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Analysis of Hand Hygiene Knowledge, Compliance, and Influencing Factors Among Psychiatric Healthcare Workers

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Abstract: *Objective:* To evaluate the knowledge, compliance, and influencing factors of hand hygiene among psychiatric healthcare workers. *Methods:* 68 healthcare workers who worked in the Department of Psychiatry between September 2023 and May 2024 were selected to assess their knowledge of hand hygiene and compliance by questionnaire as well as to analyze their influencing factors. *Results:* Knowledge of hand hygiene among healthcare workers was less than 90%, and doctors' knowledge was lower than that of nurses ($P < 0.05$). The healthcare workers' compliance with hand hygiene was lower than 80%, and the adherence of doctors was lower than that of nurses ($P < 0.05$). Analysis of influencing factors reveals that skepticism about the effectiveness of rapid disinfectants/hand washing, skin irritation from disinfectants/cleaning agents, and busy work schedules with time constraints are the main factors affecting healthcare workers' compliance with hand hygiene, with $P < 0.05$ compared with the same group. *Conclusion:* Psychiatric healthcare workers' knowledge of hand hygiene as well as compliance with it is low, and there are various factors affecting it, so targeted training is required to strengthen their hand hygiene implementation.

Keywords: Psychiatry; Healthcare workers; Hand hygiene; Knowledge; Compliance

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1. Introduction

Strict implementation of hand hygiene is a common means to reduce the chance of hospital-acquired infections, and its control rate of hospital-acquired infections is about 30% [1]. Healthcare workers are the executors of hand hygiene, and their hand hygiene status directly affects the risk of hospital-acquired infections. For psychiatry, healthcare workers have weak hand hygiene awareness, low knowledge of hand hygiene, and poor compliance, thus it is necessary to comprehensively analyze the efficiency of hand hygiene implementation and its influencing factors, and then carry out targeted, professional occupational protection education, so as to reduce the risk of nosocomial infection [2]. In this study, 68 psychiatric healthcare workers were selected to evaluate their hand hygiene knowledge, compliance, and influencing factors.

2. General information and methods

2.1. General information

68 healthcare professionals, including 29 doctors and 39 nurses, who worked in the psychiatric department between October 2021 and October 2023 were selected. Specific information is shown in **Table 1**.

Table 1. Analysis of specific information of medical and nursing staff

Specific information		Doctors (n = 29)	Nurse (n = 39)	χ^2	P
Gender	Male	8 (27.59)	10 (25.64)	0.032	0.857
	Female	21 (72.41)	29 (74.36)		
Age (years)	≤ 25	7 (24.14)	9 (23.08)	0.965	0.617
	26–40	14 (48.28)	15 (38.46)		
	> 41	8 (27.59)	15 (38.46)		
Title	Elementary	15 (51.72)	20 (51.28)	0.639	0.727
	Intermediate	10 (34.48)	11 (28.21)		
	Senior	4 (13.79)	8 (20.51)		
Work experience (years)	≤ 5	12 (41.38)	16 (41.03)	3.703	0.157
	6–10	10 (34.48)	13 (33.33)		
	> 10	7 (24.14)	10 (25.64)		
Academic qualifications	Vocational school education or below	10 (34.48)	13 (33.33)	0.255	0.968
	College	12 (41.38)	16 (41.03)		
	Undergraduate	5 (17.24)	6 (15.38)		
	Postgraduate or above	2 (6.90)	4 (10.26)		

2.2. Methods

A survey questionnaire was designed to assess the awareness of hand hygiene knowledge. Relevant literature was reviewed to summarize key points on hand hygiene in psychiatric care. The questionnaire was initially drafted and then reviewed by clinical experts. The questionnaire covers eight topics: the concept of hand hygiene, the six-step hand washing method, the five moments for hand hygiene, the significance of hand hygiene, and other related content. Each topic is scored out of 10, with a score above 7 indicating adequate awareness. To evaluate the compliance of hand hygiene, the number of times doctors and nurses should perform hand hygiene was counted, and the number of times hand hygiene was performed was counted, and the ratio of the two was the compliance. A survey questionnaire on the factors influencing hand hygiene was independently designed, containing 10 items with "yes" and "no" answers. Factors affecting the hand hygiene practices of doctors and nurses were statistically analyzed. A total of 68 questionnaires were distributed, with a 100% return rate.

2.3. Statistical methods

The data were analyzed by SPSS28.0 software, the measured values were compared/tested by *t*-test, the counted values were compared/tested by χ^2, and the difference was considered statistically significant at $P < 0.05$.

3. Results

3.1. Comparison of healthcare workers' knowledge of hand hygiene

The awareness of hand hygiene knowledge among healthcare workers was < 90% and the awareness of doctors

was lower than that of nurses ($P < 0.05$). Specific information is shown in **Table 2**.

Table 2. Comparison of healthcare workers' knowledge of hand hygiene [*n* (%)]

Personnel	Hand hygiene concepts	Six-step hand washing method	Five hand hygiene moments	Significance of hand hygiene	Hand hygiene facilities	Hand hygiene and disinfection requirements	Indications for hand sanitization
Doctors ($n = 29$)	17 (58.62)	20 (68.97)	15 (51.72)	17 (58.62)	11 (37.93)	12 (41.38)	9 (31.03)
Nurses ($n = 39$)	35 (89.74)	36 (92.31)	33 (84.62)	34 (87.18)	27 (69.23)	27 (69.23)	28 (71.79)
χ^2	8.954	6.236	8.667	7.235	6.609	5.275	11.140
P	0.003	0.013	0.003	0.007	0.010	0.022	0.001

3.2. Comparison of hand hygiene compliance among healthcare workers

The compliance of hand hygiene of healthcare workers was < 80% and the hand hygiene compliance of doctors was lower than that of nurses ($P < 0.05$). Specific information is shown in **Table 3**.

Table 3. Comparison of hand hygiene compliance of healthcare workers

Personnel	Number of times hand hygiene should be performed (*n*)	Number of times hand hygiene was performed (*n*)	Compliance (%)
Doctors	35	20	57.14
Nurses	79	60	75.95
χ^2		4.099	
P		0.043	

3.3. Analysis of influencing factors on hand hygiene of healthcare workers

The influencing factors showed that skepticism about the bactericidal effect of rapid disinfectants/hand washing, skin irritation by disinfectants/cleaning agents, busy work schedules and time constraints were the main factors affecting the hand hygiene compliance of healthcare workers, with $P < 0.05$ compared with the same group. Specific information is shown in **Table 4**.

Table 4. Analysis of factors affecting hand hygiene of healthcare workers [*n* (%)]

Influencing factors		Yes	No	χ^2	*P*
Skepticism about the bactericidal effects of rapid disinfectants/hand washing	Doctors ($n = 29$)	19 (65.52)	10 (34.48)	5.586	0.018
	Nurses ($n = 39$)	23 (58.97)	16 (41.03)	4.591	0.032
Failure to have adequate hand disinfectants at the sink	Doctors ($n = 29$)	20 (68.97)	9 (31.03)	7.881	0.005
	Nurses ($n = 39$)	24 (61.54)	15 (38.46)	6.119	0.013
Skin irritation by disinfectants/cleaning agents	Doctors ($n = 29$)	21 (72.41)	8 (27.59)	11.655	0.001
	Nurses ($n = 39$)	23 (58.97)	16 (41.03)	4.591	0.032
Insufficient attention to rapid disinfectants/ hand washing	Doctors ($n = 29$)	19 (65.52)	10 (34.48)	5.586	0.018
	Nurses ($n = 39$)	24 (61.54)	15 (38.46)	7.931	0.005
Busy work schedules and time constraints	Doctors ($n = 29$)	19 (65.52)	10 (34.48)	5.586	0.018
	Nurses ($n = 39$)	26 (66.67)	13 (33.33)	4.591	0.032

Table 4. Continued

Influencing factors		Yes	No	χ^2	*P*
Failure to provide hand drying facilities at the sink	Doctors (*n* = 29)	19 (65.52)	10 (34.48)	5.586	0.018
	Nurses (*n* = 39)	23 (58.97)	16 (41.03)	4.591	0.032
No monitoring of hand washing/scrubbing	Doctors (*n* = 29)	20 (68.97)	9 (31.03)	7.881	0.005
	Nurses (*n* = 39)	27 (69.23)	12 (30.77)	12.505	0.000
No incentives or penalties for hand washing/ scrubbing	Doctors (*n* = 29)	19 (65.52)	10 (34.48)	5.586	0.018
	Nurses (*n* = 39)	28 (71.79)	11 (39.29)	15.316	0.000
Unreasonable hand washing facilities in the work environment	Doctors (*n* = 29)	20 (68.97)	9 (31.03)	7.881	0.005
	Nurses (*n* = 39)	27 (69.23)	12 (30.77)	12.505	0.000
Mental patients do not have infectious diseases and do not need to wash their hands	Doctors (*n* = 29)	22 (75.86)	7 (24.14)	14.055	0.000
	Nurses (*n* = 39)	23 (58.97)	16 (41.03)	4.591	0.032

4. Discussion

Hands are the fundamental tools used by healthcare personnel in various medical institutions, and they are the most common vectors for hospital-acquired infections. Hands can carry a variety of pathogenic bacteria, mainly *Escherichia coli* and *Staphylococcus aureus*, which are multidrug-resistant sensitive bacteria, so controlling the implementation of hand hygiene practices can reduce the chances of nosocomial infections, and ensure the quality of healthcare services [3]. Psychiatry is different from other departments, psychiatric diseases are basically non-contagious, so healthcare workers do not pay attention to hand hygiene during the execution of healthcare operations, have low awareness of hand hygiene knowledge, and lack good hand hygiene habits [4,5]. Based on this, it is necessary to comprehensively analyze the awareness and compliance of hand hygiene among psychiatric healthcare workers, and refine the analysis of the factors affecting the implementation of hand hygiene practices, so as to improve the implementation rate of hand hygiene practices in this department and prevent hospital infections [6].

The results showed that the knowledge of hand hygiene among healthcare workers was less than 90%, while doctors' knowledge of the concept and significance of hand hygiene was 58.62%, and their knowledge of the five hygienic moments was only 51.72%, and their knowledge of hand disinfection indications and hand hygiene facilities was only 30% to 40%. Even though the nurses' knowledge of hand hygiene was high, their knowledge of hand hygiene facilities and hygienic hand disinfection requirements was only 69.23%, and their knowledge of hand disinfection indications was only 71.79%. This shows that the awareness of hand hygiene among healthcare workers is generally low, and doctors' knowledge is generally lower than that of nurses, indicating that healthcare workers do not implement hand hygiene practices when performing medical operations and pay less attention to hand disinfection. In addition, the compliance of hand hygiene of healthcare personnel was more than 80% and the compliance of hand hygiene of doctors was only 57.14%, and that of nurses was 75.95%, which was different in comparison ($P < 0.05$). It can be seen that the compliance of hand hygiene of healthcare workers is low, that is, they do not pay attention to the effect of hand hygiene on the prevention and control of nosocomial infection, and their self-prevention consciousness and capability are weak.

Based on the above results, the influencing factors of hand hygiene compliance were analyzed, and the results showed that skepticism about the bactericidal effect of rapid disinfectants/hand washing, not equipped

with a sufficient amount of hand disinfectants beside the hand washing sink, skin irritation by disinfectants/cleaning agents, and insufficient attention to rapid disinfectants/hand washing were the influencing factors for the poor hand hygiene compliance, and the comparison of the same group was $P < 0.05$. It is thus confirmed that the factors influencing poor hand hygiene compliance are quite diverse, including hardware facility factors, the attitudes of healthcare personnel, and management factors. Targeted occupational prevention education activities should be carried out to improve compliance. Specifically, in terms of hardware facilities, drying equipment or disposable paper towels and other hand-drying appliances should be added, and hand-washing hardware facilities should be optimized, such as the use of hands-free faucets; the selection of hand sanitizers that are less irritating to the skin but have better bactericidal effects; and the increase in the number of hand-drying equipment and the number of sinks, etc., so that healthcare workers can be provided with perfect hand hygiene conditions [7]. Rapid hand disinfectant is a new hand disinfectant reagent, and its bactericidal effect is ideal [8]. Therefore, in key wards or hospital corridors, it is necessary to be equipped with quick hand sanitizers, enabling medical staff to wash their hands at any time, thus leveraging their safety and convenience advantages. This will shorten handwashing time and reduce the workload of medical staff. Regarding the attitudes of medical staff, training efforts need to be strengthened, and training programs should be formulated considering the special circumstances of psychiatric departments [9]. Patients in this department generally have relatively poor self-control, exhibit significantly abnormal behavior, and have limited daily living skills and self-protection awareness. Additionally, due to the long-term medication cycles required for their treatment, their activity range is limited, making nosocomial infections more likely. It is necessary to educate about the high-risk factors for nosocomial infections in psychiatric departments and use flexible and diverse training methods to enhance the infection prevention and control awareness of medical staff [7]. After first assessing the educational level of healthcare workers and grasping their cognitive ability and educational background, the relevant person in charge needs to organize the collective learning of the use of rapid hand disinfectant and precautions for healthcare workers in the department and explain the key points of the use of hand hygiene facilities, focusing on popularizing the knowledge of nosocomial infections, which can be carried out in the form of video tutorials and knowledge lectures and exchanges [10]. Focusing on training psychiatrists' awareness of hand hygiene practices, correcting their wrong handwashing behavior, popularizing occupational safety hazards and other related knowledge, as well as explaining the relevant laws and regulations, doctors are required to strictly implement the safety segregation system, do a good job of occupational protection, and familiarize themselves with the specific implementation process of the safety operation standards and technical operation specifications, thus optimizing their prevention and control capabilities [11]. At the same time, the content of the posted posters along the department corridor can include the importance of hand hygiene, handwashing flow charts, etc., and warm reminders can be posted in the office of the medical staff to increase their awareness of hand hygiene, thereby correcting their poor behavior. In terms of management factors, it is necessary to dynamically monitor the effectiveness of the implementation of hand hygiene practices, develop regulatory measures, and implement a reward and punishment system [12].

5. Conclusion

In conclusion, the analysis of hand hygiene knowledge, compliance, and influencing factors of psychiatric healthcare workers can reasonably formulate preventive and control measures, which can effectively reduce the chances of nosocomial infection.

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Disclosure statement

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