Auditing the Compliance of Nursing Staff on Hand Washing Technique during (COVID- 19) Pandemic

Hanaa Mohamed Ahmed
Lecturer of Nursing Administration, Faculty of Nursing, Assiut University, Assiut, Egypt.
E-mail of the corresponding: author, drhanaa57@gmail.com

Abstract

Background: Hand washing is a corner stone of infection control and the third precaution mentioned alongside wearing a mask and staying six feet apart for the last year as the coronavirus pandemic. **Aim:** auditing the compliance of nursing staff on hand washing technique during Covid - 19 Pandemic. **Subject:** Nursing staff who worked with at isolation departments. **Design:** A cross-sectional descriptive research design. **Setting:** The study was conducted in El- Rajhy Liver Hospital, Neurological Hospital, Main hospital (chest department) and urology Hospital at Assiut University Hospitals. **Tools:** Tool I: Personal data of nursing staff. Tool II: Observation checklist for nursing staff about the proper technique of hand washing. **Results:** the highest percentage of the studied subject was compliance with hand washing at September and October and there was negative statistically significant correlation between compliance and not compliance items with hand washing among nursing staff. **Conclusion:** Hand washing compliance rates have increased significantly in last month only at Al Rajhy Liver Hospital and Neurological Hospitals where there has been an increase in the number of coronavirus cases among nursing staff. **Recommendations:** There must be announced strategies in hospitals for all nursing staff to note the extent of nurses' commitment to washing hands. Penalties are also applied to those do not adhere to hand washing.

Keywords: Compliance to hand washing technique, COVID 19, Nursing Staff.

Introduction:

All nurses are susceptible to contracting COVID-19 by touching contaminated surfaces or objects, and then touching their eyes, nose, or mouth(**Knepper et al ., 2020**). One of the reasons for the spread of the Coronavirus among nurses is the lack of adherence to infection control measures, especially adherence to hand-washing practices **(Desai & Patel, 2020).**

Nurses are at the front line of COVID-19 Pandemic through the proper hand washing, and constant exposure to infected patients and contaminated surfaces can put them at risk for acquiring and transmitting the infection. One of the most frequently recommended strategies is frequent washing of hands or hands rub by alcohol **(Ann-Marie Aziz., 2020).** Hand washing is the compliance of cleansing hands with soap and water or with antiseptic hand rub to stop the transmission of infection and stop the spread of disease (**Public Health England., 2020).**

There are three types of hand washing techniques namely routine, aseptic and surgical. Routine hand washing include mainly hand wash and hand rub. If hands are visibly soiled they must be washed with soap and water however alcohol based hand rub is more effective against most bacteria and many viruses than either plain liquid soap or antimicrobial soap **(Gammon , & Hunt., 2019).**

The right technique and duration of hand washing using soap and water and Alcohol-Based Hand Rub (ABHR) are very important to confirm the removal of microorganisms. WHO recommends that nurses should perform hand washing using the proper technique and known as “My 5 moments for hand washing,” that is, before and once touching the patient, before handling an invasive device for patient care, once contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings, moving from a contaminated body web (site) to a different body site throughout care of the identical patient. In particular, before putting on PPE and after removing it, when changing gloves, after any contact with a patient with suspected or confirmed COVID-19 virus, their waste, or

the environment in the patients' immediate surroundings, after contact with any respiratory secretions, before food preparation and eating, and after using the toilet **(World Health Organization., 2020).**

During pandemic of COVID-19, hand washing, along with other infection control activities, has received much attention, not only because it is a priority but also because nurses are more concerned about their own exposure to COVID-19. The research shows a 50% compliance rate for hand washing, on average, among hospital care staff. But now that everyone is hyper-aware, the rates of hand washing have generally gone up. In addition, nursing staff are scared about carrying virus back to their homes where they have newborn, young children, and elderly family members who are at more risk (**Doung et al., 2020).**

Hand washing audits are a reliable way to measure hand washing compliance. To obtain more accurate compliance rates, evidence suggests that auditors should stay on units for no longer than10 to 20 minutes at a time to evaluate the nursing staff compliance with hand washing.

Significance of the study:

Through the researcher's experience, it was noted that the number of infections with the Corona virus among nursing staff is very high, as well as the occurrence of one death among nursing staff while providing nursing care to the Corona virus patients in isolation hospitals. Also an observational hand washing adherence rates reported in the literature are generally poor. [**Otfinejad et al, 2020]** Larson states that poor hand washing is considered to be a causal link to hospital-acquire red infections (HAI) [**Boyce, & Pittet, (2020)**].

Aim of the study:

Auditing the compliance of nursing staff on hand washing technique during Covid -19 Pandemic

Research question:

Is the hand washing compliance rates have increased where there has been an increase in the number of coronavirus cases among nursing staff at the selected Hospitals?

Subjects & Methods:

Research design:

A cross-sectional descriptive research design was utilized in this study.

A cross-sectional study is a research design in which the researcher collects the data from many different individuals at a single point in time. In cross-sectional research, the researcher observe variables without influencing the individuals.

Setting: The study was conducted in El-Rajhy Liver Hospital, Neurological Hospital, Urology hospital, main hospital (chest department) at Assiut University Hospitals. These selected hospitals where the nursing staffs were working at isolation departments.

Subject: Nursing staff who worked with Covid -19 patients at isolation departments in the pre mentioned hospitals from May to October in 2020. They were 20 nursing staff in each hospital and who are willing to participate in this study the total number of the study subject (No= 80).

Tools of data collection: Two tools were utilized to collect data of the present study.

Tool I: Personal data of nursing staff: It was developed by the researcher to assess the personal data for nursing staff such as; age, sex, educational level, years of experience, and previous hand washing work shop attended.

Tool II: Observation checklist for nursing staff about the proper technique of hand washing and five moments for hand washing. It was developed by the researcher after reviewing the relevant literatures to assess nursing staff practices about the proper technique of hand washing. It included (5 items) and compliance of staff nurses (5 items). It was assessed during nursing staff routine work with Covid -19 patients. Scoring system each item in checklist was scored as follow: One grades for each step that done correct and zero for step that not done. <70 % were graded as inadequate level of practice and ≥70 % was graded as adequate level of practice.

Methods:

Validity definition is the quality or state of being valid: such as "How to use validity in a

sentence". It is have two types face and content validity. The face validity was done by 3 experts from Medical Surgical Nursing staff and two experts of Nursing Administration staff, Faculty of Nursing, Assuit University who reviewed the study tools. Also, content validity was checked and analyzed using confirmatory factor analysis test to assure (importance, clearness, and accountability of each items of the study tool) and its result was **≥ 1.8** for all items of the study tool

Reliability is the probability that a product, system, or service will perform its intended function adequately for a specified period of time, or will operate in a defined environment without failure. The reliability was carried out using the Cronbach's Alpha Coefficient test.to nursing staff practices toward hand washing. It was found to be (r=0.92 & 0.84) respectively.

Pilot study: It was conducted on 10% of the subject (8 nurses) to estimate the time needed to fill out the tools. The data obtained from the pilot study were analyzed and no changes were done, so the subject of the pilot study was included in the main study.

Procedure:

An official approval letter was obtained from the dean of the Faculty of Nursing, An official approval for data collection was obtained from administrators of the selected hospitals, Data were collected from the selected hospitals in the morning and afternoon shifts, At initial interview the researcher introduced herself to initiate a line of communication, Nursing staff agreement for voluntary participation was obtained and purpose and nature of the study was explained. The researcher obtained the personal data from the nursing staff using tool I

The researcher examined the compliance of the nursing staff using an observation checklist (Tool II), in the department temporarily converted into the COVID department. The observational checklist was carried out while the nurses were on duty during morning and afternoon shifts. The nurses were observed by the researcher while they performing the hand washing techniques by using the direct observational technique. The period of data collection was 6 months from May 2020 to October 2020.

Statistical analysis:

The statistical Package for (SPSS) version (23) was used to analyze data. Descriptive statistics was used for the quantitative data in knowledge, and personal data. Descriptive statistics included frequencies, percentages and means ± SD. Independent t-test and Pearson correlation were used to find out the relationship between total knowledge, practice and personal data (correlation is significant at the 0.05).

Ethical considerations: Research proposal was approved from Ethical Committee in the Faculty of Nursing. There was no risk for study subjects during application of research. The study followed common ethical principles in clinical research. Oral consent was obtained from nurses that were willing to participate in study, after explaining the nature and purpose the study. Confidentiality and anonymity were assured. Study subjects had the right to refuse to participate and or withdraw from the study without any rational any time & Study subject privacy was considered during collection of data.

Results:

Table (1) showed that, more than half of nurses 52.5% were aged less than 30 yrs. and nearly three quarters77.5% were female, 42.5 % had technical institute of nursing, more than half 52.5 % had more than 5 years of experiences. Also, the highest percentage of the study subject 57.5% was obtaining training program about HW at all hospitals

Table (2) showed that, the highest percentage of the studied subject was compliance with hand washing at September and October and there was negative statistically significant correlation between compliance and not compliance items with hand washing among nursing staff

Table (3) presented that, the highest mean scores were in September among the studied subject as regard compliance with hand washing at El Rajhy and Neurology Hospitals (4.25±1.2& 4.35±1.63) respectively. There were a positive statistically significant among all hospitals with finding compliance with hand washing in May, June & September months among staff nurses (0.023*, 0.043* & 0.015*) respectively.

Table (4) showed that, the highly positive correlation between Nurs compliance with hand washing and level of education during September month at El Raghy Hospital (R= .451*). Also presented, the highly positive correlation between Nurses compliance with hand washing and obtaining training program about HW during September month at Main and Neurology Hospitals (R=.674** & R=.626**) respectively.

Table (1): Distribution of personal characteristics for the studied subjects (No. =80)

Personal characteristics	Urology Hospital (n=20)		Main Hospital (n=20)		El Rajhy Hospital (n=20)		Neurology Hospital (n=20)		Total (n=80)		P. value
	No	%	No	%	No	%	No	%	No	%	
Gender											
Male	13	65.0	0	0.0	0	0.0	5	25.0	18	22.5	< 0.001**
Female	7	35.0	20	100.0	20	100.0	15	75.0	**62**	**77.5**	
Age											
Less than 30 years	19	95.0	10	50.0	1	5.0	12	60.0	**42**	**52.5**	< 0.001**
From 30-40 years	1	5.0	7	35.0	5	25.0	6	30.0	19	23.8	
More than 40 years	0	0.0	3	15.0	14	70.0	2	10.0	19	23.8	
Level of education											
Bachelor degree of nursing	5	25.0	5	25.0	5	25.0	6	30.0	21	26.3	0.936
Technical Institute of Nursing	8	40.0	10	50.0	7	35.0	9	45.0	**34**	**42.5**	
Secondary school of nursing diploma	7	35.0	5	25.0	8	40.0	5	25.0	25	31.3	
Years of experience											
less than five years	16	80.0	7	35.0	0	0.0	15	75.0	38	47.5	< 0.001**
More than 5 years	4	20.0	13	65.0	20	100.0	5	25.0	**42**	**52.5**	
Obtaining training program about HW											
Yes	14	70.0	6	30.0	11	55.0	15	75.0	46	**57.5**	0.018*
No	6	30.0	14	70.0	9	45.0	5	25.0	34	42.5	

Chi square test ***Significant level at P value < 0.01*

Table (2): Distribution of study subjects with hand washing compliance during 6 months (n=80)

Auditing Nurses compliance with hand washing	Not Compliance		Compliance		P. value	Mean ±SD	P. value
	No	%	No	%			
May	53	66.3	27	33.8	0.102	3.6±1.38	0.971
June	40	50.0	40	50.0		3.7±1.79	
July	41	51.3	39	48.8		3.56±1.81	
August	41	51.3	39	48.8		3.68±1.53	
September	35	43.7	**45**	**56.3**		3.8±1.66	
October	39	48.8	**41**	**51.3**		3.56±1.77	

Table (3): Mean scores of study subject compliance with hand washing during 6 months (n=80)

Auditing Nurses compliance with hand washing	Urology Hospital (n=20)	Main Hospital (n=20)	El Rajhy Hospital (n=20)	Neurology Hospital (n=20)	P. value
	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD	
May	3.75±1.25	2.8±1.67	3.85±0.67	4±1.49	0.023*
June	3.75±1.92	2.8±1.85	3.9±1.48	3.6±1.31	0.043*
July	3.7±1.95	3.4±1.96	3.75±1.68	3.4±1.76	0.889
August	3.05±1.67	3.65±1.84	3.9±1.25	4.1±1.17	0.150
September	3.25±1.89	3.9±1.74	**4.25±1.29**	**4.35±1.63**	0.015*
October	2.85±1.93	3.05±1.85	4±1.62	**4.35±1.27**	0.234
P. value	**0.432**	**0.285**	**0.905**	**0.210**	

One way Anova test

Table (4): Correlation Co- efficient between study subject compliance with hand washing with the Personal data

Personal data		Nurses compliance with hand Washing			
		Urology Hospital	Main Hospital	El Rajhy Hospital	Neurology Hospital
Sex	R	-0.131	-0.123	0.123	-0.170
	P	0.581	0.605	0.604	0.475
Age group	r	-0.246	-0.008	0.088	-0.081
	P	0.295	0.974	0.711	0.733
Level of education	r	0.037	-0.104	**.451***	-0.308
	P	0.877	0.662	0.046	0.186
Years of experiences	r	-0.123	0.123	-0.323	.541*
	P	0.605	0.604	0.165	0.014
Obtaining training program about HW	r	-0.225	**.674****	-0.297	**.626****
	P	0.341	0.001	0.203	0.003

Spearman Correlation Statistically Significant Correlation at P value < 0.05
Statistically Significant Correlation at P value < 0.01*

Discussion:

The Hand Washing knowledge was strongly associated with positive attitudes toward HW and correct HW practice in adults during the COVID-19 Pandemic. The present study was conducted with the aim to Auditing the compliance of nursing staff on hand washing technique during Covid -19 Pandemic at Assiut University Hospital.

The present finding used the auditing as a tool to evaluate the compliance of the nursing staff with hand washing as this finding assured the compliance of nursing staff at the time of the curve rate are increased at September month. This finding consistent with **Donnellan, et al. (2011)** Who explored that**,** the hand washing audit rates are used as a benchmark of a hospital's clinical practice. Improvements can be made by analyzing the data, feeding back the information and providing strategies for behavioral change. A change is required not only by the clinical staff, who are expected to perform hand Washing with each patient contact, but also in the way healthcare safety benchmarks are collected. Methodologies used to audit the effectiveness of hand washing should keep in mind duty of care, patient safety and the overall aim of the activity.

In this finding, the highly positive correlation between nursing staff compliance with hand Washing and level of education during September month at El Rajhy Hospital May be due to the nursing staff have bachelor degree were have highly compliance with hand washing than other degrees in this hospital, and the highly positive correlation between Nursing staff compliance with hand washing and obtaining training program about HW during September month at Main and Neurology Hospitals This finding consistent with **Al-Wutayd, et al (2020)** who reported in his study is that high educational levels increase the feeling of being vulnerable to contracting COVID-19, not touching the face while wearing gloves, and actively directing family members to wash their hands when needed. This may be explained by more education being correlated with a greater awareness of the seriousness of this disease and an increased sense of vulnerability. However, increased education was also associated with positive attitudes, as most of the moderately educated and highly educated respondents believed that HW reduces infection risk.

In the present study, there were negative statistically significant correlation between compliance and not compliance items with hand washing among nursing staff. This finding consistent with **Harper et al., (2020)** who predict in his study the compliance rate was shown in many studies to be significantly lower before patient contact as opposed to after patient contact. The gap between 'before patient contact' and 'after patient contact' compliance rates is generally explained by the health-care workers concern regarding their risk of acquisition of infections and resistant bacteria from patients. This concern leads to higher hand washing performance, specifically after patient contact. Hand hygiene before

patient contact is performed with the purpose of protecting the patients.

On the other hand **Mathur, (2011)** who reported that**,** the educational interventions for medical students should provide clear evidence that HCWs hands become grossly contaminated with pathogens upon patient contact and that alcohol hand rubs are the easiest and most effective means of decontaminating hands and thereby reducing the rates of HAIs. Increasing the emphasis on infection control, giving the charge of infection control to senior organizational members, changing the paradigm of surveillance to continuous monitoring and effective data feedback are some of the important measures. Finally, **Salama, et al (2017)** his study inconsistent the present finding where he reported that, Very poor compliance with HW practices among studied HCWs is calling for urgent intervention through auditing for practitioners.

Conclusion:

Hand Washing compliance rates have increased significantly in last month's only at Al Rajhy Liver Hospital and Neurological Hospitals where there has been an increase in the number of coronavirus cases among nurses compared with other hospitals.

Recommendations:

The researchers recommended the following:

1. There must be announced strategies in hospitals for all nursing staff to note the extent of nurses' commitment to washing hands.
2. The best ways to improve hand washing compliance is training and continuous education of all HCWs including newly educated physicians and nurses.
3. Strict observation and regular audit of their compliance with IC standard precautions and correction of poor practices by the IC team are also required as pre-planned patient safety activities.
4. Ensuring availability of the required resources and supportive infrastructure is recommended.
5. The resources should be include: sinks, hand rubbing and drying facilities and availability of reminders on HH practices like posters that should be displayed in a proximity of sinks and hand rubbing at all ICUs and wards.
6. Penalties are also applied to those who do not adhere to hand washing**.**
7. There must be a guided post next to the sinks as a way to remind the nurses on the right way to wash hands and the correct times to wash hands.

References:

Al-Wutayd,O, Mansour, A., Aldosary, A., Hamdan, Z. & Al-Batanony,M. (2020): Hand washing knowledge, attitudes, and practices during the COVID-19 pandemic in Saudi Arabia: A non-representative cross-sectional study, Article number: 16769 (2020) Cite this article Scientific Reports (*Sci Rep*) ISSN 2045-2322 (online).

Ann-M.A., (2020): Hand washing and stopping the spread of COVID-19, Journal of Paramedic Practice , Downloaded from magonlinelibrary.com by 041.176.238.240 on September 5, 2021

Boyce J., & Pittet D., (2020): 'MMWR Recommendations and Reports. Guideline for hand washing in health care setting, vol.51.RR16; 1–44.

Daniel J., Livorsi, M., Cassie, C., ,Michael, S., ,Mark W., Vander W., & EliN, P.,(2018): Heather Schacht Reisinger, PhD Evaluation of Barriers to Audit – and – Feedback Programs That Used Direct Observation of Hand Washing Compliance A Qualitative Study, JAMANetworkOpen;1(6).

Desai, N., Patel P., (2020): Stopping the spread of COVID-19. Journal American Medical Association. Published online March 20, 2020, one page. https://doi.org/10.1001/jama.2020.4269

Donnellan, R., Ludher's, J. & Brydon, M.(2011): A Novel Approach to Auditing the Compliance of Hand

Washing and Staff Behavior Change Healthcare Infection 16(2):55-60

Doung, P., Suphanchaimat, R., &Panjangampatthana, A., (2020): Case control study of use of personal protective measures and risk for severe acute respiratory syndrome coronavirus 2 infection, Thailand. Emerg Infect Dis 2020;26. https://doi.org/10.3201/ eid2611.203003

Gammon, J., & Hunt J., (2019): The neglected element of hand washing - significance of hand drying, efficiency of different methods and clinical implication: A review. J Infect Prev. 2019 Mar; 20(2):66-74. - PMC - PubMed

Harper C., Satchell L., Fido D., & Latzman R. (2020): Functional fear predicts public health compliance in the COVID-19 pandemic. Int J Ment Health Addic.:1–14. doi: 10.1007/s11469-020-00281-5.

Knepper B., Miller A.,& Young H., (2020): Impact of an automated hand washing monitoring system combined with a performance improvement intervention on hospital-acquired infections .Infect Control HospEpidemiol.;41(8):931-937. doi:10.1017/ice.2020.182

Mathur, P. (2011): Hand washing: Back to the basics of infection control, The Indian Journal of Medical Research, 134(5): 611–620.

Otfinejad, N., Peters, A., & Pittet, D.,(2020): Hand washing and the novel coronavirus pandemic: the role of healthcare workers, J Hosp Infect(published online March 19

Public Health England., (2020):.COVID-19: infection prevention and control guidance. https:// tinyurl.com/y82t53a7

Salama, O., Elweshahi,1 H., &Abd El Raheem, A. (2017): Knowledge, Attitudes and Compliance with Hand Washing Practices among Health Care Workers in Alexandria Main University Hospital, Journal of High Institute of Public Health 2017;47(2):39-47.

World Health Organization.,(2020): Recommendation to Member States to improve hand Washing practices widely to help prevent the transmission of the COVID-19.. https://www. who.int/ docs/ default- source/ inaugural-who-partners-forum/who-interim-recommendation-on-obligatoryhand-Washing -against-transmission-of-covid-19.pdf**.**