ORIGINAL ARTICLE

Hand Hygiene Compliance Barriers and Facilitators in Iranian Nurses: A Qualitative Study

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ABSTRACT

Introduction: Hand hygiene plays a huge role in removing hospital infections. The aim of this study was to explore the nurses' viewpoints about the factors affecting hand hygiene compliance. **Methods:** In this qualitative content analysis study, the data were collected through purposive sampling and semi-structured interviews with 15 nurses. Interviews were audio-recorded and transcribed verbatim. Thematic analyses were conducted using Lundman and Graneheim's method. **Results:** Six themes were identified, including the facilitator and barriers to compliance with hand hygiene on personal, interpersonal, and organizational levels. One theme was personal facilitator, with categories of facilitating the cognition and adherence to values. Personal barriers included cognitive obstacles, attitudinal barriers, and physical barriers. The interpersonal facilitators included supportive social climate and appropriate culture building. The interpersonal barriers involved inappropriate culture building and being under pressure. The organizational facilitators were strong leadership style, good managerial support, and competent staff evaluation; the last theme was organizational barriers with categories of poor leadership style, ineffective staff development, inconsistency in organizational policy, and incompetent staff evaluation. **Conclusion:** This study adopted an integrated approach to examining the factors affecting the nurses' hand hygiene compliance. It is recommended that future interventions should consider the differences at individual, interpersonal, and organizational levels and developed a tailoring approach.

Keywords: Hand Hygiene, Qualitative Research, Nurses, Compliance

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INTRODUCTION

Hand hygiene compliance is a straightforward and inexpensive means that plays a huge role in reducing hospital infections and increasing the patients' safety (1). Worldwide evidence implies low hand hygiene compliance averages 45.5% among health care workers (HCWs) and even students (2-5). This problem has also been raised about Iranian HCWs (6, 7).

There are some factors that affect compliance with hand hygiene. The findings of a quantitative study demonstrated that the HCWs' attitude and self-efficacy were powerful criteria for compliance with hand hygiene, while social influence and lack of knowledge could act as barriers to hand hygiene (8). Erasmus et al. showed that the most important reason for compliance with hand hygiene is belief in self-protection, and non-compliance with hand hygiene is a result of lack of a positive role model and social norms (9). White et al. noted that accessibility of sinks/products, training, and reminders were identified as facilitators, and chaos and emergency situations were considered as the barriers (10).

Iranian researchers in a qualitative study have identified personal factors, environmental factors, and health systems including administrative obligations and monitoring systems as the most important factors affecting the nurses' hand hygiene compliance (11). Another study points to three major themes including individual, environmental and motivational factors (12). Nicol et al. found that personal experience in hand hygiene was more important than formal education, and considered lived experiences as a powerful tool for increasing the effectiveness of these educational methods (13). The results of an experimental study also showed that hand hygiene compliance in HCWs improved with a combination of training programs and consultation with multidisciplinary teams and further supervision (14).

In most cases, the studies conducted to date have focused only on some of the factors affecting hand hygiene compliance, and especially in Iran it has not been studied with a comprehensive view regarding facilitating and preventing factors. Therefore, this study aimed to explain hand hygiene compliance barriers and facilitators among Iranian nurses.

MATERIALS AND METHODS

Design

This is a qualitative study using a content analysis approach to explain the important factors in nurses' hand hygiene compliance in three hospitals of the Shiraz University of Medical Science in the South of Iran.

Participants

A voluntary sample of 15 nurses was chosen as participants through purposive sampling by taking the maximum variations in terms of age and level of education into account. The inclusion criteria included having a Bachelor's degree (or higher), having three years of clinical experience (or more), and giving consent to participate in the study. The exclusion criteria were lack of interest in continuing the participation and transferring from the research environment.

Procedure

In-depth, semi-structured interviews and field notes were used as the data collection instrument. The interviews were face-to-face and lasted for 45 minutes. Interviews were audio-recorded with participants' permission and subsequently transcribed. The time and frequency of the interviews depended on the willingness of the participants and sufficiency of the collected information. The interviews started with a general and open question as a guide "What is the status of hand hygiene compliance in your workplace?", and then the main question was asked "what are the major factors influencing hand hygiene compliance?" Further descriptions were also achieved by asking probing questions such as "Can you explain more about this?", "Do you have any special experience with this?" Sampling continued until the data saturation, when no new data obtained from the interviews, was achieved (15). This study was reported according to the Standards for Reporting Qualitative Research (SRQR)(16). Then, the results were categorized and analyzed manually without using any software.

Data analysis

For the qualitative content analysis, Lundman and Graneheim's five-step method was used (17). To establish trustworthiness, we used Guba and Lincoln's criteria including credibility, dependability, transferability, and confirmability (18). Field note-taking, peer debriefing sessions were used to increase the data credibility with two experts who were not the authors of this study (19). Dependability was confirmed by checking the accuracy of the written transcripts against the audio-recorded data, an exact explanation of research methods (20). Confirmability was assured by using a separate reflexive journal for each researcher and presenting them in weekly meetings.(21). The purposive sampling with maximum diversity and operational and theoretical data saturation increased the data transferability (19, 22).

Ethical clearance

This study was approved by the ethics committee of Shiraz University of Medical Sciences No. IR.SUMS. REC.1397.419. Data were confidential, but not anonymous because the participants were observed by the interviewer. They were asked not to use the names of individuals during the interview. The names inadvertently used by participants were not transcribed. Written informed consent was obtained for the interview and its recording, and no compulsion was applied to continue the study.

RESULTS

Fifteen nurses participated in this study, including 9 females and 6 males with a median (range) age of 27.00(25-40) years and a median (range) of work experience 6.00 (2-18) years. All the nurses were married, and only one was single and one was widowed. Thirteen nurses had a bachelor's degree, and two of them had a master's degree. According to the data analysis, 370 initial codes were obtained, which were summarized to 58 codes. Then, 30 subcategories were extracted; finally, 15 categories and 6 themes were developed (Table I).

Interpretation of the findings using the direct quotes of the nurses is as follows:

Personal Facilitators

Facilitating cognitions

Facilitating cognitions are internal factors that account for perceived efficacy and perceived risk. Perceived efficacy means an efficient understanding of hand hygiene compliance for nurses. Perceived risk refers to the perception of the dangers of leaving or doing certain activities (23). Nurses in this study stated that they observed hand hygiene because they knew the risks of not complying with hand hygiene.

"*…..It is important to understand that poor hand hygiene may endanger the health of nurses and patients.*" (P10)

Conscientiousness

Conscientiousness is a personal facilitator. Some nurses act on ethical principles and evaluate themselves according to these principles. Participant 3 stated:

"*…I think maintaining good hand hygiene, where others do not, requires a great deal of conscience*".

Table I: The themes, categories, subcategories of this study

Subcategories	Categories	Themes
-Perceived efficacy -Perceived risk	-Facilitating cognitions	-Personal facilitators
-Conscientiousness	-Adherence to values	
-Inadequate knowledge -Unrealistic optimism	- Cognitive obstacles	-Personal barriers
-Negative Attitude	-Attitudinal barriers	
-Skin allergy	-Physical barrier	
-Positive role model -Influence of charismatic individuals -Reminders by colleagues and patients	-Supportive social climate	Interpersonal facilitators
-Suitable family culture -Going with the stream	- Appropriate culture building	
-Inadequate family education -Going with the stream	-Inappropriate culture building	Interpersonal barriers
-Compulsion from the patient and their family	-Being under pressure	
-Good authority -Material support	-Strong leadership style -Good managerial support	Organizational facilitators
-Efficient performance appraisal -Effective monitoring -Reward oriented evaluation system	-Competent staff evaluation	
- Doing marginal functions - Disregard for hierarchy - Discriminatory policies	-Poor leadership Style	Organizational barriers
- Insufficient and ineffective Pre service Education - Low quality and compulsory in-service education	-Ineffective staff development	
- Ineffective laws	- Inconsistency in organizational policy	
-Insensitive performance appraisal -Inefficient monitoring -punishment oriented evaluation system	-Incompetent staff evaluation	

Personal barriers

Cognitive obstacles

The most important cognitive obstacles in this study were inadequate knowledge, unrealistic optimism. Some staff did not know that hand hygiene compliance could prevent many infections. Some experienced colleagues tended to think they were immune to infection.

"...They think they are immune to all infections and keep saying nothing has happened to me during all these years; so why should I wash my hands frequently?" (P12)

Attitudinal barriers

Some nurses had inappropriate attitudes, which made them resistant to hand washing.

"...We encountered some nurses that hand hygiene isn't important to them or did not like to wash their hands regularly". (P5)

Skin allergy

Another personal barrier is skin allergy which is the result of using low-quality solutions, frequent hand washing, no use of hand lotion, and even the use of powdered latex gloves for nursing staff.

"...A lot of nurses have hand eczema and psoriasis because of too much hand washing and rubbing". (P8)

Interpersonal facilitators

Supportive social climate

According to the interviews, the features of a supportive social climate are the existence of positive role models, influence of charismatic individuals, reminders by colleagues, and patients to comply with hand hygiene.

"...When I comply with hand hygiene on certain occasions, the new personnel learns it unconsciously and does the same". (P5)

"…In the last ward where I worked, due to the infection control expert character, the staff members did their best to comply with hand hygiene principles". (P11)

"…When the patients remind the nurses to wash their hands, the nurses take it seriously. Patients sometimes even say quietly "you did not wash your hands!" (P2)

Appropriate culture building

The colleagues whose families were concerned with hand hygiene complained more about hand hygiene. One of the nurses stated:

"....Creating a culture to adhere to hand hygiene should be done from childhood, in which case nurses are more committed". (P9)

Interpersonal barriers

Inappropriate culture building

The nurses stated that they did not learn correct hand hygiene in childhood and now they also behave like the majority of others in the ward, even if this behavior is poor hand hygiene.

"...No one taught us correct hand hygiene in childhood; only our parents forced us to wash our hands before eating, and we still do." (P3)

"...When a newly graduated nurse sees others don't comply with hand hygiene, she prefers to behave like the majority of others; why should she care?" (P7)

Being under pressure

The interviewees stated that sometimes, the urgency created by the patients or their companions would cause the nurses to forget hand hygiene.

"...Patients or their companions tell us "what are you doing; hurry! Now that I need your help, you are washing your hands?" (P1)

Organizational facilitators

Strong leadership style

According to the interviewees, one of the organizational facilitators was a strong leadership style.

"…A powerful head nurse warns the nurses about hand hygiene once or twice, but the third time, reprimands

them. This is effective." (P4)

Good managerial support

The presence of hand sanitizers is one of the necessities of hand hygiene in the wards.

"*…A hand sanitizer dispenser on the top of each bed makes it easy to observe hand hygiene without spending time".* (P8)

Competent staff evaluation

The nurses state that evaluation will be effective if hand hygiene compliance becomes a part of nursing performance appraisal and it is accompanied by a reward; it can promote hand hygiene compliance.

"*…Evaluation is important if it can affect the financial status and employment*". (P15)

"*…When I receive an acknowledgement letter from the nursing office, it gives me energy for a long period of time since I understand that my efforts are seen*". (P10)

Organizational barriers

Poor leadership Style

The signs of weak leadership include addressing marginal issues, disregarding hierarchy, and discriminatory policies between occupational groups.

"*…In this ward, the head nurse is mostly busy with marginal issues such as documenting and going to the meeting, and she pays little attention to the main issues*". (P3)

"*…In the case of problem, at first I refer to the supervisor. The head nurses cannot do anything*". (P12)

"*…Head nurses and even supervisors often differentiate between nurses and physicians in health hygiene compliance and only the warn nurses*". (P5)

Ineffective staff development

The participants referred to the problems in pre-service training and in-service training shortcoming as other barriers, which need reform.

"*…The trainings are always cliché and boring. There is an old video played every time*". (P8)

Inconsistency in organizational policy

The participants also referred to ineffective laws as another organizational barrier.

"*...It is important to comply with hand hygiene under any financial and temporal circumstances, but sometimes our hospital policies change because of financial issues, and hand hygiene is no longer a priority*".(P14)

Incompetent staff evaluation

Characteristics of inappropriate evaluation are lack of attention to the staff performance appraisal, the existence of ineffective monitoring system, and more attention to punishment system.

"*…Despite what is generally claimed, hand hygiene is not a criterion for evaluation of head nurses*". (P11)

-"*If there is always punishment, after two or three times, the nurse may no longer have the motivation to do the right thing!*"(P9)

DISCUSSION

The findings showed that the nurses' hand hygiene compliance depends on a combination of personal, interpersonal, and organizational facilitators and barriers. These results are in line with three levels affecting Robbins' organizational behavior including personal, group, and organizational(24). The finding is also in accordance with ecological patterns since it considers personal (self-confidence and self-efficacy), interpersonal (social support), and socio-political factors which are effective in behavior (25).

According to the results, personal facilitators including perceived efficacy and perceived risk play an important role in hand hygiene compliance and affect the outcome expectations, goals, and perceptions of barriers and opportunities (26). Previous studies have shown that nurses are more likely to wash their hands when they are at increased risk for infection, or when hand dirt is more pronounced.(27, 28). It seems that measures such as seeing germs on equipment of the wards and even culturing the microbes found on the nurses' palms help their understanding of the infection. The results also demonstrated that conscientious nurses more frequently observed hand hygiene. Judge et al. in line with this finding concluded that the conscientious people were more committed to complying with safety principles in their work environment (29).

The personal barriers showed that sometimes the nurses' inappropriate cognition such as inadequate knowledge, unrealistic optimism can be an obstacle to hand hygiene compliance. This finding is supported by Jang et al. who stated HCWs' information on hand hygiene is insufficient, and they do not even know that they should wash their hands several times (30). In this study, experienced colleagues' unrealistic optimism can be attributed to their more experience, less error expectation, and less risk perception because unrealistic optimism is a part of the perception, which reduces the perceived risk and motivation for the individuals' health behavior (31). The negative attitude was also specified as a personal barrier because an attitude reflects a person's psychological tendency to behave in a certain direction or in the opposite direction(32). In this study, it was identified that skin allergy had reduced the nurses' interest in hand hygiene compliance and frequency of washing. Kingston et al. stated that skin sensitivity and skin damage were important barriers to hand hygiene compliance for the nurses (31).

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Interpersonal facilitators revealed that nurses are more likely to adhere to hand hygiene in a supportive clinical climate with positive role models. Previous studies in line with this finding refer to the importance of positive role models in the nurses' compliance with hand hygiene(9, 27). One of the other facilitating factors to observe hand hygiene was to remind it by colleagues and patients. Carboneau et al. consistent with this finding stated that in a safe clinical climate, frequently, the nurses remind each other the importance of hand hygiene compliance(31). Awaji et al. also explained that the cooperation of patients and their request from nurses could force the nurses to comply with hand hygiene (33). In a socially supportive climate, the presence of charismatic characters that influence and guide others towards their pleasant behavior can be a stimulant to comply with hand hygiene in other staff. Okorie et al. represented that charismatic individuals can persuade others to perform the task and achieve organizational goals since people accept their commands without question (30). Sometimes the social climate is not appropriate for the staff, and they encountered negative role models in the workplace. In a study, nursing students stated they were strongly influenced by negative hand hygiene role models (34). Lankford et al. stated that health-care workers didn't wash their hands if they were in a room with a peer or head nurse who did not perform hand hygiene (35).

According to the findings, hand hygiene education in families is one of the interpersonal facilitators that leads to suitable culture building. Umberson et al. explained that past habits, which were shaped largely by socialization in the family, have a significant role in shaping health behaviors (36). Moving with or against the flow is also another interpersonal factor that can be an interpersonal facilitator or barrier to hand hygiene compliance, depending on the negative or positive cultural climate in the workplace. Klucharev et al. stated that people often behaved and made decisions according to normative group behavior, and that is why social conformity takes place (37). Sometimes, unexpected demands and coercion from the patient and his family cause the nurses to change their priorities and neglect to observe hand hygiene. In literature, attention has been paid to the patient 's influence on the nurses (38).

A strong leadership style is considered one of the organizational facilitators. Leadership is the process of influencing others and guiding them towards goals(35). According to the interviewees, one of the most important requirements for effective leadership was head nurses' authority. In a hospital, head nurses are the closest managerial staff to the personnel, and they have the task of institutionalizing the organization's goals such as hand hygiene compliance. If for some reason head nurses' authority is decreased, his/her influence on the personnel will be diminished, and as a result, his/her warnings will not be accepted. Mazi et al. believed that head nurses can ensure regular compliance with hand hygiene by providing feedback and reminders to the nurses (39).

According to the interviewees, the poor leadership style is characterized by addressing marginal issues, disregarding hierarchy, and discriminatory policies. Addressing the trivial issues and marginal functions will reduce the authority of head nurses and most can be happened due to the high workload, lack of duty allocation, and ambiguity in duties in hospital wards. This situation is more often seen in less fair leadership where leaders pay more attention to minor issues (40). In addition, participants said that some nurses prefer to go to supervisors instead of head nurses to solve their problems, and this causes to reduce head nurses' authority and to weaken their managerial status. A study approves this finding and states that a huge sign of poor management style is bypassing the chain of command (41). Sometimes discriminatory policies are enforced by the management group between nurses and other medical teams, which is one another sign of poor leadership. Nurses said in interviews that their function is regularly monitored by infection control supervisors, whereas this is not the case for physicians. Ensher et al. in line with this finding stated that effective management can be achieved by implementing fair policies and strengthening appropriate management behaviors and eliminating discrimination among employees (42).

Another organizational facilitator is good managerial support. The presence of high-quality products, accessibility to materials and equipment, and appropriate arrangement of cleaning materials are indicative of supportive management. Sometimes, nurses are less likely to wash their hands due to the poor management of equipment and supplies. Hammerschmidt and Manser emphasized that direct accessibility to hand hygiene equipment simultaneously with the motivation of nurses to maintain hand hygiene is absolutely essential (43). Lohiniva et al. also indicated that the low number of sinks in the wards and lack of proper washing materials is a reason for poor hand hygiene compliance (44).

The results showed that ineffective staff development is an important organizational barrier to hand hygiene compliance. Problems in pre-service and in-service training and the gap between knowledge and practice show ineffective staff development. To overcome these problems, the academic centers should be sensitive to the changing needs of clinical environments and should dynamically change their training program, which is

called responsible education(45). Bluestone et al. stated that suitable in-service training and participating in workshops through direct learning and hidden learning can institutionalize organizational behavior in staff(46). Inconsistency in organizational policy is also an organizational barrier. Here, this means that if the policy of a hospital is to maintain hand hygiene, this policy should be a priority in all situations, even in crises and shortages. Participants in this study complained of changing hospital policies during times of financial shortages. Engen et al. confirmed that policy consistency can be a valuable strategy to strengthen the successful implementation of politics and increases support and acceptance of policies by employees (47).

According to the results, if staff evaluation in hospital is done efficiently, it will be a organizational facilitating factor for hand hygiene compliance, and if employers ignore, or do not do it effectively, it will be considered as a barrier. Performance appraisal is one of the necessary components of staff evaluation. It refers to the analysis of the personal performance of the staff, which identifies the relative value of the employee in the organization, and one of its main objectives is to identify the strengths and weaknesses of the employees(48). Therefore, if managers are not concerned with important issues such as hand hygiene compliance while appraising the performance, this behavior will not be taken seriously(49). Effective monitoring is also important to staff evaluation. Standard monitoring happens through direct observation of hand hygiene compliance (50). Huis et al. believed the monitoring will be successful if all personnel are supervised and done regularly (51). The interviewed nurses in this study stated the inattention and the little time of monitoring as barriers to effective monitoring. Katanami et al. also confirmed that if the monitoring is not continuous and serious, the goals of monitoring will fail (52). Another major component of properly evaluating staff is the existence of a reward-oriented evaluation system in the hospital that rewards appropriate staff behavior(53). Nasirudeen et al. confirmed that an important way for increasing compliance with hand hygiene was using a reward and punishment system(54). On the other hand, punishment oriented evaluation system is a sign of ineffective staff evaluation. Lydon et al. stated that frequent punishment results in discourage individuals from engaging to hand hygiene compliance (55). It is suggested that the punishment and reward system should be developed according to a logical plan in the hospital.

CONCLUSION

This study identified a variety of barriers and facilitators of hand washing at different levels of personal, interpersonal, and organizational levels. It is suggested that a tailoring approach should be taken in designing future interventions, considering all the factors affecting hand hygiene compliance. It is important to note that providing facilitators and removing barriers can increase the nurses' job satisfaction in addition to hand hygiene compliance. Future studies are needed on how effective factors in designing the interventions can best be used to improve the nurses' hand hygiene compliance.

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