



Hand hygiene practices of health care workers in the operating theater: an observational study

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ABSTRACT

Background: Healthcare Associated infections (HCAIs) remain to be a major health concern. Nonetheless, there is a few data showing the adherence on hand-hygiene practices in OT. **Objective:** The purpose of this study is to present and show the real picture of the hand-hygiene practices inside the operating theater of Al-Bayda Medical Center in September 2022. This will serve as a baseline data for any intervention necessary. **Methods:** This is an observational qualitative study including the surgeons, anesthesiologists, and scrub nurses who are participating in the surgical procedures and must perform surgical hand washing before the surgery. Using a formulated checklist, each OT staff were observed while the observers are simultaneously recording the results. **Results:** 34 doctors and 16 nurses were covertly observed. The age group of 21-30 and 31-40 comprise the majority of the respondents, which is 18 (36%) and 16 (32%), respectively; 29 are female and 21 are male. 34 out of 50 respondents are married. 26 of the respondents graduated from their college course; Eight (16%) are post-graduate. The rest are vocational (14) and high school (2) graduates, which are the nurses. 96% of respondents correctly wear and tuck scrubs suit, wear cap and mask. 7 out of 50 are wearing ring. 11 touched the sink and/or their clothing touched the sink and even got wet at least once. 14 of the respondents turned off after they have wet their hands. 42 respondents held their hands higher than the elbow. 12 respondents did not use soap and just washed their hands with water. The rest are applying soap only on the hands, not including the arms and elbow. Only 13 respondents thoroughly wash and clean the hands covering all the areas (palm, fingertips, interlaced, fingertip, thumb, sided of fingertip, wrist, arm, and elbows for at least 2 minutes. 34 did it but only less than 30 seconds; while the 3 did not do it at all. Only 3 respondents scrub the arms to 3 inch above the elbow for at least one minute; 47 washed only up to the wrist. 4 respondents cleaned their nails using the brush. 45 respondents rinse off thoroughly, starting off from the fingertips, down to the elbows under the flowing water. 12 respondents turned-off the faucet using their hands. 4 respondents lowered their hands while going inside the OT. **Conclusion:** Majority of the healthcare workers are not practicing surgical hand washing correctly inside the operating theater. 16 out of 16 of birth attendants are either high school graduate or diploma.

Keywords:

Surgical hand washing – Sterile - Aseptic technique - Operating theater - Practice



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Introduction:

Healthcare Associated infections (HCAIs) remain to be a major health concern.^[1] Two to five of patients going through surgical procedure suffer from surgical site infections (SSIs). Patient contact inside the operating theater (OT) may be a contributing factor of HCAI via microbial contamination through improper hand-hygiene practices.^[2] Proper performance of hand-washing technique is the most effective way or preventing microbial transfer.^[3] Nonetheless, there is a few data showing the adherence on hand-hygiene practices in OT.^[4]

Hand-hygiene should remain to be emphasized in controlling infection. Not only it vital to industrial, community, and domestic settings, it is also crucial in the healthcare institutions. Although guidelines about hand-hygiene is posted in every healthcare settings, total compliance among the employees remains poor.^[5]

Studies showed that millions of lives were saved yearly due to the use of soap.^[5] In 1961 in the US, it was recommended that health practitioners should wash their hands with soap for one to two minutes before and after patient contact.^[6]

Hand hygiene is the cheapest way to prevent HCAI.^[7] Inadequate information has been presented on compliance to hand-hygiene protocols by OT staff, and its role in controlling OT-borne HCAI. In a study made among anesthesiologist, only 58% are washing their hands in between cases.^[8-11] 69% anesthesiologist wash their hands before eating, while only 17% perform hand hygiene before administering anesthesia.^[12] Adherence to gloving guidelines has also shown less than 50% rate.^[8,9,10,13]

There are other contributing factors for the development of HCAI in an intraoperative environment. Anesthesia is linked with weakening the immunity.^[14] Frequently touching the patient by the OT staff can cause cross contamination.^[7, 15] Contamination from inanimate objects like mobile, machines, pens, IV sets, and the likes has also been observed.^[12, 17, 18]

Objective:

The purpose of this study is to present and show the real picture of the hand-hygiene practices inside the operating theater of Al-Bayda Medical Center in September 2022. This will serve as a baseline data for any intervention necessary.

Methods:

This is an observational qualitative study including the surgeons, anesthesiologists, and scrub nurses who are participating in the surgical procedures and must perform surgical hand washing before the surgery. Covert direct observations of the OT staff were performed by two trained observers. Single observation was made for each staff before the surgery. Using a formulated checklist, each OT staff were observed while the observers are simultaneously recording the results. Results were limited to: done, not done, improperly done. They are taking note of detailed observations as well.

Results:

There are 34 doctors and 16 nurses were observed. The age group of 21-30 and 31-40 comprise the majority of the respondents, which is 18 (36%) and 16 (32%),



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respectively; twenty-nine are female and twenty-one are male. Most of the respondents are also married (34 out of 50). Fifty-two percent (26) of the respondents graduated from their college course; Eight (16%) are post-graduate. The rest are vocational (14) and high school (2) graduates, which are the nurses. The checklist has 12 points for observation:

1. Wear and tuck scrub suit, wear cap and mask- 96% of respondents did it correctly.
2. Remove jewelry such as ring and wrist watch- 7 out of 50 are wearing ring.
3. Stand in front of the sink. Do not allow the clothing to touch the sink during the procedure- 11 touched the sink and/or their clothing touched the sink and even got wet at least once.
4. Turn on the faucet and adjust the water flow and temperature. The water must be flowing until the procedure is done. Warm water is desired- 14 of the respondents turned off after they have wet their hands.
5. Wet hands thoroughly under flowing water, holding hands higher than elbows so that the water flow from fingertips down to the elbow- 42 respondents did it correctly; the 8 are doing it the other way around.
6. Apply antimicrobial soap deliberately on both arms from fingertips to the elbows- 12 respondents did not use soap and just washed their hands with water. The rest are applying soap only on the hands, not including the arms and elbow.
7. Thoroughly wash and clean the hands covering all the areas (palm, fingertips, interlaced, fingertip, thumb, sided of fingertip, wrist, arm, and elbows for at least 2 minutes- Only 13 respondents did it correctly. 34 did it but only less than 30 seconds; while the 3 did not do it at all.
8. Scrub the arms to 3 inch above the elbow for at least one minute- only 3 respondents did it correctly; 47 washed only up to the wrist.
9. Clean the fingertips using a brush or orangewood stick- only 4 respondents cleaned their nails using the brush; the rest did not do it correctly.
10. Rinse off thoroughly, starting off from the fingertips, down to the elbows under the flowing water- 45 respondents did it correctly.
11. Turn of the pedal, without touching anything- 12 respondents turned-off the faucet using their hands.
12. Hold hands higher the elbow. Go inside the OR- 4 respondents lowered their hands



Procedure	Done	Not Done	Improperly Done
1. Wear and tuck the scrub suit, wear cap and mask.			
2. Remove jewelry such as ring and wrist watch.			
3. Stand in front of sink. Don't allow clothes to touch the sink.			
4. Turn on faucet and adjust water flow and temperature. Water must be flowing all throughout the procedure. Warm water is desired.			
5. Wet hands thoroughly under flowing water, holding hands higher than the elbows so water flows from fingertips to elbows.			
6. Apply antimicrobial soap deliberately on both arms from fingertips to elbows.			
7. Thoroughly wash and clean the hands covering all areas (palm, fingertips, back of hands, interlace, thumb, sides, wrist, arms, elbows) for at least 2 minutes.			
8. Scrub the hands, wrist, arms up to 3 inches above the elbow for at least one minute.			
9. Clean the fingertips using a brush or an orangewood stick.			
10. Rinse off soap thoroughly starting from fingertips, down to the elbows under the flowing water.			
11. Turn off the faucet without touching anything.			
12. Hold hands higher than the elbows going inside the OT.			

Table 1: Checklist used by the observers.



Diagram 1: Soap used inside the operating theater.



MAIN OT

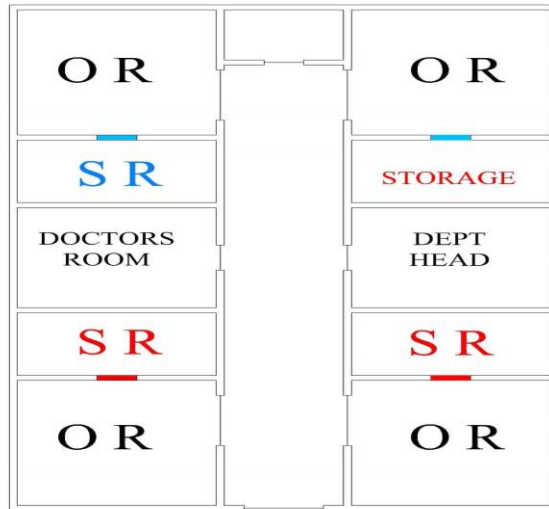


Diagram 2: Simple blueprint of the Main operating theater.



Diagram 3: Main operating theater hand washing area.



Diagram 4: Gynecology operating theater hand washing area.



GYNE OT

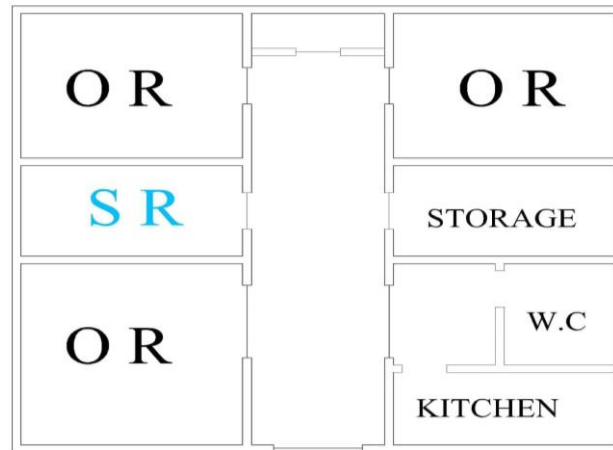


Diagram 5: Simple blueprint of the Gyne operating theater.

Conclusion:

Only 3 respondents did the procedure correctly. 11 respondents touched the sink at least once; 14 respondents are turning off the faucet in between the procedure; 11 respondents did not use antimicrobial soap at all; 37 washed their hands less than the desired time; 47 respondents did not include the arms and the elbows in the procedure; only 4 respondents cared to clean their nails; 12 respondents closed the faucet using their clean hands right after the procedure.

On the other hand, 48 respondents tucked their scrub suits, and are wearing cap and mask during the procedure. 43 respondents removed their jewelry and watch before starting the procedure; 42 respondents wet their hands with the fingertips above the level of the elbow; and 45 rinsed of the water correctly; and 46 kept their hands up while going inside the theater to dry their hands.

Majority of the healthcare workers are not practicing surgical hand washing correctly inside the operating theater. 16 out of 16 nurses are either high school graduate or diploma.

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