

Exploring Determinants of Hand Hygiene among Hospital Nurses: A Qualitative Study

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Research article

Keywords: Hand Hygiene, Hand Washing, Theory of Planned Behavior, Nursing

Posted Date: March 30th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-19852/v1>

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Version of Record: A version of this preprint was published on November 25th, 2020. See the published version at <https://doi.org/10.1186/s12912-020-00505-y>.

Abstract

Background: The present research is a qualitative one aiming to determine factors affecting hand-hygiene behavior of the nursing staff in Shariati Hospital of Tehran, Iran.

Methods: This was a qualitative study performed using content analysis approach. Considering the aim of the study, 16 in-depth semi-structured interviews were held with the nursing staff of Shariati Hospital of Tehran University of Medical Sciences. A convenient sampling was performed and continued until data saturation and until no new codes and categories were obtained. Data were analyzed through a qualitative content analysis based on the Graham and landsman method. Directed qualitative content analysis was done in order to analyze the data.

Results: The results of this study revealed 3 main themes in the Theory of Planned Behavior (TPB) (attitude, subjective norms and perceived behavioral control) and 8 main themes in the outside the framework (environment, perceptions, life style, morality, education, organizational culture, salience and personality).

Conclusion: Due to the other factors also found in this study, an integration of theories and models for designing of interventions is recommended to increase adherence to hand hygiene behavior.

Background

HH is a simple way to reduce hospital infections, to prevent the spread of antimicrobial resistance and to increase patients' security[1]. A mere hand washes stands as a primary way of preventing the spread of hospital infections. A hand wash would cut down on 50% of hospital infections[2]. Hospital infections lengthen patients' stay in hospital, impose high costs on patients and the health system of the whole country. They may also cause mortalities[3]. A review of literature on following HH protocols indicate that HH in certain districts (30-40%) functions much lower than others (for 50-60%). Medics' HH was reported to be 32% while nurses' HH was estimated to be 48%. HH functioning before touching a patient was reported to be 21%, and after touching a patient was 47%[3]. Although the rising trend of HH protocols is indicative of the lower occurrence of infection, still taking HH serious among other specialized teams has remained poor[4]. According to the figures reported by WHO, 1,400,000 people worldwide suffer from the side effects of hospital infections, per second. In developing countries, the rate of preventable infections induced by healthcare services was estimated 40% higher[5]. Hospital infections are recognized among the key risk factors in healthcare centers. HH stands as the first step that needs to be taken to control these infections[6]. Evidence has it that there exists a wide gap between what people know and how they behave in the healthcare system[7]. A myriad of factors can affect the clinical behavior of the health staff, awareness of which can help to modify their behavior[8]. A number of obstacles known to HH are: skin irritation caused by HH factors, limited access to HH facilities, interference with patient and medical staff communications, belief in the priority of patient's need for HH, wearing gloves, absentmindedness, unawareness of instructions, inadequate time for HH, work overload, insufficient personnel, lack of

scientific information about the definite correlation of HH and hospital infections. Some of these obstacles to HH have been evaluated in descriptive studies or have turned into quantitative results. Unawareness of HH guidelines, unawareness of emergency cases of HH upon providing a patient with healthcare services and unawareness of the risk of transmitting infectious factors are the main obstacles to HH. Moreover, a number of the medical staff believed that they would wash their hands when necessary. However, deeper investigation showed that they did not[6].

A review of the previous literature, HH and control of infection in Iran and in the world as well as systematic and filed body of research all attest to the importance of attention to HH. It can guide small- and large-scale policies and plans and the maintenance of a desirable health state. Therefore, a focus on interventions to getting the determinant factors is especially important and determining these factors is a key pre-requisite. On the other hand, due to the appropriateness and importance of TPB in investigating HH as acknowledged by the previous body of research, the present research aimed to clarify the determining factors of HH in Tehran hospitals. This research follows a qualitative and theoretical framework.

Methods

As a qualitative study, the present research aimed to determine factors affecting HH behavior of the nursing staff in hospitals affiliated with Tehran University of Medical Sciences.

Participants& Study setting

The nursing staff of Shariati Hospital of Tehran University of Medical Sciences was included in the convenience method. This hospital includes sections CCU, NICU, ICU and Emergency. Total number of contributions the participants was 16 in the study. Convenient sampling technique was used in this study. The inclusion criterion was voluntary participation.

Structured-Interview Guide

Semi-structured interviews were used to collect data. Since this type of interview is profound and flexible, it fits in well with qualitative research[9]. In advance to the interviews, the purpose of the research, participants' rights and the need for voice recording were made known to all subjects. Their full consent was obtained. The key questions used as interview guideline were designed based on TPB (**Table1**).

The 4 criteria of Lincoln and Guba in the present research

To check the validity of the data, a permanent and continuous engagement with the topic of research was used as the method of inquiry. It took six months to engage with the staff to get to know them better. We also used code confirmation by the research subjects. In fact, the initial codes were first controlled by the interviewees before being categorized by the researcher. To check the confirmation of how the coding was done in the categories of the planned behavior theory, an inter-rater method was followed with the help of two researchers so as to use the complementary comments of colleagues. The sample was

selected from different socioeconomic levels and education backgrounds. The transferability of data from different patients and service providers was also checked.

Face-to-Face Interviews

All interviews were conducted individually in a convenient and private context. Each lasted for 25-35 minutes and interviews continued in number so long as the data were saturated. So that there were no new codes in the last three interviews.

The total number of participants in this study was 16 nurses. As agreed by all participants, all interviews were voice-recorded. Word by word transcription was done to prepare the data for analysis. In a qualitative investigation, the researcher is supposed to sink into data. (11). Therefore, the researcher reviewed interview texts several times.

Ethical Considerations

Among ethical considerations of this study were subjects' informed consent, anonymity and confidentiality of data during analysis. A few subjects did not consent to the voice recording, which was replaced by a mere real-time manual note-taking. This article has been extracted from a PhD thesis on Health Education and Health Promotion that has been confirmed in ethics committee. Also, it has been approved and supported as a research project by Environmental and Occupational Hazards Control Research Center in Shahid Beheshti University of Medical Sciences, Tehran, Iran (SBMU.RAM.REC.1394.540).

Analysis

Directed qualitative content analysis was done in order to analyze the data. This method is used so as to analyze the texts. In this method, through a systematic classification procedure, codes and themes are identified. Content analysis is beyond the mere extraction of actual content from textual data. It helps to find hidden themes and patterns in the text produced by participants[10]. The right method to analyze texts qualitatively is guided or theory-based qualitative content analysis. This method was first proposed by Shannon and Hsieh (2005). In guided qualitative content analysis, the initial coding starts with a theory or findings from a similar research. This analysis aims to validate or extend a conceptual framework or a previous theory. The theory selected in the present research can help to concentrate on the research question.

Therefore, in this research, the data were analyzed through six stages including: 1. Researcher's familiarity with data 2. Extraction of initial codes from data 3. Searching for themes via a review of the extracted codes from the previous stage 4. Review of themes and re-comparing them with data to make sure of their accuracy 5. Defining and entitling themes, and 6. Preparing a final report[11].

Results

16 subjects participated in the present research, whose age ranged from 23 to 47. Factors affecting HH extracted from the texts belonged to either TPB framework or outside this framework:

The main Categories related to TPB framework (Table 2):

(A) Attitude (include Behavioral beliefs and Evaluation of outcomes): In this structure, phrases were extracted such as: The belief to the behavior, Good feeling and satisfaction after hand washing (Behavioral beliefs), Valuing for self-health, the importance of family health (Evaluation of behavioral outcomes).

Quotation: A male nurse with 6 years of work experience stated: “there was another human being I cared about. For the respect I pay health of him and myself, I do not wish to transmit infections to him or get them from him”.

(B) Subjective Norms (include: Normative beliefs, Motivation to compliance, Descriptive norms): In this structure, phrases were extracted such as: Supervisor’s emphasizes to Hand washing, The effect of Doctor’s believe to Hand washing (Normative beliefs), Hand washing must begin from the top (Motivation to compliance) and Effect of behavior by physicians (Descriptive norms).

Quotations:

Normative beliefs: As an example, a 36 year-old staff nurse declared: “They are really effective. Those above us set a model for us. When for example I see that the head nurse washes hands always when visiting a patient, I get impressed”.

Motivation to compliance: “others play a key role here”.

Descriptive norms: As an instance, a participant admitted: “when my top rank does a certain thing, I do too”.

(C) Perceived Behavioral Control (include Control beliefs and Perceived power) In this structure, phrases were extracted such as: Negligence and laziness, Crowded wards and high workload situations (Control beliefs), Possibility of adherence in every circumstances (Perceived power).

Quotations:

Control beliefs (Head nurse (40 year-old): “well, when he is pressed for time, there is no way to concentrate, no way to wash hands”.

Perceived power: “being busy should not be an excuse for not washing our hands”

The main Categories related to outside TPB framework (Table 3):

(A) Environment: Refers to the physical and social environment surrounding an individual.

1. **Monitoring and supervision:** some initial code this subgroup Includes: rules and regulations, consistent controls, direct and indirect monitoring.

Quotation (A male employee with six years of experience): “monitoring has a great effect. Hand culture test done a few years ago was very effective indeed. But it no longer exists. They used to let us know of the culture test result”.

2. **Reinforcement:** The initial code, such as encourage writing, seen important, was placed on this sub-category.

Quotation (A head nurse with 15 years of experience): “we learned through the system to expect positive/negative reinforcement. There should be a difference between who abides by the rules and who does not”.

3. **Cues to Action:** refer to facilitating force which produces a need for doing a certain thing. The initial code, such as poster in sight and reminders was placed on this subscale.

Quotation: “They need to put up advertisements especially LEDs everywhere”.

4. **Availability & Accessibility:** system’s commitment to provide the required facilities was among the factors mentioned by the present nurses. Some initial code include: Availability of sink and Appropriate dryer.

Quotation: “The staffs are mostly young females. Regular hand wash irritates their skin. It would be better to provide quality lotions”.

Preferences: among the issues mentioned by the interviewees were quality odorous hand wash liquid and hand-rub which could help promote HH behavior.

Quotation: “The better quality the soap, the less allergic it is and the better stuff it has, the more comfortably the nurses will use it”.

5. **Modeling:** some initial code in this subgroup include: See nurse and head nurse behaviors.

Quotation: “It differs from one unit to another. In a given unit once the head nurse keeps washing hands 5 times, others would see that and follow that”.

(B) Perceptions:

1. **Outcome expectations:** Refer to belief about the likelihood of the behavior leading to a specific outcome. Participants pointed to prevention of infection transmission, patient’s longer stay in hospital and control of infections resistant to treatments.

Quotation (A nurse with 10 years of work experience): “Instead of recovering, his disease gets worse”.

2. **Perceived barrier:** It is refer to an individual's assessment of the obstacles to behavior change.

In the present study, these concern skin irritation, lack of proper hand wash soap or lotion, loss of nails (due to excessive hand wash), skin allergy and forgetting to wash hands.

Quotation: “we use too much liquid and our skin gets irritated and this all plays a role”.

Education: Lack of awareness of hand infections, patient education, patient education, education through the media, were in this sub-category.

Quotation: “Awareness rising should be through the media”.

3. **Organizational culture:** refers to the main values, assumptions and interpretations of approaches characterizing an organization. Initial codes in the sub-categories included: one's priority of HH in the public sector as compared to the private sector and conveyance of the importance of work to the personnel.

Quotation: “In private hospitals you do what others often do. The context dominates you and keeps imitating others. There is a fear of conditioning”.

4. **Salience:** The sensitivity of the subject, mental priority and underestimating the role of hygiene were included in this subgroup.

Quotation: “It is very important to see hand washing as a primary priority”.

5. **Personality:** this is Sub-category, initial codes such as: characteristics as being disciplined and having a strong personality were included.

Quotation: “I think they have a strong personality, because they believe where there is a will, there is a way”.

6. **Morality:** It refers to covers human spiritual and natural characteristics. Initial codes were including: conscience, fairness, feeling responsible towards others, indifference and lack of attention.

Quotation: “How do they feel responsible? Two people working side by side in an office, but working differently. It all depends on their conscience and morals”.

7. **Life style:** Refers to the specific way of life led by an individual, group or a society. Initial codes in the Sub-category were: establishment of washing in one's unconscious mind, family training, establishment of the hand washing habit, creating the culture of hand washing (both in families and society).

Quotation: “Too often we are snowed-under but yet for me, it's part of my within, my unconscious”

Discussion

In the present research, TPB constructs along with environment, perceptions, education, organizational culture, salience, life style, personality and morality were recognized as effective factors of HH. The main categories of TPB were attitude, subjective norms and perceived behavioral control.

The main Categories related to TPB framework

Attitude

In the present study, all participants had a positive attitude towards HH. This positive attitude can be investigated based on what has been gained from the research initial codes. The participants mentioned “prevention of infection”, “personnel’s self-care” in the behavioral beliefs domain and “valuation of self-health”, “valuation of others’ health and that of the human kind” as well as “importance of family health” in the evaluation of consequences section. In Barrett’s qualitative research (2008) in the U.K., nursing university students had a positive view towards HH behavior[12]. In their research, Whitby et al. mentioned the main motivation of the staff to be washing up the hands and self-protection against infection in the first place and saving patient’s life in the next place[13]. The national related literature, similar to the international literature, mentioned hand-washing as the most frequent case[14, 15]. Burnett et al. and Yuan et al. showed that the nurses had a good and positive attitude toward HH [16, 17]. Lankford et al. showed a statistically significant difference between caring about hygiene before and after contacting with a patient[18].

Subjective Norms

According to the present results, the participants mentioned supervisors’ care about hand-washing, doctor’s belief in hand-washing and peer-effect (in hospital) as the effective factors. These indicators dealt to some extent with abstract norms and in fact revealed nurses’ motivation and obedience of their seniors in hospital. In an investigation conducted by van Beeck et al. (2009) in the ICUs of 5 hospitals, medical students stated directly that they imitated professors’ and higher ranks’ behavior[19]. In their research, Whitby & Perkins maintained that colleagues’ behavior can affect their healthcare behaviors[20, 21]. We can infer that one key predictor of hand-washing behavior among young and inexperienced staff is perceived social pressure by the seniors[18, 19, 22]. In some other research, Van Beeck et al. referred to lacking positive social norms and models among physicians and managers as an inhibiting factor of showing hand-washing behavior[19]. Thus, as in social contexts, enjoying appropriate positive models and norms plays a key role. Moreover, according to experience, people tend to imitate managers’ behaviors. Thus, it seems that if the head-nurse, doctor, infection control nurse and other managers show inappropriate hand-wash behavior, it can directly affect the performance of the other personnel.

The present findings managed to extract such meaningful units as “critical and crowded condition of the ward as well as overwork”, “effect of emergent conditions”, “inadequate workforce” and “lack of concentration due to insufficient time”. These units are concerned with the controlling beliefs as in the

perceived behavioral control in the planned behavior theory. It in fact points to the perceived power and in the case of showing healthy and hygienic behavior, washing hands is done in all conditions. As perceived by these individuals, this behavior is well established in them.

According to the present findings, the following sub-categories of environmental effects affected the target behavior: supervision and monitoring (direct and indirect supervision such as a hidden camera), reinforcement (reward and punishment system for motivation in the form of written appreciation or oral reminding by the colleagues), cue for action (e.g. putting up posters where they can be easily seen), easy access (easy access to sink and a proper drier), preferences (quality and odor of the washing liquid and hand-rub), observational modelling and learning (attention to the head-nurse and professor in the hand-wash process). These indicators obtained from this research help us to conclude that the surrounding environment can be a determining factor in showing healthy behavior. In an investigation entitled as "investigating the effective factors of HH behavior among healthcare providers in ICU: a qualitative study", Ravaghi et al. (2014) found the following as the main obstacles to performing HH behavior: formal/informal control, improper spatial design, limited facilities and equipment[23]. It seems that though the institutes have succeeded in motivating and propagating the target behavior, it is essential to monitor the staff strictly so as to promote the staff's behaviors concerning the hand-wash[24].

Perceptions were among the main themes extracted from this research. They include the secondary themes, outcome expectation and perceived obstacles. Concerning the former, mention was made of the worsening of the disease, preventing infection transmission, lengthening patient's stay in hospital and controlling infections resistant to treatments. The latter included allergic skin, skin irritation (lack of quality lotion or liquid soap), loss of nails (excessive washing) and forgetting to wash hands. Some other research findings concerning the obstacles to hand-washing were consistent with the present research. They mentioned inadequate time, too many patients cared by a nurse, time-consuming hand-wash, dry and irritable skin caused by recurrent washing, inadequate lavatories in different sections of healthcare centers, inaccessible lavatories, the wrong belief that wearing gloves makes a hand-wash redundant and low awareness of the significance of hand-wash as the main obstacles to show the healthy behavior[12, 25-27]. However, healthcare authorities need to raise others' awareness and remove the wrong belief that wearing gloves can replace washed hands.

Education and awareness were among the other themes extracted from this research and were comprised of such meaningful units as "unawareness of unclean hands" and "raising personnel's awareness of the significance of hand-wash". In order to think of effective policies to promote HH, the current state and staff's awareness and performance should be examined[3]. In a descriptive research conducted by Nabavi et al. (2013) among a medical staff, awareness level was reported to be moderate and attitude and HH behavior were found to be poor[28]. A wrong belief was also found to be prevalent among the health staff to wear gloves instead of washing hands[19]. This finding is consistent with some other research conducted in ICU that showed though the nursing staff wore gloves in the majority of cases, after taking them off, they hardly ever wash or disinfect their hands[14]. However, there are mixed findings that show either positive or negative effects of wearing gloves on washing hands afterwards[29]. They

must have persuaded themselves that wearing gloves is a proper replacement for cleaning hands and protects both the patient and themselves from infection. On the other hand, Parsi et al. do not perceive gloves as a good replacement for clean hands and maintain that gloves are not fully impenetrable[30]. When the healthcare providers do not wash their hands properly before wearing gloves, it seems that why they wear gloves in the first place is more to protect themselves rather than to prevent and control the transmission of diseases to patients. Nevertheless, they need to know that wearing gloves does not suffice on its own to protect them fully from the patient-induced infection[29].

Organizational culture defined as a set of common values and beliefs among the staff of an organization was also found as a theme in the present research. A sub-theme was organizational atmosphere which was reported to be more dominant in the private sector than the public. Many key beliefs affecting behavior differ from a behavior to another across populations[31].

Life style as a key factor in HH behavior was among the primary codes extracted and recognized by the participants. Family primary training: is the establishment of the hand washing habit and creating the culture of hand washing. Otherwise, the intention to perform a certain behavior loses its significance to an individual[31].

Personality was another factor derived from this research. Personality-based features were found to be effective factors in HH behavior. Among such personality-based features were: having a strong character, being disciplined and being obsessive-compulsive. Such variables as demographic information, personality factors, attitudinal and individual factors are highly effective on behavior. They also have indirect effects through the model constructs[31].

Habit-formation, salience and personality were incorporated in the recent version of TPB that is IBM (Integrated Behavioral Model) as the determining factors of behavior[31].

Morality was a theme derived after the analysis of interviewees' accounts. One's perceived morality of a behavior as well as perceived feeling of responsibility seriously affect one's performance of an action or refraining from that. A few participants mentioned HH as a moral norm in preventing the transmission of infections. This norm is a philanthropic reality and can be activated via an individual's natural attitude. It occurs when one believes that his key moral values have been approved. Moral norms can play a role in staff's compliance with the rules of infection control. In their research entitled as "different social and moral norms among medical students", Roberto et al. (2010) concluded that the two variables, mental and moral norms are good predictors of medical students' compliance with HH instructions[32].

Conclusion

The present research identified factors affecting HH among nurses. It also determined domains which need to be considered for assessment and intervention by health-care specialists. This research was indicative of a number of characteristics and beliefs relevant to HH behavior, which were related to behavior change theories and models. Therefore, it emphasizes on the importance of using behavior

change theories and models in designing interventions with the aim of promoting the performance of HH behavior. However, due to the qualitative nature of this research, there is a need for further research in future to discover how the identified factors are correlated. Other factors should also be identified in order to generalize the findings. Finally, the present research is a form of shared experience which can contribute to other similar body of research. Therefore, the need for theory-based interventions following an integrated approach comprised of theories and models seems to be a great help. There is a need for further similar research to identify hygiene determinants in the light of other theories and models especially IBM.

Abbreviations

HH: Hand Hygiene; WHO: World Health Organization

Declarations

Ethics approval and consent to participate

Ethical approval: This study has been approved and supported as a research project by Environmental and Occupational Hazards Control Research Center in Shahid Beheshti University of Medical Sciences, Tehran, Iran (SBMU.RAM.REC.1394.540). Participants were provided information about the study and verbal consented by proceeding to take the survey; this implied verbal consent was approved by the Ethical Board Committee of Shahid Beheshti University of Medical Sciences.

Consent for Publication

Not applicable.

Availability of data and material

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors have no conflicts of interest.

Funding

This study is sponsored by Shahid Beheshti University of Medical Sciences in Tehran. The funding agencies had no role in the design of study, data collection and analysis, or presentation of the results.

Authors' contributions

MGH, SR, ASM, and HB designed the study. HB and ASM wrote the first draft. All authors contributed to writing, revising, and approved the final manuscript.

Acknowledgments

The authors thank all the nursing staff who participated in this research and also thanked Shahid Beheshti University of Medical Sciences for their financial support.

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Tables

Table 1. Topics Covered to Lead Interviews

Topic	Some Discussion Point
Attitudes	<ol style="list-style-type: none"> 1. How do you define hand hygiene? 2. How do you feel about hand hygiene? 3. Why do you think some staff frequently wash their hands and keep them clean while others do not?
Subjective norms	<ol style="list-style-type: none"> 4. How does the environment and the people around affect hand hygiene?
Perceived behavioral control	<ol style="list-style-type: none"> 5. How can some people adhere to hand hygiene in almost all circumstances?

Table 2. TPB Constructs based Determinants of Hand Hygiene

Initial Codes	Sub-categories	The main Categories
§ The belief to the behavior § Good feeling and satisfaction after hand washing § To prevent from infection transmission § To Reduce the use of antibiotics and drug costs § To reduce costs and increase hospital income § Safety of employees § Residence and hospitalization of patient in hospital § To control drug-resistant infections	Behavioral beliefs	Attitude: overall sense of like or dislike of a behavior
§ Valuing for self-health § Valuing for the health of others § The importance of family health	Evaluation of behavioral outcomes	
§ Supervisor's emphasizes to Hand washing § The effect of Doctor's believe to Hand washing § Hand washing must begin from the top (management level) § The influence of others in hospital	Normative beliefs	Subjective Norms: have to do with the most important people in one's life who believe one must or must not show a certain behavior
§ Hand washing must begin from the top (management level) § The influence of others in hospital	Motivation to compliance	
§ Effect of behavior by	Descriptive	

physicians	norms	
§ Negligence and laziness	Control beliefs	Perceived Behavioral Control: people's perceptions of their ability to perform a given behavior
§ Crowded wards and high workload situations		
§ The impact of emergency situations		
§ Insufficient number of personnel		
§ Lack of concentration due to lack of time		
§ Possibility of adherence at the crowded situation	Perceived power	
§ Possibility of adherence in every circumstances		

Table 3. Some Other Determinants of Hand Hygiene (Out of TPB Framework)

Initial Codes	Sub-categories	The main Categories
§ Law	Supervision	Environment
§ Continuous controls	&	
§ Direct and indirect supervision.	Monitoring	
§ Monitoring		
§ Staff feedback and statistics.		
§ Cultivation of hands and reflection to personnel		
§ The institutionalization of monitoring		
§ Installing Hidden Camera.		
§ Supervision and monitoring		
§ Pressure		
§ Obligation Service personnel to hand hygiene		
§ System of rewards and punishments to motivate	Reinforcement	
§ Encourage writing		
§ Seen important		
§ Verbal encouragement		
§ Verbal reminding form colleagues		
§ Poster in sight	Cues to Action	
§ Reminders		
§ More advertising (LSD)		
§ Availability of sink	Availability & Accessibility	
§ Qualities and aromatic liquid soap and Hand rub and paper		
§ Appropriate dryer		
§ Qualities and aromatic liquid soap and Hand rub and paper	Preferences	
§ According to the head nurse and professor at hand washing	Modeling & Observational Learning	
§ Benchmarking and being model for others		
§ Acute illness due to The lack of hand hygiene behavior	Outcome expectations.	Perceptions

§ Preventing from infection.		
§ Residence and hospitalization of patients in hospital		
§ Control treatment resistant infections		
§ Sensitive skin	Perceived barriers	
§ Skin dryness (lack of suitable lotions and liquid soaps)		
§ The destruction of Nails (Washing too)		
§ Forget hand washing		
§ Lack of awareness of the hand contamination	Awareness and Education	Education
§ Patient Education		
§ Training to along patient		
§ Instill the importance of behavior to personnel		
§ Education through the media		
§ Continuing Education		
§ Effect of organizational climate on the individual	Organizational climate Sense of participation and cooperation	Organizational Culture
§ Priority of hand hygiene in private sector rather than public sector		
§ Induction of the importance of Hand washing for staff		
§ Patient participation in hand hygiene programs		
§ Culture of hand hygiene (Organization)		
§ Insensitivity to the issue	The importance of behavior	Salience
§ Mental priorities		
§ Failure to understand the importance of hand hygiene		
§ Hand washing in unconscious	Habit	Life Style
§ Initial training of family		
§ Make a habit of washing hands		
§ Culture of hand hygiene (family and community)		
§ Regulatory and being obsessive	Personality characteristics	Personality

§ Having a strong character person		
§ Conscience and morality	Conscience and ethics	Morality
§ Having fairness		
§ The responsibility for others and humankind		
§ Neglect and indifference		