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Evaluation of operating room staff hand scrub and its compliance with hand scrub standards (2015)

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ABSTRACT

Hand scrubbing is an important part of the strategy of preventing infection after surgery. For insuring that our hands are disinfected properly after hand scrub procedure, we must do the hand scrub compliance with the standards. This study aimed to evaluate hand scrub of operating room staff and its compliance with hand scrub standards. This was a cross-sectional study. The source of data were 56 operating room staff working in Ali-ebn-Abitaleb hospital of Zahedan. Data was collected through a standard checklist extracted from Berry & Kohn's book. Data were analyzed using ANOVA and T-test by SPSS v.19. The mean age was 30.21 ± 4.27 among respondents. Mean of the total hand scrubbing performance score of respondents was 13.96 ± 2.98 . There was a significant relationship between hand scrubbing performance and academic degree but there wasn't any significant relationship between hand scrubbing performance and gender. Hand scrub performance of staff was not compliant with standards. The findings suggest managers and directors to perform effective proceedings for improving this performance. And also we suggest them to do a proper supervision on this performance.

Key words: Operating room, compliance, Hand scrub

INTRODUCTION

Operating room staff are responsible to prepare a safe surgical site to prevent the hospital infections (1). The infection of surgical site is one of the most common hospital infections (2), that brings suffer, pain, prolongation of hospital stay, increased hospital costs, and even death in patient (3). Clean environment, clean bed linens, proper hand washing and using aseptic techniques can be effective to prevent the infections (1). The hands disinfection of the surgical team are very important in order to prevent the infection of surgical site (4, 5). Hands hygiene is one of the general principles of controlling the hospital infections (6). Hand scrubbing includes: cleaning the nails with a brush, using antiseptic solutions for hands and forearms, and after that washing the hands with an aseptic technique (7). The importance of hand washing was found on 1847. After that on 1861 Vice suggested hand scrubbing with chlorinated lime before every medical proceeding. The suggestion of Vice on 1861 Reduced the mortality rate of patients unbelievably (2). The hand scrubbing should aim to decrease the microorganisms and also decrease the risk of infection at the surgical site. So then it will be beneficial for the health care system (8-10). Hand scrubbing is an important part of the strategy of preventing the infection after the surgery (11). Today we have considerable developments in designing the surgical instruments and equipment. But yet we have a 17% report of glove perforations. So then yet hand scrub can be beneficial for decreasing the post-surgery infections (12, 13). Manjunat et al. reported the rate of glove perforation in laparotomy surgery 63% for surgeons and 40% for scrub nurses (14). Also according to results of a study conducted in Mashhad hands of staff will go to be infected by a temporary or pathogenic flora during the day and hand washing would decrease this infection (15). Today hand scrubbing is compulsory for every sterile surgical team member (2). But despite this fact that hand scrubbing is a common task in operating room, most previous studies couldn't demonstrate any standard protocol for that and

widespread changes were done on that (19-16). Also the results of studies had shown that tend to hand washing standards is low in healthcare centers (22-20). According to this that hand scrubbing is a necessary and important task and can prevent the after the surgery infections and also according to changes in hand scrubbing methods (some non-standard methods were seen), the researchers decided to conduct a study to evaluate operating room staff hand scrub and its compliance with hand scrub standards on operating room staffs working.

MATERIALS AND METHODS

This was cross-sectional study conducted in Ali-ebn-Abitaleb hospital of Zahedan. We had 56 participants including surgical technologists with associated degree and bachelor degree, residents of surgery and surgeons. Data collected through a standard checklist extracted from Berry & Kohn's Operating Room Technique 13th edition. This checklist included 20 questions which were answered by "YES" and "NO". The answer "YES" had a score of 1 and the answer "NO" had a score 0. The validity of the checklist was proved by 5 professors of operating room department. The Respondents who could gain a score of 20 and higher were staff with good scrub performance and those who had a score less than 20 were staff with poor scrub performance. We went to the operating room in three work shifts (morning, afternoon and evening). After explaining the aims of the study and getting the written consent from the staff we asked them to scrub their hands. While they were doing the scrub we gave them scores according to the checklist items. After data collecting they were analyzed using ANOVA and T-test by SPSS v.19.

RESULTS

Respondents were 56 operating room staff. 17 of them had associate degree of surgical technology (30.4%), 14 had bachelor (B.S.) of surgical technology (25%), 6 were surgeons (10.7%) and 19 were residents of surgery (33.9%). There was a significant relationship between the academic degree and staff scrub performance ($p=0.00$). The mean of age was 30.21 ± 4.27 among the respondents. 20 of respondents were males (35.7%) and 36 were females (64.3%). There wasn't any significant relationship between sex and age and staff scrub performance ($p>0.05$). Mean of the total hand scrubbing performance score of respondents was 13.96 ± 2.98 . The higher score was 18 from 20 and the lowest was 7 from 20. All of the staff used betadine for disinfecting their hands. Female surgical technologists who had B.S degree had the highest mean of hand scrub performance score.

Table 1. The relation between demographic information and staff hand scrub performance

		Mean	Standard deviation	Min score	Max score
Academic degree	ST with associated degree	14.82	1.74	11	18
	ST with B.S	16.07	1.68	12	18
	Surgeon	15	3.16	10	17
	Resident of surgery	11.31	2.78	7	16
Gender	Male	12.95	3.15	8	18
	Female	14.52	2.77	7	18

Table 2. The Frequency of staff's true or false performance according to the checklist

Items	YES (percent)	NO (percent)
Gets sure that everything that is necessary for hand scrub is inside the scrub room	98.2	1.8
Removes extra things such as rings, bracelets and watches from his/her hand	100	0
He did cut his nails	92.9	7.1
His hat is completely covering his hair and ears	50	50
His mask is fixed in a good position	98.2	1.8
He wears eye shields and glasses	26.8	73.2
He opens the water tap as enough as needed	80.4	19.6
Brings water to the desired temperature.	98.2	1.8
During the procedure refrains from touching the water tap or any other location	96.4	3.6
Wets his hand and arms	98.2	1.8
Opens sterile scrub brush.	0	100
Cleans under the fingers by brush properly	0	100
Rubs both palms together properly	91.9	8.9
Rubs the back of the left hand with palm of the right hand	78.6	21.4
Rubs each of fingers separately using betadine	67.9	32.1
Rubs the external edge of the hand	44.6	55.4
Rubs the internal edge of the hand	42.9	57.1
Rubs the forearm arm rotatory up to 5 centimeter higher than forearm	71.4	28.6
During doing the scrub procedure keeps the fingers and wrist higher than the arm	67.9	32.1
Repeats the same steps for next hand	92.9	7.1

All the staff removed extra things such as rings, bracelets and watches from their hand. But all of them didn't use a brush for cleaning their nails. The relation between demographic information and staff hand scrub performance is shown in table 1. And also the percentage of staff's true or false performance is shown in table 2.

DISCUSSION

Sterile or unsterile is absolute: this is the rule of operating room and there is no rather sterile or rather unsterile in it. So if just one step of a procedure goes wrong we can say that procedure is completely wrong (1). No one of subjects could gain a complete score of this checklist in this study. Females had a higher score than males in this study but there wasn't any relationship between sex and staff hand scrub performance.

The surgical technologists who had a Bachelor of surgical technology had a higher score than others that this can be cause of their higher level of knowledge in comparison with surgical technologists with associated degree. Also surgeons had a higher score than the residents of surgery that this can be cause of their responsibility to patient's life. Unfortunately the residents of surgery had the lowest mean of score. This can be cause of this that no one is there to hint the residents about this matter and also it can be cause of lack of responsibility in Iranian residents of surgery toward patient's life and health. There was a significant relationship between academic degree and score of hand scrub performance and the residents of surgery had a significant difference with other three groups. According to the results of this study half of the subjects didn't get sure that their hat is completely covering their hair and ears and also didn't wear eye shields and glasses. This is while that Braswell (23) states that all the staff's head should be covered by surgery dress. The mask also should be worn before scrubbing. The mask would protect the patient from the microorganisms of staff's respiratory system (1). Most of the staff had worn their masks before scrub procedure in this study. Removing watches, bracelets and rings is necessary before the hand scrub procedure. Cause they can be haven for microorganisms (1). According to Braswell statements (23) that he should every kind of jewel should be removed before scrubbing the hands all the staff had removed their jewels before scrubbing procedure. This part of the checklist was completely done by the staff and this can be cause of this that these materials may be forgotten in patient's abdomen during the surgery and may result in dangerous infections. The results of this study had shown that just a few number of the staff use a brush for cleaning their nails and their nails re not short. In the study of Zandiet al. conducted in Hamedan, they didn't use a brush for cleaning their nail also (25). Not shorten nails can be a place for microorganisms growth and also can cause glove perforation during the surgery (24). So then it is necessary for the staff to insure that their nails are short and disinfected.

But also in the study of Asdornwised et al., the results had shown that using a brush for cleaning the nails can damage the skin. May be this is one of the reasons that the staff does not use a brush to clean their nails. So then our offer is this to use sterile sponges instead of brushes for disinfecting the nails. Because most of the accredited organizations emphasize that the nails must be disinfected with a sterile material (28-25). Nurses usually have a positive attitude toward hand hygiene and this factor signifies their readiness for learning better the clinical principles and guidelines toward hand hygiene that was provided by WHO, American Center for control and prevention of Diseases and regional health care organizations. Results of a study which conducted by Sharif and arbabisarjou et al. have showed that nurses had a good performance about hand hygiene(29).

CONCLUSION

The hand scrub performance of the staff was not compliant with the standards at all. We suggest the managers and directors to do effective proceedings for improving this performance. Proceeding such as staff education, attaching posters for the principles of hand scrub etc. If we do not pay attention to this matter it can result in patient's safety and outcomes.

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REFERENCES

- [1] Shawish FA, Payagen LT, Kiblasan JIA, Elwahaishi SS. *International Journal of Nursing Science*. **2015**;5(3):93-6.

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- [2] Verwilghen DR, Mainil J, Mastrocicco E, Hamaide A, Detilleux J, Van Galen G, et al. *The Veterinary Journal*. **2011**;190(3):372-7.
- [3] Megeus V, Nilsson K, Karlsson J, Eriksson BI, Andersson AE. *Antimicrobial resistance and infection control*. **2015**;4(1):5.
- [4] Widmer A, Rotter M, Voss A, Nthumba P, Allegranzi B, Boyce J, et al. *Journal of Hospital Infection*. **2010**;74(2):112-22.
- [5] Organization WH. WHO guidelines on hand hygiene in health care: first global patient safety challenge. Clean care is safer care: World Health Organization; **2009**.
- [6] Hedin G, Blomkvist A, Janson M, Lindblom A. *APMIS*. **2012**;120(10):802-7.
- [7] Tanner J, Khan D, Walsh S, Chernova J, Lamont S, Laurent T. *Journal of Hospital Infection*. **2009**;71(3):234-8.
- [8] Spruce L. *AORN journal*. **2013**;98(5):449-60.
- [9] Asdornwiset U, Prechakul B, Trakulsomboon S, Rojananin S, Rongrungrong Y, Supanya W, et al. *J NursSci* Vol. **2011**;29(3).
- [10] Ataee RA, Tavana AM, Khatami SM, Baghmaleki FA, Miry LS. *Journal of Health Policy and Sustainable Health*. **2014**;1(2).
- [11] Hübner N-O, Kellner N, Partecke L, Koburger T, Heidecke C-D, Kohlmann T, et al. *Journal of hospital infection*. **2011**;78(1):11-5.
- [12] AvMed D, Foo TL, Low W, Naidu G. *Ann Acad Med Singapore*. **2012**;41:12-6.
- [13] Kareem S, Mahmood A, Hussein Z. *J ClinExpOphthalmol*. **2014**;5(340):2.
- [14] Manjunath A, Shepherd J, Barton D, Bridges J, Ind T. *BJOG: An International Journal of Obstetrics & Gynaecology*. **2008**;115(8):1015-9.
- [15] Naderinasab M, TayyebiMeibodi N, Nahidi Y, Bakhshizadeh A. *Medical Laboratory Journal*. **2013**;7(3):75-9.
- [16] Hsieh HF, Chiu HH, Lee FP. *Journal of advanced nursing*. **2006**;55(1):68-78.
- [17] Nicolay C. *International Journal of Surgery*. **2006**;4(1):53-65.
- [18] Humphreys H. *Journal of Hospital Infection*. **2002**;51:241q55.
- [19] Alcan AO, Korkmaz FD. *American journal of infection control*. **2012**;40(9):826-9.
- [20] Mortell M, Gallagher R, Sunley K, Tanner J, Timms A, Pugh H, et al. *Health Technology Assessment*. **2012**;15:30.
- [21] Haas JP, Larson EL. *Academic Emergency Medicine*. **2008**;15(4):393-6.
- [22] Trampuz A, Widmer AF, editors. Hand hygiene: a frequently missed lifesaving opportunity during patient care. Mayo Clinic Proceedings; **2004**: Elsevier.
- [23] Braswell ML, Spruce L. *AORN journal*. **2012**;95(1):122-40.
- [24] Bentz P, Ellis J. Modules for basic nursing skills. Philadelphia: Lippincott Williams & Wilkins; **2007**.
- [25] Zandeyeh M, Heidari A, Bourzo S, Fakhr AA, Moghimbeigi MSA. *Scientific Journal of Hamadan Nursing & Midwifery Faculty*.19(2):24-34.
- [26] Hsieh HF, Chiu HH, Lee FP. *Journal of advanced nursing*. **2006**;55(1):68-78.
- [27] Khan A, McLaren SG, Nelson CL. *Clinical orthopaedics and related research*. **2003**;414:65-8.
- [28] Committee AopRNRP. *AORN journal*. **2004**;79(2):416.
- [29] Sharif , A R., Arbabisarjou, A., Balouchi A., et al. (2015). *GJHS*,8(8):57-65. Doi:10.5539/gjhs.v8n8p57.