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COMPLIANCE ANALYSIS OF HAND HYGIENE REGULATION IMPLEMENTATION AT DR. M. GOENAWAN PARTOWIDIGDO PULMONARY HOSPITAL BASED ON WHO MULTIMODAL HAND HYGIENE IMPROVEMENT STRATEGY

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ABSTRACT

The Hospital Infection Prevention and Control Program (HIPCP) is an effort to reduce the risk of Healthcare-Associated Infections (HAIs), including hand hygiene compliance. WHO issued the Multimodal Hand Hygiene Improvement Strategy as one of the strategies to tackle low hand hygiene compliance. Dr. M. Goenawan Partowidigdo Pulmonary Hospital (RSPG) has implemented hand hygiene regulations referring to the current policies, but it has not met the target over the last three years. This study aims to analyze the implementation of the regulation of hand hygiene compliance at RSPG according to the WHO Multimodal Hand Hygiene Improvement Strategy, using an analytical descriptive qualitative approach with a case study method. The analysis uses the combination of the theory of George Edward III, Weaver, and the WHO Multimodal Hand Hygiene Improvement Strategy. WHO Multimodal Hand Hygiene Improvement Strategy assessment was conducted by scoring the Hand Hygiene Self-Assessment Framework (HHSAF). The results showed the lowest percentage of HHSAF scores on the bureaucratic structure variable, but the most important variable was the resource variable, namely human resources, related to activeness and behavior issues. These issues were obtained from in-depth interviews developed from structured questions on HHSAF. Hand Hygiene of RSPG is at an intermediate level. Researchers recommend behavioral enforcement with appreciative inquiry in addition to reward and punishment as an effort to improve compliance with the implementation of hand hygiene regulations at RSPG.

Introduction

Health policies are defined by the World Health Organization (WHO) (2016) as various decisions, plans, and actions taken to achieve certain health goals in society. Ripley 1986 in Purwanto 2012 in Ayuningtyas 2019 states that policy implementation

analysis needs to be carried out to understand the policy implementation phenomenon through mapping the factors (variables) that influence the implementation phenomenon. Furthermore, the important role of compliance in policy implementation is the achievement of policy objectives if the policy criteria are carried out by implementers properly and consistently (Akib, 2010).

Hospitals as a form of health care facility must be able to fulfill patient rights in terms of safety (Kementerian Kesehatan, 2017a). Patient safety includes protecting patients from the risk of Healthcare-Associated Infections (HAIs), where the target rate of HAIs in hospitals must be equal to or less than 1.5% (Kementerian Kesehatan, 2008). Infection Prevention and Control (IPC) programs must be well organized, especially prevention through standard precautions, including hand hygiene for all hospital staff. Medical staff must adopt and observe hand hygiene measures as 80% of infections spread through hands (Diantoro and Rizal, 2021). In 2022, WHO stated that effective IPC prevents up to 70% of HAIs, and hand hygiene is one of the most effective attempts in reducing the spread of germs. However, hand hygiene compliance is only 9% during critical patient care in low-income countries, and in high-income countries hand hygiene compliance rarely reaches 70% (WHO, 2021, 2022). WHO released the Multimodal Hand Hygiene Improvement Strategy as a strategy to improve hand hygiene compliance rates. In 2021, WHO stated that the Multimodal Hand Hygiene Improvement Strategy has proven to be highly effective in terms of significant improvements in key hand hygiene indicators, reductions in HAIs and antimicrobial resistance, and substantially helped stop outbreaks (WHO, 2021). Assessment of this multimodal implementation in health care facilities is completed with a scoring system using the WHO Hand Hygiene Self-Assessment Framework (HHSAF) form. Based on the total score, it can be assessed at one of the levels of hand hygiene promotion and practice, namely *Inadequate*, *Basic, Intermediate,* and *Advanced* (WHO, 2010).

Hand hygiene regulation in Indonesia is contained in Regulation of the Minister of Health of the Republic of Indonesia No. 27 of 2017 concerning IPC Guidelines in Health Care Facilities. This regulation also refers to The WHO *Guidelines on Hand Hygiene in Health Care: First Global Patient Safety Challenge* in 2009. The WHO Multimodal Hand Hygiene Improvement Strategy is included in this guideline. Hand hygiene guidelines in Regulation of the Minister of Health of the Republic of Indonesia No. 27 of 2017 consist of hand hygiene procedure, indication, and description of monitoring and evaluation, with hand hygiene auditing and reporting included. In terms of facilities, proposing the procurement of tools and materials, budget, education and training, organizational structure, described in the regulation in general along with other IPC program beside hand hygiene. While the WHO Multimodal Hand Hygiene Improvement Strategy is more specific and detailed in the scope of hand hygiene only, consisting of five components namely System Change, Training and Education, Evaluation and Feedback, Reminders in the Workplace, and Institutional Safety Climate (World Health Organization, 2009; WHO, 2010; Kementerian Kesehatan, 2017b)**.**

This research focuses on regulation implementation, using George Edward III's policy implementation theory with 4 variables such as communication, resources, disposition, and bureaucratic structure. This research also applies Weaver's compliance theory and *The WHO Multimodal Hand Hygiene Improvement Strategy* which are collaborated to the variables of the policy theory.

Data obtained by researchers from preliminary studies at the Dr. M. Goenawan Partowidigdo Pulmonary Hospital (RSPG) Cisarua Bogor shows that the hand hygiene compliance rate has not met the target of at least 85%. The hand hygiene compliance rate for staff at RSPG in 2020 was 56.17%. In 2021, it was 49.75%. Meanwhile, in 2022, it was 67.73%. The IPC Committee Work Guidelines of RSPG Cisarua Bogor refers to policies, including Regulation of the Minister of Health of the Republic of Indonesia No. 27 of 2017 concerning IPC Guidelines in Health Care Facilities and WHO Guidelines on Hand Hygiene in Healthcare in 2009. Therefore, this study aims to conduct a further analysis on the compliance with the implementation of hand hygiene regulations at RSPG Cisarua Bogor based on *WHO Multimodal Hand Hygiene Improvement Strategy.*

METHOD

The method of the research is an analytic descriptive qualitative research approach with a case study method, focusing on regulatory implementation compliance. Moreover, it applies George Edward III's policy implementation analysis, which collaborated with Weaver's compliance theory and the *WHO Multimodal Hand Hygiene Improvement Strategy.* The assessment scoring elements of the WHO Multimodal Hand Hygiene Improvement Strategy uses HHSAF structured questions.

The research was conducted at RSPG Cisarua Bogor for one month, starting from the second week of January 2023 to the end of the second week of February 2023. The data used included primary data and secondary data. Primary data was obtained from in-depth interviews and structured interviews with informants, as well as observations. Secondary data was obtained from document reviews of the IPC Committee and related units. The informants in this study were the Hospital IPC Committee, namely: President Director, Director of Medical, Nursing, and Ancillary, Chair of the IPC Committee, *Infection Prevention and Control Doctors* (IPCD), *Infection Prevention and Control Nurses* (IPCN), *Infection Prevention and Control Link Nurses* (IPCLN), and *Infection Prevention and Control Link* (IPCL). The inclusion criteria applied in this research include the informants' names as listed on the valid IPC Committee Decree, the informants who were the team leaders of the units or installation, the informants who were the heads of the units, the informants who were the heads of the installations and the informants who were willing to be interviewed. The exclusion criteria used were the informants acting as field supervisors as well as those who were difficult to contact or those who did not show any response after being contacted. As a form of source triangulation, researchers also interviewed other informants aside from the IPC Committee. They were the Sub-Coordinator of Accounting and State Property, Junior Expert Personnel Analyst, Sub-Coordinator of Organization and General, and Head of

Health Promotion and Marketing Department. Among the informants, 36 informants fit the inclusion criteria and two informants were excluded. Thus, 34 people were interviewed in this study. The purpose of triangulation of sources, methodology and theory application was to increase validity and reliability. The researchers compiled the results of data processing into a matrix before determining the scoring. Furthermore, the data was interpreted in order to draw conclusions that were outlined as *points of analysis.* The last step was describing the result of data analysis in a narrative form. Scoring results from structured interviews were entered into the HHSAF assessment and summed. The summation of the scoring was done twice. The first summation was according to the WHO multimodal on the HHSAF to determine the hand hygiene level. The second one was based on the variables in George Edward III to determine the total score of each variable.

RESULTS AND DISCUSSION

Informant Characteristics

The researchers identified the characteristics of the informants into 6 major groups, namely age, gender, latest education, length of service, type of profession, and position in the RSPG IPC Committee. Most of the informants were aged 40-50 years, female gender, undergraduate education level, length of work 10-20 years, nurse, and IPCLN (Table 1). From the results of in-depth interviews, all informants stated that there were no specific characteristics related to age, gender, level of education, period in employment, type of profession, and position that influenced hand hygiene compliance in RSPG, as well as no specific characteristics related to the findings of the IPC committee, most of which were not active in carrying out their duties and responsibilities in the IPC committee. This is different from several previous studies. Research by Anugrahwati and Hakim (2019) stated that there was an influence of age and gender characteristics on hand hygiene compliance, where the characteristics of the sample in the study were most of the age over 30 years and female gender. For the characteristics of the working period, research by Anugrahwari and Hakim (2019) and by Pundar (2019) stated that the longer the working period, the more obedient hand hygiene will be (Anugrahwati and Hakim, 2019; Pundar, 2019). Based on the type of profession, a systematic review article on hand hygiene compliance in ICU by Lambe et al (2019) in the journal Critical Care Medicine obtained compliance data based on the type of health worker, namely nursing staff 43.4%, doctors 32.6%, and other staff 53.8% (Lambe *et al.*, 2019). The findings regarding the inactivity of most IPC committees will be discussed further in the discussion of human resource variables.

Table 1. Informant Characteristics

Characteristics	Total (People)	%
Age (Year)		
> 25 -30	2	5,9
> 30-40	9	26,5

>40-50	17	50,0
>50-60	6	17,6
Sex		
Male	14	41,2
Female	20	58,8
Education		
Master-Graduate	2	5,9
Undergraduate	16	47,1
Second Professional Degree	4	11,8
Associate's Degree	8	23,5
Bachelor of Applied Science	3	8,8
High School Graduate	1	2,9
Period of Employment (Year)		
< 5	5	14,7
>5-10	3	8,8
>10-20	17	50,0
>20-30	6	17,6
>30-40	2	5,9
Profession Type		
Doctor	6	17,6
Nurse	18	52,9
Other medical staff	3	8,8
Non-medical staff	8	23,5
Position in IPC Committee		
Director of Medical, Nursing, and Ancillary	1	2,9
Chair of Quality Improvement Committee	1	2,9
Chair of IPC Committee	1	2,9
IPCN	2	5,9
IPCD	4	11,8
IPCLN	10	29,4
Other Members Of The Committee (Team Leader)	3	8,8
IPCN/Secretary	1	2,9
IPCL	8	23,5
Other Position		
Head of Health Promotion and Marketing Departement	1	2,9
Sub-Coordinator of Accounting and State Property,	1	2,9
Junior Expert Personnel Analyst	1	2,9

Source: Primary Data, 2023

Communication

The regulations communicated were the RSPG IPC Committee Work Guidelines, which were then derived into Hand Hygiene SOP with Handrub (Hand Disinfection) and Hand Hygiene SOP with Soap. From a brief interview during the preliminary study, information was obtained that regulatory communication was conveyed to officers directly in the healthcare units, in meetings, or through media such as printed media, short messages, and paging systems.

The indicators used in measuring the success of communication are transmission, intelligibility, and consistency. Transmission was assessed using in-depth interviews, while intelligibility and consistency were assessed based on the WHO Multimodal Hand Hygiene Improvement Strategy, which scored HHSAF and obtained a total score 92.5 out of a maximum score of 115 (Table 2).

Transmission

The process of socializing regulations, especially Standard Operating Procedures (SOP), is carried out in four ways such as through training by the Education and Research Department, direct socialization by IPCN, coordination meetings, and new employee orientation.

There are three models of bureaucratic levels in the regulation transmission process namely:

a. Director, IPC Committee, Education and Research Department, health care personnel.
b. Director, IPC Committee and Quality Committee, Sub coordinator, Head of Installation/Head of Unit, and staff (including team leader).
c. Director, IPC Committee, unit staff.

This level of bureaucracy is quite efficient so that regulations are well conveyed with minimal distortion. This is proved by only two informants out of 22 informants stating that miscommunication occurred at the service level.

Intelligibility

Researchers used structured questions based on the WHO Multimodal Hand Hygiene Improvement Strategy, which scored HHSAF 3.5a, 3.5b.i, 3.5b.ii, 5.5a, 5.5b, and obtained a score of 30 out of a maximum score of 30. This was supported by informants' statements that the deliveries of the regulations were clear. It can be concluded that the communication of hand hygiene regulation at RSPG is intelligible.

Consistency

Assessment of the consistency of hand hygiene regulation communication was carried out using structured questions based on *the WHO Multimodal Hand Hygiene Improvement Strategy*, namely scoring on HHSAF 4.1a, 4.1b, 4.1c, 4.2, 4.3, 4.4, 4.5. The score obtained is 62.5 out of a maximum score of 85. The scoring results are supported by findings from observations in the field as there are posters of hand washing indications (5 moments), the ways of washing hands with handrub and the ways of washing hands with running water. Nevertheless, the posters are not all positioned in the hospital room or in every sink. In other words, the IPC Committee still strives for consistency in information provision or through informal methods. In this way, the results show that RSPG still requires consistency of communication of hand regulation.

Table 2. Total HHSAF Score on Communication Variables

Communication	RSPG Score	Maximum Score
Transmission	-	-
Intelligibility	30	30
Consistency	62,5	85
Total	92,5	115

Resources

RSPG management support for resource fulfillment is considered good enough. This is supported by informants' statements during the preliminary study that the availability of hand hygiene facilities is widespread, the hospital has a hand hygiene budget, and it is easy to apply for internal training or send delegates to get the latest training related to IPC.

The indicators used in analyzing resources are human resources, budget, facilities, information and authority. All four indicators were assessed based on the WHO Multimodal Hand Hygiene Improvement Strategy, which scored HHSAF and obtained a total score 170 out of a maximum score of 230 (Table 3).

Human Resources

Assessment of human resources is measured in terms of quantity and quality. RSPG management provides support for hand hygiene training, so the human resources available to support the implementation of hand hygiene are sufficient. Assessment of the quality of human resources was carried out using structured questions, namely assessment of HHSAF 2.1a, 2.1b, 2.3, 2.4, 3.2a, 3.2b. RSPG scored 65 out of a maximum score of 80. The annual training implementation had not been consistent. In addition to quantity and quality, the researchers found problems with activeness and behavioral factors affecting compliance with hand hygiene regulations in RSPG. The problem arose because most of the human resources in the IPC committee were still inactive. The non-compliance of personnel is more caused by behavior and work culture.

Budget

The overview of budget resources was assessed using HHSAF 1.6 and 2.5. It scored 20 out of a maximum score of 20. This is supported by the results of in-depth interviews regarding the budget submission process to its realization. Supporting data was also obtained through document review including the budget in the annual work program of the IPC Committee, data on the recapitulation of expenditure on hand hygiene supplies, and the training budget in the budget plan of the Education and Research section.

Facilities

The overview of facility resources was assessed from HHSAF 1.1 to 1.5, and 3.1. The score was 80 out of a maximum score of 100. Hand washing soap and paper towels have not been provided in the patient care rooms. This is a policy of the RSPG

management with the purpose of efficiency. Based on the results of the interviews, it reveals that patients and families of patients used hand washing soap and drying tissue not according to their designation. This shows inefficient usage.

From the description above, it can be concluded that the resources for hand hygiene facilities for staff are adequate, but hand hygiene facilities for patients in the treatment room still need to be provided. .

Information and Authority

The overview of information and authority resources was assessed with HHSAF 5.6a to 5.6f. The score is 5 out of a maximum score of 30. Specific mentoring for hand hygiene at RSPG is not available. New employees are obliged to attend the new employee orientation which includes socialization of all IPC programs. Information on hand hygiene is obtained by staff at RSPG through training, socialization, and hand hygiene promotion media. However, the implementation is tentative as it has not yet been done regularly. In terms of authority, the head of the unit has a higher authority than that of the team leader who is the IPCLN and IPCL.

Table 3. Total HHSAF Score on the Resource Variable

Resources	RSPG Score	Maximum Score
Human Resources	65	80
Budget	20	20
Facilities	80	100
Information and Authority	5	30
Total	170	230

Disposition

Dispositions or tendencies will affect effective regulation implementation. Positive and supportive tendencies will optimize policy implementation. While negative or rejecting tendencies will be an obstacle to policy implementation. The preliminary study showed that the management of RSPG has a positive tendency in efforts to improve hand hygiene compliance, such as making regulations, fulfilling facilities, providing budgets, supporting training and education. While the tendency of officers still needs to be further examined by the fact that the officer compliance rate did not reach the target for three years.

The indicators used in analyzing disposition are designation of bureaucratic, incentives, and commitment. All three indicators were assessed based on the WHO Multimodal Hand Hygiene Improvement Strategy, which scored HHSAF and obtained a total score 65 out of a maximum score of 100 (Table 4).

Designation of Bureaucracy

An overview of the assessment of bureaucratic appointments on the HHSAF was carried out in questions 5.2a, 5.2b, 5.2c, 5.3, 5.4a, 5.4b, with a score of 15 out of a maximum score of 40. Promotion of hand hygiene on the commemoration of World Hand Hygiene Day on May 5 has not been carried out. This is in accordance with the findings in the document review, where the researchers found the World Handwashing Day commemoration program but did not find the May 5 World Hand Hygiene Day commemoration program. "Handwashing Ambassador of the month" is not included in the priority program. The organizational structure of the IPC Committee is considered not entirely dedicated to the implementation of the hand hygiene program. The roles and duties of IPCLNs and IPCLs in the IPC Committee are poorly understood. This was the case for 13 out of 30 informants interviewed. 12 informants answered that they were not dedicated, while 5 informants could not answer. In an effort to improve this, the work program has included efforts to strengthen the internal IPC Committee. Moreover, it was included in the 2022 Priority Program, but the realization has not been maximized.

Incentives

The results of interviews regarding the appreciation given by management show that appreciation in the form of material (i.e., money, gifts, or other goods) was not given. Out of 26 informants, 15 informants felt that there should be incentives provided for hand hygiene compliance because it is expected to motivate staff to improve hand hygiene compliance. 6 informants gave a neutral answer. 6 informants answered that incentives are not mandatory because hand hygiene is already considered an obligation as stated in the SOP. Furthermore, 20 informants thought that providing incentives or non-material appreciation would have an influence on hand hygiene compliance. Another 6 informants doubted the positive impact of incentives or appreciation. Non-material appreciation was considered more likely to be implemented, for example, designation of handwashing ambassadors, role models, hand hygiene leaders, and involvement in training and seminars with funding from the hospital. Thus, provision of incentives or other forms of appreciation are not provided by RSPG.

Commitment

An overview of the commitment was assessed using HHSAF 3.3a, 3.3b, 3.3c, 3.4a, and 3.4b, with a score of 50 out of a maximum score of 60. Hand hygiene monitoring at RSPG was carried out by IPCN through surveys directly to the staff. The obstacles found during monitoring varied from difficulty in obtaining opportunities, healthcare workers who wore gloves without indication to the arguments from the staff. It can be concluded that the commitment of staff assessed from the results of indirect monitoring and direct monitoring is still poor.

Table 4. Total HHSAF Score on Disposition Variables

Disposition	RSPG Score	Maximum Score
Designation of Bureaucracy	15	40
Incentives	-	-
Commitment	50	60
Total	65	100

Bureaucratic Structure

Bureaucratic structures that are not conducive to regulation implementation will hinder regulation implementation. Bureaucracy is an institution that implements activities. Bureaucracy has two main characteristics, namely standard operating procedures (SOPs) and fragmentation. The preliminary study showed that the SOP for hand hygiene in RSPG was clear and in accordance with WHO and national regulations. Informants also stated that the coordination in the existing bureaucratic structure was quite good.

The indicators used in analyzing the bureaucratic structure are SOP, guidelines, and fragmentation. All indicators were assessed based on the WHO Multimodal Hand Hygiene Improvement Strategy, which scored HHSAF and obtained a total score 15 out of a maximum score of 65 (Table 5).

Standard Operating Procedures (SOP) and Guidelines

The description of SOP and Guidelines was assessed with HHSAF 2.2a to 2.2d with a score of 0 out of a maximum score of 20, due to the unavailability of WHO Guidelines on Hand Hygiene in Health-care: A Summary, WHO Hand Hygiene Technical Reference Manual, WHO Hand Hygiene: Why, How, and When Brochure, and WHO Glove Use information leaflet. SOP and hand hygiene guidelines in RSPG which refer to Regulation of the Minister of Health of the Republic of Indonesia No. 27 of 2017 concerning IPC Guidelines in Health Care Facilities have met WHO guidelines. This is evident from the results of interviews with 22 informants stating that to understand and to implement the hand hygiene SOP are possible. Nevertheless, different perceptions occur regarding the moment of hand washing based on the nursing SOP since they only do it only before and after providing care to patients instead of between patients. This can increase the risk of transmission through contact through the hands of nurses. Thus, adjustments are needed to the nursing SOP regarding hand washing time schedule according to SOP and IPC guidelines.

Fragmentation

The description of fragmentation on the HHSAF was assessed by questions 5.1a, 5.1b, 5.1c, 5.2a, 5.2b, 5.2c, and 5.4 with a score of 15 out of a maximum score of 45. Bureaucratic fragmentation causes the bureaucracy to become specialized, tending to compete for information and resources. 20 informants stated that there was no

bureaucratic fragmentation during regulation implementation, and 1 informant answered that he did not know. Thus, it can be concluded that bureaucratic fragmentation does not occur.

Table 5. Total HHSAF Score on Bureaucratic Structure Variables

Bureaucratic Structure	Skor RSPG	Skor Maksimal
SOP and guidelines	0	20
Fragmentation	15	45
Total	15	65

Hand Hygiene Level

Preliminary study showed that RSPG has never conducted a self-assessment to determine the level of hand hygiene before this research. Hand hygiene level is determined by calculating the total number of HHSAF scores based on multimodal elements. The lowest scores were on institutional safety climate, while the highest scores were on evaluation and feedback. RSPG obtained a total score of 312.5 out of a maximum score of 500 (Table 6). This score places RSPG at the intermediate level, with the interpretation of hand hygiene promotion strategies being appropriate, and hand hygiene practices having improved.

Table 6. HHSAF Assessment Based on Multimodal Elements

No.	Multimodal	RSPG Score	Maximum Score
1.	System change	85	100
2.	Training and education	50	100
3.	Evaluation and feedback	90	100
4.	Reminders in the workplace	62,5	100
5.	Institutional safety climate	25	100
	TOTAL	312,5	500

DISCUSSION

The results show that among the four variables, namely Communication, Resources, Disposition, and Bureaucratic Structure, the lowest percentage of the total HHSAF score was on the bureaucratic structure variable. However, this is not the variable that has the most influence on compliance with the implementation of hand hygiene regulations at RSPG. The unavailability of references to the SOPs listed on the HHSAF form is perceived as the reason for the result instead of the existence, activities, and coordination of the RSPG bureaucratic structure.

The most important variable in compliance with the implementation of hand hygiene regulations at RSPG is the resource variable, focusing on human resources, as it is related to the issue of activeness and behavior.

The only limitation in quality assessment with the HHSAF concentrates on the consistency of annual training implementation since there is a lack of involvement of all hospital IPC committees in the agenda. Aside from quantity and quality, issues of activeness and behavior appear since human resources in the IPC Committee do not act proactively in this matter. Meanwhile, behavior is the issue for non-compliance of officers. Although the HHSAF does not have assessment points regarding the activeness and behavior of the implementers, this finding was obtained from the development of in-depth interviews from structured interviews conducted with HHSAF questions.

Several studies have shown that behavior is influenced by factors such as age, education, knowledge, and attitude (Wahyuni, 2013; Dewi, 2020). However, this does not correlate with the situation at RSPG where specific characteristics of non-compliant officers are not shown. Other studies suggest that behavior to comply is influenced by perceptions showing that they act as a positive influence on compliance whereas convenience cannot be perceived giving any effect on compliance (Maryani, 2019).

In the Regulation of the Minister of Health of the Republic of Indonesia No. 27 of 2017 concerning IPC Guidelines in Health Care Facilities, one of the criteria for those who are members of the IPC Committee is to have an interest in IPC. While the IPC Committee branding is associated with the addition of unfavorable tasks and responsibilities. In other words, the perceptions of usefulness and convenience are not perceived positively. Tackling this matter, organizational and employee branding (employer branding) can be a suitable strategy to increase employee engagement. Employer branding is a strategy to create a pleasant work environment, positive and competitive behavior, good teamwork, good reward system, good organizational governance, and adequate learning and training culture (Windayanti and Febrian, 2022). In terms of the active role of all IPC Committee members, organizational branding and employer branding strategies are expected to change the perception of officers in RSPG towards the IPC Committee and foster interest in carrying out duties and responsibilities in the IPC Committee. In addition, two quantitative studies regarding factors associated with nurse compliance for hand hygiene led to the results of the correlation between reward and punishment regarding compliance. Furthermore, it reveals that the correlation between attitude and compliance does not exist. Reward and punishment are associated with behavioral reinforcement. Work culture is closely related to behavior. With reinforcement, it will affect a person's behavior or attitude (Ratnawati and Sianturi, 2018; Neta, 2021). Behavior change can also be achieved through appreciative inquiry. Appreciative inquiry in healthcare is a motivational organizational change intervention aiming to improve the quality and safety of healthcare services. A systematic review and narrative synthesis study on the impact of appreciative inquiry in healthcare reflects that out of 33 included studies, only 13 studies reported behavior change. Behavior change occurred in 12 of the 13 studies (McCarthy, 2017; Merriel *et al.*, 2022).

According to the findings in the research, improvements in each variable are urgently required for RSPG instead of focusing on human resources alone. This is supported by George Edward III's theory claiming that the four variables are mutually

correlated. Besides, the hand hygiene level of RSPG is intermediate with the lowest scores on institutional safety culture, training and education. The WHO report on the HHSAF survey in 2015-2016 which was attended by 807 health facilities from 91 countries stated that 87.5% of health facilities had progressed to intermediate or advanced levels. The lowest average HHSAF scores of the multimodal strategy components were in the Africa region whereas the highest average scores were in the Southeast Asia region. Among the components assessed, the lowest scores were for evaluation and feedback on hand hygiene and institutional safety culture (World Health Organization, 2016). Based on the results of the study, the achievements of RSPG at the end of 2022 are similar to those of health institutions in other countries surveyed by WHO in 2015-2016.

CONCLUSION AND RECOMMENDATION

The percentage achievement of the total RSPG score on each variable shows that communication: 80.4%, resources: 73.9%, disposition: 100%, and bureaucratic structure: 23 %. The lowest score on bureaucratic structure is due to the unavailability of references for SOPs as listed on the HHSAF form. The existence, activities, and coordination of the RSPG bureaucratic structure are not the reasons for the lowest score. This causes bureaucratic structure not perceived as the most influencing variable in compliance with hand hygiene regulation implementation at RSPG. In contrast, the most influencing compliance with the implementation of hand hygiene regulations in RSPG is the resource variable, namely human resources. Quantity, Quality, less proactive actions shown by most of the IPC committee and behavioral factors are the findings that are necessary to tackle immediately. Thus, it is recommended to increase the active role and to change the behavior of the IPC committee through behavior enforcement and appreciative inquiry approaches. In addition, efforts to increase compliance with the implementation of hand hygiene regulations need to be carried out on the four variables according to the results of the study considering the mutual correlation of the four variables.

The Hand Hygiene Level of RSPG Cisarua Bogor based on situation analysis using HHSAF is Intermediate level, with a total score of 312.5 from a maximum score of 500. Long-term planning is still needed for continuous improvement. The 2024 work program can be revised to focus more on multimodal strategies due to the low scores based on the result of this study. RSPG can make simple improvements according to the scoring of each multimodal in the HHSAF that has been completed by researchers. It is suggested to repeat assessments using the HHSAF annually to maintain the progress of improvements and assess whether they are significant to the RSPG hand hygiene compliance rate. At the end, an adjustable assessment form is the last suggestion for assessing the activeness and behavior that have not been fully accommodated in the HHSAF form.

AUTHOR CONTRIBUTIONS

Conceived and designed the research by MF, AA, and MB; MF performed the research; MF, AA, MB, ESD, and IBSW analyzed the data; MF wrote the manuscript.

The authors read and approved the final manuscript. MF = Mila Fitriana; AA= Anhari Achadi; MB = Masyitoh Bashabih; ESD = Ede Surya Darmawan; IBSW = Ida Bagus Sila Wiweka.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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