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Protocol COVID-19 Implementation on Handling Medical Records at Indonesian Hospitals: A SERVQUAL Analysis

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Abstract

High-risk COVID-19 transmission infecting Healthcare Workers (HCWs) at COVID-19 Referral Hospitals. Health protocols for HCWs including medical record department staff needed to be implemented to reduce the transmission and keep the health services quality consistent even in pandemic times. This study aimed to evaluate medical record administrators' (MRA) health services quality on handling the COVID-19 patient's medical records at Referral Hospitals in Indonesia. This study was a quantitative study with a cross-sectional approach through distributed online questionnaires to 63 MRA in public and private hospitals that used SERVQUAL indicators (tangible, assurance, reliability, and responsiveness). The results showed a difference in assurance value in the gender category with a p-value of 0.026. The average female assurance score is higher than that of men. There was no significant difference between characteristics with the existing SERVQUAL indicators except assurance in the education, age, contact, type of hospital categories.

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Introduction

Coronavirus disease (COVID-19) was first detected in Wuhan city, China in December 2019. On January 2020, the WHO declared that the current outbreak constituted a Public Health Emergency of International Concern. Current available evidence is that the COVID-19 virus is transmitted between people through close contact and droplets. People most at risk of infection are those who are in contact with a COVID-19 patient and/or who care for COVID-19 patients. This inevitably places health workers at a high risk of infection (WHO, 2019).

Globally, as of, 27 August 2021, there have been 214,468,601 confirmed cases of COVID-19, including 4,470,969 deaths, reported to WHO.(World Health Organization, 2021) The South East Asia Region (SEAR) remains the third most affected WHO Region with 40.5 million cases, after the Americas (81.7 million cases) and European Regions (63.7 million cases). The South-East Asia Region reported over 614 000 new cases. The highest numbers of new cases were reported from India (231658 new cases; 16.8 newcases per 100000; a 10% population per week) still reported in North Kalimantan, East Kalimantan, Bangka Belitung islands, DI Yogyakarta and Bali.(World Health Organization, 2020)

In countries with mandatory reporting systems for health care-associated infections, SARS-CoV-2 infection should be included as a priority condition for reporting within these systems. All cases and clusters in health care settings should be investigated and documented for their source and transmission patterns to allow rapid control. Ideally, specific reporting of the number of COVID-19 cases and deaths (including asymptomatic SARS-CoV-2 infections) in HCWs should be implemented.(Wenger et al., 2020)
The death rate of medical personnel due to COVID-19, especially doctors and nurses, were increasing. Based on data from the Health Care Worker Death Impact Index (IPKN), the ratio of HCWs deaths compared to total deaths due to COVID-19 in Indonesia is one of the highest among other countries, namely 2.4%.(IDI, 2020) Corona Virus Disease 2019 (COVID-19) is categorized as a Specific Work-related Disease in Certain Occupations.(Indonesian Health Ministry, 2020) It means workers that decrease), Thailand (142 138 new cases; 203.6 new cases per 100 000; a 6% decrease), and Indonesia (125 102 new cases; 45.7 new cases per 100 000; a 34% decrease). The highest numbers of new deaths were reported from Indonesia (8784 new deaths; 3.2 new deaths per 100 000; a 16% decrease).(World Health Organization, 2020)
Overview of the epidemiological situation for the period between 16 August – 22 August 2021 showed that Indonesia reported a decline in new cases for the fifth consecutive week. High case incidence (>150 cases per 100 000 carry out their work by dealing with COVID-19 have a high risk of getting infected by COVID-19, which in turn, causes occupational diseases specific to certain jobs, including medical records administrator (MRA). The General Chairperson of The Indonesian Association of Professional Medical record administrator and Health Information (PORMIKI) Central Executive Board stipulates further steps regarding Medical Recording and Health Information Work procedures in situations of the virus outbreak. These steps were taken as a form of PORMIKI's commitment to increase awareness and seek protection for all Indonesian Medical record administrators and Health Information from contamination or exposure to the COVID-19 virus, which is a risk of mass infection from the distribution of Medical Record Documents where the virus can transmit through paper media.(PORMIKI, 2020)
Maintaining public trust (reliability) in the capacity of the health system to safely meet essential needs and controlling risks of infection in health care facilities is key to ensuring proper healthcare-seeking behavior and adherence to public health advice (assurance).(WHO, 2020a) Strengthening primary health care to realize universal health coverage provides an essential foundation for adapting to the pandemic context. A well-organized and well-prepared health system will maintain equal access to quality essential health services during an emergency (responsiveness) to limit direct deaths and avoid indirect deaths.(WHO, 2020b) In the early stages of the COVID-19 outbreak, many health systems managed to maintain standard service delivery when faced with a limited number of COVID-19 caseloads.(WHO, 2020a)
SERVQUAL is still one of the most reliable service quality measurement models for the last two decades.(Samen et al., 2013) The inventors of SERVQUAL propose, refine, and claim the five dimensions and items of SERVQUAL, namely tangibles, reliability, responsiveness, assurance, and empathy as a general framework for measuring service quality.(Parasuraman et al., 1988) The SERVQUAL instrument and dimensions have been used extensively by many academics and managers. There are several ways in which SERVQUAL results can be used to help identify areas for performance improvement.
There are limited studies discuss Covid-19 in the Medical Record Unit especially MRA-related their risk get infected by Covid-19. This study aimed to analyze the implementation of health protocols and management of COVID-19 medical records patients by medical record administrators (MRA) at COVID-19 referral hospitals. This study included MRA from public and private hospitals in Central Java Provinces, Indonesia.

Methods

Central Java Provinces of Indonesia has 58 referral hospitals of Covid-19. This study distributed the questionnaire12 to MRA of the public and private referral hospital Covid-19 in Central Java Provinces Indonesia and got 63 respondents willing to fill the online survey. The respondents are MRA from 20 hospitals.
The study distributed an online questionnaire describing SERVQUAL indicators, namely tangible, assurance, reliability, and responsiveness. The questionnaire contains question-related to the implementation of health protocol by MRA and the COVID-19 Patient Medical Records handling at Rereferral Hospitals in Indonesia during the COVID-19 pandemic.
Data collection was carried out from July to August 2020 with the SERVQUAL indicator questionnaire instrument to analyze the quality of MRA's health protocols and COVID-19 patients' medical records at the referral hospital in Indonesia. This study used JASP ver.13 (Jeffrey's Amazing Statistics Program) to conduct a t-test analysis.

Results

The results of the study are described in the distribution of respondent characteristics as in the following table:

Table 1.
Respondent Characteristics of MRA (N=63)

Characteristics Gender		F (%)
Gender		
a.	Male	11 (17,5)
b.	Female	52 (82,5)
Education Background		
a.	High School Graduated	11 (17.5)
b.	Undergraduate	52 (82.5)
Age		
a.	15 - 24 years old	26 (41.3)
b.	25 - 54 years old	37 (58.7)
Contact with patients		
a.	Direct	24 (38.1)
b.	Indirect	39 (61.9)
Hospital Type		
a.	Public	38 (60.3)
b.	Private	25 (39.7)
TOTAL		63 (100,0)

The results showed in Table 1 indicate that most of the respondents were female 52 (82.5%), while the male 11 (17.5%). Most of the respondents in all service units have an undergraduate background (82.5%) and have graduated from high school (17.5%). From table 1, it can also be concluded that there are 26 respondents aged 15 to 24 years (41.3%), while for the 25-54 years age range, there are 37 people (58.7%). Most of the medical record administrators were in work positions unrelated to or had direct contact with patients, namely 61.9% or 39 people. In contrast, for MRA who had direct contact with 24 people (38%). Most of the respondents were recruits at Government Hospitals as many as 38 people or 60.3%.

Classification of the workforce by age in developing countries is adjusted based on economic growth. Expansion of Education facilities, education levels, and increased income opportunities, namely for the "main" working age (25 to 54 years), the young workforce (15 to 24 years), and the workforce among older workers (55 to 64 years or 65 years and over) which indicates a pension (ILO, 2013).

Table 2.
The SERVQUAL indicator of MRA's health protocol and managing medical record of Covid-19 patients by Selection Questions

Question	Yes		Not	
	n	%	n	%
Tangible				
Health workers always use surgical masks and carry out hand hygiene after touching Medical Record Data according to WHO classification	57	90.5	6	9.5

The Patient Registration Room in the hospital has used physical barriers such as glass or plastic windows	53	84.1	10	15.9
PPE (Personal Protection Equipment) available in the Medical Record Unit:				
a. Surgical mask	55	87.3	8	12.7
b. Hand rub	61	96.8	2	3.2
c. Antiseptic liquid	50	79.4	13	20.6
d. Hand wash and soap	58	92.1	5	7.9
e. Table napkin	37	58.7	26	41.3
f. Box Container	26	41.3	37	58.7
g. Hospital Director Circular for Making and Returning Medical Records of COVID-19 Patients	40	63.5	23	36.5
h. PPE Standard of Medical record administrator	49	77.8	14	22.2
Reliability				
The hospital where the Medical record administrator work has used telemedicine to evaluate the clinical development of patients with suspected COVID-19 infection	38	60.3	25	39.7
Medical Records staff should wash their hands with soap and hand rub frequently	38	60.3	25	39.7
Medical Record Document are to be kept in the nurse station except in the ICU isolation room and the Medical record administrator perform hand hygiene or use clean gloves when writing down the Medical Records Document	51	81.0	12	19.0
Assurance				
Coronaviruses are a large family of viruses that cause disease in humans and animals	47	74.6	16	25.4
COVID-19 is caused by SARS-COV19 which belongs to the same large family of coronaviruses that caused SARS in 2003	45	71.4	18	28.6
Regulations defining COVID-19 as a specific occupational disease	45	71.4	18	28.6
The method of restoring Medical Record Documents (DRM) after COVID-19 Patient Service is that DRM is put into plastic, it is recommended to be in white for the infection code.	40	63.5	23	36.5
The method of restoring Medical Record Documents (DRM) after COVID-19 Patient Service is that DRM is stored in a special place and is kept for 4-6 days where the Medical Record officer labels the date and time on the plastic	59	93.7	4	6.3
Question	**Yes**		**Not**	
	n	**%**	**n**	**%**
The method of restoring Medical Record Documents (DRM) after COVID-19 Patient Services is that the DRM is covered and wiped by simply spraying disinfectant at a certain distance so that the paper files are not damaged	9	14.3	54	85.7

PORMIKI Central Executive Board Circular No. HM.01.01 / 002 / III / 2020 contains Medical Recorder Work Procedures and Health Information In the Covid-19 Outbreak situation.	34	54.0	29	46.0

The tangible indicators show the availability of facilities and equipment related to COVID-19 at the Hospital. The results of tangible indicators are pretty good, and facilities and equipment availability is above 50%. However, we found that there are no box containers for storing COVID-19 Medical Records at the Medical Record Unit to handling the Medical Record Documents for COVID-19 patients. This fact has taken place in 58.7% of MRA.

Table 3.
The SERVQUAL indicator of MRA's health protocol and managing medical record of Covid-19 patients by Likert Scale Questions

Question	Strongly Disagree		Less Agree		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%
Reliability								
COVID-19 is included in the category of occupational diseases caused by other biological factors in the workplace where there is a direct relationship between exposure to biological factors arising from work activities and diseases experienced by workers that can be scientifically proven using appropriate methods.	2	3.2	12	19.0	32	50.8	17	27.0
Arrangement of shift work for COVID-19 patients, preferably every 3 hours, is an effort to minimize direct contact with isolated COVID-19 patients using intercom, CCTV, and handy talkies with patients.	0	0	8	12.7	29	46.0	26	41.3
Electronic Medical Records (RME) can minimize high risks because computer devices are easier to clean with disinfectants than paper.	0	0	1	1.6	16	25.4	46	73.0
Responsiveness								
Medical records staff should wash their hands with soap and hand rub frequently	0	0	0	0	2	3.2	61	96.8
Medical records staff must clean work tables using antiseptic without relying on cleaners.	0	0	2	3.2	8	12.7	53	84.1

The reliability question item shows that the reliability of MRAand the hospital where they work is considered good, with a majority result above 50%. Next on the indicators assurance, which describes the knowledge, attitudes, and practices of MRAand the feasibility of referral hospitals for health services during the pandemic, most have a good understanding of COVID-19 by more than 50%. It's just that there are question items that produce a value below 50%, such as knowledge of MRA regarding how to recover Medical Record Documents after COVID-19 Patient Service is only 9%.

There were question items reliability and responsiveness in the Likert scale questions. Table 4 below showed that the majority show support or assess both the reliability and speed of the response of MR or other health workers on tasks at the hospital.

Table 4.
The Cross Tabulation of Respondents Characteristic and SERVQUAL indicator

Variable	Tangible			Reliability			Responsiveness			Assurance		
	mean	SD	p value	mean	SD	p value	mean	SD	p value	mean	SD	p value

Gender											
Male	7.82	1.56	0.85	15.64	1.80	0.48	7.73	0.65	0.72	3.18	1.08	0.02
Female	7.69	2.06		15.29	1.43		7.79	0.49		4.17	1.35	
Education												
High School	7.91	2.16	0.72	15.82	15.25	0.25	7.82	0.63	0.78	3.45	1.13	0.14
Undergraduate	7.67	1.94		1.08	1.56		7.77	0.51		4.12	1.38	
Age												
15-24 years old	7.77	2.22	0.86	15.46	15.27	0.62	7.73	0.53	0.53	3.92	1.23	0.71
25-54 years old	7.68	1.81		1.39	1.57		7.81	0.52		4.05	1.45	
Contact patient												
Direct	7.42	1.74	0.35	15.38	15.33	0.91	7.83	0.38	0.51	3.79	1.50	0.34
Indirect	7.9	2.10		1.31	1.62		7.74	0.59		4.13	1.26	
Hospital												
Private	7.68	1.99	0.91	15.26	15.48	0.57	7.82	0.51	0.48	4.08	1.22	0.57
Public	7.74	1.98		1.50	1.53		7.72	0.54		3.88	1.56	

Table 4 indicates no significant differences between characteristics with the existing SERVQUAL indicators in the majority, such as *tangible, reliability, responsiveness* in all categories. However, one among all the available variables found a difference in value assurance on the gender category of the respondent male and female with a p-value <0.05, namely, 0.026. Table 3 shows that the mean score on the score *assurance* female respondents is higher than males.

Discussion

This study used the SERVQUAL indicators model to assess hospital services. ServQual is an empirically derived method that service organizations can use to improve service quality. The SERVQUAL questionnaire has been widely adopted and revised in several studies, one of which is related to chronic diseases. An example is that 1,595 consecutive patients attending the kidney disease screening program in Taichung City were asked to complete a questionnaire on the SERVQUAL scale. A total of 1085 effective questionnaires were collected to analyze quality factors in kidney disease services.

The study examined the satisfaction of patients with kidney failure.(Lin et al., 2009) Tangible (tangible) is the appearance of the installed physical facilities, equipment, employees, and materials. This dimension describes the physical form and services that consumers will receive. According to the results of the study, it was found that the results obtained were quite good where the availability of facilities and equipment was above 50%. This can be seen from the availability of facilities and equipment as recommended by PORMIKI, both physically and staff. However, we can also observe that there are still facilities that are not yet available at the Medical Record Unit where the Officer works related to the handling of Medical Record Documents for COVID-19 patients, namely the unavailability of box container 58.7% of the officers' workplaces for storing COVID-19 Patient Medical Record Documents.

Women hold 70.97% of pharmacist degrees, 83.99% of nursing degrees, and 93.91 of midwifery degrees. Among dentists and odontologists, women represent 45.65% and 46.36% of the profession, respectively. There was no official statistical data for nurses supporting staff, but in the hospitals we surveyed, we found that 6% were men and 94% were women data from a professional association for 2011 showed that 46.36% of all physicians were women, which suggests that gender roles are changing in the medical field. Our results appear to confirm the feminization of health care professions.(Carrillo-García et al., 2013)

Besides, almost all of the studies did not distinguish between the tasks performed by male and female healthcare workers in conflict zones. The research ability limits identify the underlying causes for the differences in work-related health outcomes between men and women. Detailed exposure assessments unravel the sex/gender differences in workplace exposures. For instance, a hospital employee study with the same job title showed that men had more physically demanding tasks, while women had more repetitive tasks, ultimately delivering different health outcomes. Also, wars and armed conflicts may have distinct burdens on men and women; studying these differences concerning job type, task distribution, exposures,

and health outcomes in men and women HCWs is essential, yet lacking in most of the articles in this review.(Habib et al., 2020)

There was no difference in the quality of health services on the SERVQUAL indicator in this study from the difference in hospital type. The results are contrary to a study found in Turkey, where the quality of health services in private hospitals is better than in government hospitals on indicators responsiveness. That study explained that the long waiting time in providing services in government hospitals causes the perception of poor health service quality in patients.(Işik et al., 2011)

The studies that describe medical record documents handling protocol during the COVID-19 pandemic are limited. A multinational survey aims to assess hospital staff's quality and ability and how their practices are related to COVID-19, and their readiness to face the conditions of this COVID-19 pandemic is crucial. Reliable hospital management (reliability) is needed to ensure the quality of health services during a pandemic is maintained in conditions that comply with health protocols, including the medical record unit. The quality of staff and medical record service system, one of the handling of medical record documents in the Referral Hospital will adapt quickly to changing needs and targets.

Telemedicine services are health services carried out by doctors and clinical management that use information and communication technology to diagnose, treat, prevent, and evaluate a patient's health condition according to their competence and authority.(Haider et al., 2020) The results of telemedicine services are recorded in digital records that are used by doctors and clinical management as medical record documents and are the responsibility of doctors and clinical management, must be kept confidential, and are used following statutory provisions. However, applying telehealth or telemedicine in the health sector are challenges. There are many obstacles, such as costs, human resources, policies, and behavior.(Tasri & Tasri, 2020)

MRA produced quality information for hospital management so that they must have optimal abilities in managing medical records and health information. An excellent medical administrator will be able to make the information and handle medical record documents correctly and with quality(Edmund et al., 2009) even in the COVID-19 pandemic. A MRA's competencies in managing medical records and health information are essential so that MRA should competent to fulfill the service, medical administration, and health information so that management could make the right decisions in health services.

The application of a medical record information system requires continuous supervision so that management can conduct evaluations. MRA who are competent (reliability) in the field of medical record management and health information will be able to meet the needs of patients in health services (responsiveness), so as to improve public health in general(He et al., 2019) both before and during the COVID-19 pandemic according to existing health protocols.

What is still a limitation and needs to be reviewed in relation to the results of this study is that there is a discussion gap to optimize Electronic Medical Records(Noraziani et al., 2013) in handling Medical Record Documents both during COVID-19 and after COVID-19. Besides aiming to improve SERVICE QUALITY in terms of reliability because it can minimize transmission through the media, Electronic Medical Records also increase officers' reliability in handling Medical Record Documents. The use of an Electronic Medical Record (EMR) system is important in supporting the health system's clinical needs dealing with the COVID-19 pandemic. Qualified and competent health information management professionals will adapt to any circumstances, including changes in the EMR system's use.(Reeves et al., 2020)

This study also examines the educational background in this study that most MRA have completed tertiary education. This study is consistent with research that states that medical record officers' competence in using Electronic Medical Records in the future during the pandemic will be greatly supported by universities or institutions that provide curriculum related to Electronic Medical Records' competence. This curriculum will give MRA the ability to carry out work effectively, efficiently and safely. The importance of prudent teaching documentation in the use of electronic health records.(Niedermier, 2017) This is inversely proportional to the research results on knowledge and attitudes of MRA in computerized operations, which have an important influence on the uptake and utilization of computer systems in the workplace. This study in Africa states that most MRAin remote rural areas in African primary health facilities have little computer knowledge, but they have positive attitudes and expressed willingness to adopt technology.(Sukums et al., 2014)

However, what needs to recommend electronic Medical Records during this pandemic is access to personal data on EHR to identify people who are particularly at risk from the COVID-19 pandemic. It is only justified if, first, other data already available on the public list proves to be insufficient; second, access to such data should only be provided if individual physicians bound by professional confidentiality cannot easily pass on the information to vulnerable persons. Third, if these conditions are met, it must be ensured that the access does not interfere with the acceptance of EHR and results in vulnerable people choosing to

leave the medical record system, thus ultimately harming the patient in the long term and not as a basis for medical action against the wishes of the patient.(Stoeger & Schmidhuber, 2020)

The COVID-19 pandemic has forced all healthcare systems such as hospitals and clinics to implement telehealth services quickly, and the delivery of patient care by the American health system will change forever. The same is the case in Indonesia to minimize the number of offline patient queues and reduce the pile of patients that pose a risk of crowding in hospitals. We are "becoming virtual" during a crisis, but we must keep in mind the most critical transformation phase and the best way to effectively implement telehealth. Whether healthcare companies are ready or not, the new reality is that virtual care has arrived. (Wosik et al., 2020)

Other studies have found a substantial decline in public acceptance in terms of gender, age category, patient category, and various diagnoses related to chronic respiratory conditions and mental health during the COVID-19 pandemic. This may imply that there has been a lack of public trust in the safety and reliability of health care agencies such as hospitals since the pandemic(Nourazari et al., 2020) so that the reliability value (reliability) becomes low. Facing the COVID-19 pandemic, the health service system can make the best preparations by following the government's guidelines and recommendations.(Reeves et al., 2020)

As the health, economic and social impact of the COVID-19 pandemic continues to reverberate throughout the South East-Asian region, policymakers are rapidly implementing digitized solutions for healthcare. By way of restructuring emergency components of existing projects and deployment of disaster finance instruments, the development of digital health technologies has accelerated to deliver innovative solutions for needed care outside of established health care facilities.(World Health Organization, 2020)

Conclusion

Several factors that influenced the health services quality during the COVID-19 pandemic were health worker performance and the hospital facilities provided to COVID-19 patients at Referral Hospitals. SERVQUAL dimensions that could measure the health services quality at the COVID-19 Referral Hospital were tangible, reliable, responsive, and assurance to health workers and medical record handling. There was a difference in the assurance indicator value between government hospitals and private hospitals regarding the implementation of the health worker protocol and COVID-19 patient medical records handling.

Author Contributions

Conceived of the presented idea, developed the theory and per- formed the computations, verified the analytical methods, carried out the experiment, wrote the manuscript, supervised the project, developed the theoretical formalism, took the lead in writing the manuscript. Contribution: contributed to the final version of the manuscript, interpretation of the results. All authors discussed the results and contributed to the final manuscript.

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