). In the standard 4.5 “Screening room”, the average score of the hospital groups was moderately high, from 3.7/5 in district hospitals and specialized hospitals to 4.0/5 in central hospitals and regional hospitals. In standard 4.6 “Isolation rooms for suspect cases”, the mean score was lowest in the ministerial hospitals (mean=2.5/3), and the highest average score was in the regional hospital group (mean=2.8/3).

Table 3. Hospital’s self-assessment on criteria 5-8

Contents	Central (n=51)	Regional (n=43)	Provincial (n=154)	District (n=623)	Specialized (n=304)	Ministerial (n=45)
	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)
Criterion 5. Infection prevention for some crowded areas						
5.1. Application of information technology in organization (0-2 points)	1.4 (0.8)	0.9 (0.8)	1.1 (0.8)	0.8 (0.8)	1.1 (0.8)	0.8 (0.8)
5.2. Waiting area, queue area (0-3 points)	2.9 (0.3)	3 (0.2)	2.9 (0.3)	2.9 (0.3)	3 (0.2)	2.9 (0.3)
5.3. Sample collection (0-5 points)	4.6 (1.2)	4.6 (0.7)	4.6 (1)	4.5 (1)	4.5 (1.1)	4.2 (1.6)
5.4. Medical imaging (0-4 points)	3.7 (0.9)	3.6 (0.8)	3.7 (0.9)	3.7 (0.7)	3.5 (1.1)	3.5 (0.8)

Contents	Central (n=51)	Regional (n=43)	Provincial (n=154)	District (n=623)	Specialized (n=304)	Ministerial (n=45)
	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)
5.5. Functional testing (0-4 points)	3.2 (1.2)	3.1 (1.1)	3.3 (1.1)	2.9 (1.3)	2.9 (1.4)	2.8 (1.3)
5.6. Pharmacy (0-4 points)	3.3 (0.9)	3.1 (0.8)	3.1 (0.8)	2.8 (1)	2.8 (1.2)	2.7 (1.2)
5.7. Vendor booth (0-3 points/ not applicable to hospitals without vendor booth)	1.7 (1.2)	1.5 (1)	1.5 (1.1)	1.1 (1.1)	0.9 (1.1)	0.4 (0.8)
5.8. Cafeteria (0-5 points/not applicable to hospitals without cafeteria)	3.7 (1.6)	3.9 (1)	3.4 (1.7)	3.1 (1.7)	3.2 (1.7)	2.3 (2)
5.9. Hospital bill payment counter (0-4 points)	3.4 (0.7)	3.3 (0.5)	3.3 (0.6)	3.1 (0.5)	3.2 (0.7)	3 (0.8)
Total score (0-34 points)	27.8 (5.1)	26.9 (3.3)	26.9 (4.5)	24.8 (4.3)	24.8 (5)	22.6 (5.3)
Criterion 6. Management of safety of patients and patient families						
6.1. Regulations on family presence restriction (0-3 points)	3 (0.1)	3 (0.0)	3 (0.1)	3 (0.2)	3 (0.2)	2.9 (0.5)
6.2. Preparation of isolation area for patients from affected areas (0-3 points)	2.5 (0.8)	2.5 (0.8)	2.6 (0.8)	2.5 (0.8)	2.5 (0.8)	2.3 (0.9)
6.3. Intrahospital patient transport (0-5 points)	4.8 (0.6)	4.9 (0.3)	4.8 (0.7)	4.8 (0.5)	4.8 (0.5)	4.7 (0.6)
6.4. Preparation of inpatient rooms (0-6 points)	4.2 (1.4)	3.7 (1.2)	4 (1.1)	4.4 (1.1)	4.1 (1.2)	4.2 (1.2)
6.5. Admitted patient care (0-5 points)	3.8 (1.3)	2.8 (1.1)	3.2 (1.2)	3 (1.2)	3.1 (1.2)	3.2 (1.3)
6.6. Admitted patient management (0-4 points)	3.8 (0.6)	3.4 (0.9)	3.6 (0.6)	3.5 (0.7)	3.7 (0.6)	3.6 (0.7)
6.7. Enhancement of remote medical examination, treatment and consultation (0-5 points)	3.9 (1.2)	3.2 (1.3)	3.4 (1.2)	2.7 (1.2)	2.6 (1.2)	2.5 (1.3)
Total score (0-31 points)	25.9 (3.3)	23.5 (2.7)	24.5 (3.1)	23.8 (3.2)	23.7 (3)	23.6 (3.4)
Criterion 7. Healthcare worker safety management						
7.1. Interdepartmental consultations and meetings, hospital briefings (0-4 points)	3.7 (0.8)	3.3 (1.1)	3.3 (1.1)	2.9 (1.1)	3.1 (1.0)	2.7 (1.1)
7.2. Health monitoring for healthcare workers (0-4 points)	3.7 (0.6)	3.2 (0.9)	3.5 (0.8)	3.3 (0.9)	3.4 (0.8)	3.3 (0.8)
7.3. Management of risk from outsourced workers (0-3 points)	2.6 (0.9)	2.5 (1)	2.6 (0.9)	2.2 (1.2)	2.3 (1.2)	1.9 (1.3)
Total score (0-11 points)	9.9 (1.3)	9 (2.2)	9.4 (1.8)	8.4 (2.2)	8.8 (2.0)	7.9 (2.1)

Contents	Central (n=51)	Regional (n=43)	Provincial (n=154)	District (n=623)	Specialized (n=304)	Ministerial (n=45)
	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)
Criterion 8. Hospital hygiene						
8.1. Restroom management (0-3 points)	2.9 (0.3)	2.9 (0.4)	2.9 (0.3)	2.9 (0.3)	3 (0.2)	2.8 (0.5)
8.2. Cleaning of frequently touched surfaces (0-3 points)	2.9 (0.2)	2.9 (0.4)	3 (0.3)	2.9 (0.3)	2.9 (0.3)	2.9 (0.4)
Total score (0-6 points)	5.9 (0.5)	5.8 (0.5)	5.9 (0.5)	5.9 (0.5)	5.9 (0.4)	5.7 (0.7)

Infection prevention for some crowded areas

For criterion 5 “Infection prevention for some crowded areas”, in general, the average score in this criterion is average compared to the total score. The mean score was lowest at ministerial hospitals (mean=22.6/34, SD=5.3), and highest at central hospitals (mean=27.8/34, SD=5.1). There were several hospitals not applying several standards of this criterion, such as hospitals without food counters or vendor booth. However, the average score in two standards “Cafeteria” and “Vendor Booth” is also the lowest compared to the corresponding total score of that standard. The average score of the standard 5.7. “Vendor booth” was lowest in ministerial hospitals (mean=0.4/3, SD=0.8), followed by specialized hospitals (mean=0.9/3, SD=1.1). The average score was highest in the central hospitals (mean=1.7/3, SD=1.2). In standard 5.8 “Cafeteria”, the mean score was lowest in ministerial hospitals group (mean=2.3/5, SD=2.0), highest in provincial hospitals group (mean=3.9, SD=1.0). In other standards of criterion 5, ministerial hospitals also had the lowest average score compared to other hospital groups.

Management of safety of patients and patient families

Regarding criterion 6 “Management of safety of patients and patient families”, regional hospitals had the lowest average

score (mean=23.5/31, SD=2.7), while central hospitals had the highest average score (mean=25.9/31, SD=3.3). All hospitals performed well the standard 6.1 “Regulations on family presence restriction”. The ministerial hospitals had the lowest score with mean=2.9, SD=0.5. There was also no difference among hospitals groups regarding standard 6.2 and 6.3. With the standard 6.4 “Preparation of inpatient rooms”, central hospitals and ministerial hospitals had the highest average score (mean=4.2/6, SD=1.4), while regional hospitals had the lowest average score (mean=3.7/6, SD=1.2). With the standard of 6.5 “Admitted patient care” and 6.6 “Admitted patient management”, the average scores of regional hospitals were also the lowest compared to other hospital groups. For standard 6.7 “Enhancement of remote medical examination, treatment and consultation”, the average score in all hospitals was low. The mean score was lowest at ministerial hospitals (mean=2.5/5, SD=1.3), and highest at central hospitals (mean=3.9, SD=1.2).

Healthcare worker safety management

In criterion 7 “Healthcare worker safety management”, ministerial hospitals had the lowest average score of 7.9 (SD=2.1), especially in standard 7.1 “Interdepartmental consultations and meetings, hospital briefings” (mean=2.7/4) and 7.3 “Management of risk from outsourced

workers” (mean=1.9/3). The average score was highest in the central hospitals group (mean=9.9, SD=1.3). In standard 7.2 “Health monitoring for healthcare workers”, the average score was lowest in regional hospitals (mean = 3.2, SD = 0.9) and highest in central hospitals (mean = 3.7, SD = 0.6).

Hospital hygiene

For criterion 8 “Hospital hygiene”, all hospitals had high average scores, from 5.7/6 (SD=0.7) in ministerial hospitals to 5.9/6 in central hospitals, provincial hospitals, district hospitals and specialized hospitals.

Table 4. Score of eight criteria for hospital safety

	Mean	SD	Median	Min	Max	%/ Highest possible score
1. Establishment of steering committee and formulation of prevention plan (0-24 points)	20.7	2.7	21	7	24	86.3
2.Training (0-6 points)	5.0	1.2	5	0	6	83.3
3.General precautions (0-13 points)	11.7	1.2	12	7	13	90.0
4.Screening and streamlining (0-25 points)	20.4	2.2	21	10	25	81.7
5.Infection prevention for some crowded areas (0-34 points)	25.2	4.8	26	4	34	74.0
6.Management of safety of patients and patient families (0-31 points)	24.1	3.2	24	9	31	77.9
7.Healthcare worker safety management (0-11 points)	8.7	2.1	9	1	11	79.4
8. Hospital hygiene (0-6 points)	5.9	0.5	6	2	6	97.8
Total (0-150 points)	121.7	11.5	122	68	149	81.7

Table 10 showed the summed score of eight criteria for hospital safety according to Decision 3088/QĐ-BYT. Compared to the possible maximum score, the score of criterion 5 had the lowest percentage, followed by criteria 6 and 7. Meanwhile, the criterion 8 had the highest percentage, followed by criterion 3 and 1. The total score

of hospital safety was 121.7 (SD=11.5), which equaled 81.7% of possible maximum score. Overall, there are 91.3% of hospitals in public sector were assessed as “Safe hospital”. Only 7.8% of public hospitals was in the group “Safe with moderate level” and 0.9% of public hospitals was classified in “Unsafe” group (Table 11).

Table 5. Classification of safe hospitals (n=1220)

Categories	Frequency (n)	Percentage (%)
Safe hospital	1114	91.3
Safe with moderate level	95	7.8
Unsafe	11	0.9

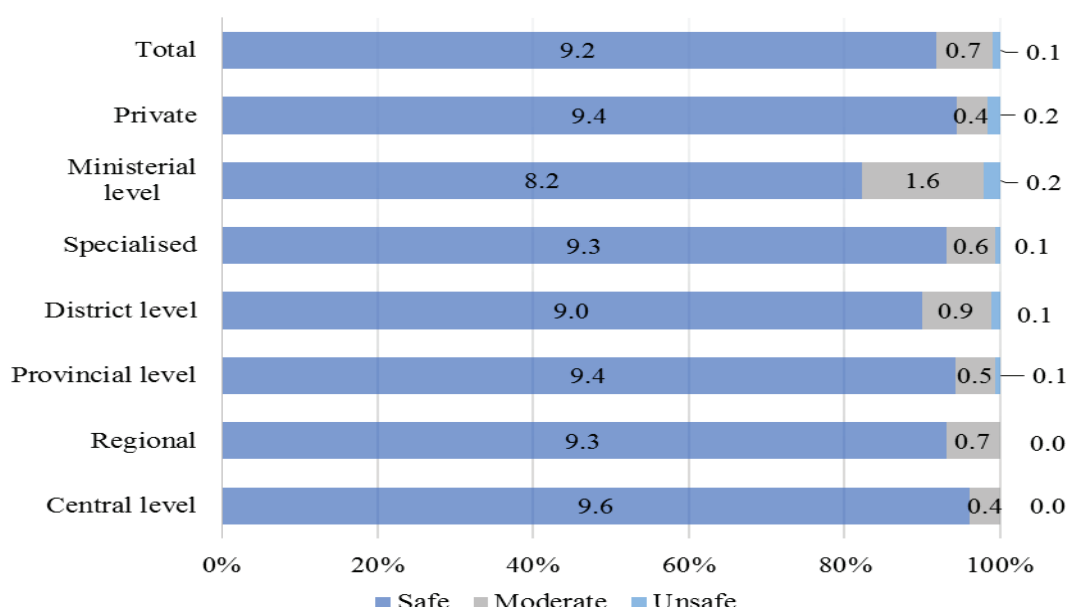


Figure 1. Classification of safe hospitals by type of hospitals

According to Figure 1, the proportion of “safe hospital” was lowest in the ministerial hospital group (82.2%), followed by district hospitals (89.9%) and regional hospitals (93.0%). The rate of “safe hospital” was highest in the central level group (96.1%), followed by povincial hospitals (94.2%) and specialized hospitals (93.1%).

DISCUSSION

The findings of this study showed that the proportion of hospitals classified as “safe hospital” was 91.7%, “safe hospital with moderate level” was 7.3% and “unsafe hospital” was 1.0%. Thus, basically, most hospitals in Vietnam have met the standards of safe hospitals according to Decision 3088/QĐ-BYT. The criterion 8 “Hospital hygiene” had the highest level of compliance, followed by criterion 3 “General precautions” and 1 “Establishment of steering committee and formulation of prevention plan”.

In this study, findings showed that for criterion 8 “Hospital hygiene”, all hospitals

had high average scores, from 5.7/6 (SD=0.7) in ministerial hospitals to 5.9/6 in central hospitals, provincial hospitals, district hospitals, specialized hospitals and private hospitals. This was one of the basic recommendations in the prevention of COVID-19. SARS-CoV-2 had a longer viability period on stainless steel and plastic surfaces, with half-lives of 5.6 and 6.8 h, respectively (12).

In terms of criteria 3 “General precautions”, research results showed that standards on using face masks have been well complied. This could be partly explained by the habit of Vietnamese people wearing masks when going out. In addition, the mandatory wearing of masks had been regulated by the Government, so it could be seen that the compliance level of this standard was at a high level. However, compliance with “hand hygiene” standards was not as good as “wearing face mask” standards. In this study, although the level of compliance was still high, the score for this standard was lower than that of “wearing face mask” standards.

A previous report in Vietnam on adults showed that only 26.3% practiced washing their hands correctly, and only 28.4% washed their hands for at least 20 seconds. Although 92.1% washed hands after contacting surfaces at public places (e.g., lifts, knob doors), only 66.3% practiced handwashing after removing masks (13). On the hospital side, a previous study reported that the overall compliance was 31%; physicians had the lowest rate of compliance at 15%, while nurses had the highest rate at 39%; internal medicine had the lowest rate at 16%, while the intensive care unit had the highest rate at 40% (14). Barriers to handwashing compliance among healthcare workers included limited resources, patient overcrowding, shortage of staff, allergic reactions to hand sanitizers, and lack of awareness (15).

For criteria 1, one of the criteria to ensure that the COVID-19 disease prevention and control at hospitals was unified and smooth was the establishment of a steering committee on disease prevention; develop a plan and assign work to each specific group of medical staff. This criterion was also emphasized in the international guidelines (16-17). Although hospitals had established committees/councils to direct COVID-19 prevention and control activities, the development of specific plans had not yet been fully implemented, especially in district hospitals.

However, despite good compliance in several criteria, there are still significant gaps in implementation in hospitals. Criterion 5 “Infection prevention for some crowded areas” had the lowest level of compliance, followed by criterion 6 and 7.

For criteria 5 “Infection prevention for some crowded areas”, social distancing within hospitals was vital in reducing nosocomial spread, especially in hospitals where the majority of patients were nursed in multi-

bedded cohort rooms, rather than in single-occupancy rooms. Preventing infections in healthcare facilities was uniquely difficult – and important. Healthcare facilities were areas of mass gathering that cannot be closed during a lockdown. This was understandable since these were the areas where many groups were gathered including 1) patients; 2) caregiver; 3) medical staff; and 4) service staff. Given the limited space of these areas, implementing person-to-person distancing in these areas presents a major challenge for hospitals. Experience from other countries faced a similar situation (18-20).

In criteria 6 “Management of safety of patients and patient families”, while all hospitals performed well the standard 6.1 “Regulations on family presence restriction”, the major implementation gaps appear in standard 6.5 “Admitted patient care” and 6.7 “Enhancement of remote medical examination, treatment and consultation”, where the average score in all hospitals was low. This could be explained by the following reasons. First, shortages of personal protective equipment and medical consumables were reported. Frontline health professionals had a distinctly higher risk of infection, especially those who re-use personal protective equipment (PPE) or did not have adequate PPE ²⁶. This was one of the major challenges in ensuring safety for both patients and medical staff. This issue was experienced in all hospitals across Vietnam. This result was similar to previous studies in Vietnam and other countries (21-23). Second, the lack of space in hospitals, especially at the grassroots level, limits the ability of hospitals to provide separate spaces for patients with respiratory diseases and those suffering from other diseases.

For criteria 7 “Healthcare worker safety management”, the greatest problem in this criterion was “Management of risk from outsourced workers”. Non-hospital staff had

many potential uncontrollable risks. However, it could be seen that, at present, hospitals, especially ministerial hospitals and private hospitals, did not have clear mechanisms and regulations on the management of this group of staff. If not well controlled, although the hospital might have other satisfactory conditions, the hospital might still be at high risk of becoming a COVID-19 outbreak with an external source. Notably, this was related to criterion 2 “Training”. Sufficient knowledge and on-premises work experience might improve the ability of healthcare professionals to better handle COVID-19, since incorrect attitudes and practices directly increase the risk of infection (24-25).

Study limitations: This study still had some limitations that using of secondary data at one point in time; thus, it was not possible to assess the improvement over time of the hospitals. Second, the study did not include all hospitals in Vietnam; the study results might not be applicable to unselected hospitals, such as some hospitals in the Ministry of Public Security. However, this study was selected in 1220 hospitals nationwide with different characteristics (such as type and regions).

CONCLUSION

Overall, the hospitals well implemented the criteria according to Decision 3088/QD-BYT to ensure the safety of the hospital before the COVID-19 pandemic. The proportion of public hospitals classified as “safe hospital” was 91.3%, “safe hospital with moderate level” was 7.8% and “unsafe hospital” was 0.9%. The rate of “safe hospital” was lowest in the ministerial hospital group (82.2%), followed by district hospital (89.9%) and regional hospitals (93.0%). The rate of “safe hospital” was highest in the central level group (96.1%), provincial hospital (94.2%) and specialized hospitals (93.1%). Relying

on the main findings, it suggested that the hospitals should continue to complete the system of emergency response to epidemics and strengthen training and ensure the training and practice of non-hospital staff in COVID-19 prevention. Moreover, MOH should improve the criteria in Decision 3088/QD-BYT to be more suitable with the emerging new situation and threat of the pandemic and develop mechanisms and regulations that require hospitals to regularly report on disease preparation and response.

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