

An Assessment of Hand Hygiene Practices among Health Care Providers in Operation Theatre

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ABSTRACT

Aims: To assess the frequency of hand hygiene opportunities available to health care providers during surgeries and to assess the frequency of hand hygiene practices of health care providers in those hand hygiene opportunities.

Study design: Cross sectional study

Place and duration of study: Operation theatre and recovery room at The Indus Hospital Korangi Campus and Sheikh Saeed Memorial Campus from 21st March 2021 to 30th August 2021

Methodology: Two hundred and eighty one health care professional for 55 surgeries were included for hand hygiene opportunities and their hand hygiene practice. Every opportunity to practice hand hygiene was observed and noted as having occurred (hand wash or hand rub) or missed. Throughout the period, the PI was recorded opportunities for hand hygiene and missed opportunities using WHO's hand hygiene observational form.

Results: The average age of the health care provider was 31.22±8.15 years. The overall adherence to hand hygiene practice according to WHO guidelines was 16.1% while 83.9% were not according to WHO hand hygiene guideline. Failure of hand hygiene practice was significantly high in all type of hand hygiene opportunity. Rate of missed/failure hand hygiene practice was significantly high in nurses and technician and also their qualification ($p<0.05$).

Conclusion: The poor hand hygiene compliance was frequently noticed among health care workers. Hand hygiene should be an educational priority and it needs to be implemented effectively. Therefore, hand hygiene resources is an integral part for better strategic and improvement strategy.

Keywords: Hand hygiene, Contamination, Health care associated infections; Prevention.

INTRODUCTION

Hospital acquired infections also known as the nosocomial infection, is an infection that is acquired in the hospital setting or other health care facility to susceptible patients by various means. Although there are various modes of transmission of infections, but most commonly in health care institutions, these infections result from the transmission of microorganisms from one hand to the next among health care workers and to the patients¹.

Hand hygiene has been identified as the preventive recommended strategy that will narrow down cross-transmission of pathogens in the healthcare environment. It has been proven to reduce the incidence of nosocomial infections².

Especially, physicians, consultants, surgeons, residents, nursing assistants, sweepers and other health care providers show noncompliance to hand hygiene and practices. There may be due to many factors contributing towards poor hand washing compliance among healthcare providers like lack of knowledge about importance of hand hygiene in preventing infections, and various means of hand transmitted infection, no availability of hand washing sinks, soap and water, time required to perform proper hand washing steps, effect of hand washing products on skin, and lack of knowledge regarding hand hygiene³.

However, in Pakistan healthcare acquired infections is the major challenge for which the WHO initiated the Hand Hygiene campaign in Pakistan Institute of Medical Sciences (PIMS) in 2007. After running this campaign, prevention of health care acquired infections became the topmost priority for most of the health care institutions as well as for PIMS⁴.

Among anesthesiologists 17% are reported performing hand hygiene before anesthesia, compared with 69% before lunch. There is low Compliance of gloving, with rates of adherence never exceeding 50%.⁵ There is evident transmission of infectious organisms between the anesthesia environment and patients.⁶ Wearing gloves for protection is not the replacement for recommended hand hygiene, as unintentional tear of gloves can occur during procedures and there is also a risk of contamination of hands during removal of gloves⁷.

The World Health Organization (WHO) has given guidelines based on evidence regarding HH in healthcare. An observational tool has been developed known as "my five moments for hand hygiene" that explains the scientific recommendations for hand hygiene and practices. These guidelines have been developed as an acceptable tool to train and teach our healthcare providers at whatever level to practice HH and can be used as the best tool to promote HH practice and strict adherence to it.⁸

A study done in Sweden in 2015 reported that a total of 2,393 opportunities were observed during 94 surgeries. Out of which, higher proportion of opportunities were observed in general surgery 1256(52%) followed by orthopedic, urology, gynecology, preoperative center and pediatric surgery 507(21%); 221(9.2%); 165(6.8%); 132(5.5%); 112(4.7%). Majority of the hand hygiene practice was observed in preoperative center followed orthopedics, gynecology, general surgery, urology and pediatric surgeries 13(9.8%); 36(7.1%); 8(4.8%); 59(4.7%); 7(3.2%); 3(2%)⁸.

The objectives of the study were to assess the frequency of hand hygiene opportunities available to health care providers during surgeries and to assess the frequency of hand hygiene practices of health care providers in those hand hygiene opportunities.

MATERIALS AND METHODS

The cross sectional study was conducted at Operation theatre and recovery room at The Indus Hospital Korangi Campus and Sheikh Saeed Memorial Campus, Karachi from 21st March 2021 to 30th August 2021. After approval of research from Ethical Committee 281 health care professional for 55 surgeries were enrolled. Either gender, those HCPs present in OR during the surgery period were included. Any person who is not a health care provider was excluded. Hand hygiene opportunities was observed of the healthcare provider by following a given patient through the perioperative process through the entire intraoperative period and into recovery period where the handing over to the post-anesthesia care staff takes place. The observations was initiated once the OT team start to prepare for the surgical procedure which could include preoperative examination, intravenous lines introduction, and some may receive regional anesthesia within recovery room before being shifted to OT. Every opportunity to practice hand

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hygiene was observed and noted as having occurred (hand wash or hand rub) or missed. Throughout the period, the PI was recorded opportunities for HH and missed opportunities using WHO's HH observational form. Additional information collected was included type of surgery and type of anesthesia used. Personal information regarding the HCP's gender, age, professional experience, qualification and duration of employment in The Indus Hospital was recorded. The healthcare providers being observed was aware that a study is taking place on patient safety but specific details was not told of what is being measured. All the data was entered and analyzed using statistical software SPSS-26.0. Chi-square test/Fisher exact test was applied as appropriate to assess significant association between types of HCP categories like age, gender, qualification, and opportunity and action taken by HCPs. P-value < 0.05 was considered statistically significant.

RESULTS

There were 185 (65.84%) males and 96 (34.16%) females, 37.37% doctors, 25.27% nurses and 37.7% technicians and professional educational of the participants were shown in Table 1. The average age of the HCP was 31.22±8.15 years and average experience of HCP was 7.39±5.71 years (Table 2). The most common surgery was general surgery followed by orthopedic and gynaecology surgeries (Table 3).

The overall adherence to hand hygiene practice according to WHO guidelines was 16.1% while 83.9% were not hand hygiene practice (Table 4). Frequency of hand hygiene opportunities available to health care providers during surgeries are presented in Fig. 1. Failure of hand hygiene practice was significantly high in all type of hand hygiene opportunity (Table 5).

Table 1: Demographic information of health care providers (n=281)

Variable	No.	%
Gender		
Males	185	65.84
Females	96	34.16
Profession		
Doctors	105	37.37
Nurses	71	25.26
Technician	105	37.37
Qualification		
Diploma	129	45.91
BSN	47	16.73
Resident	60	21.35
FCPS or MCPS	45	16.01

Table 2: Descriptive statistics of health care providers (n = 281)

Variable	Mean±SD
Age of the health care providers (years)	31.22±8.15
Overall experience (years)	7.39±5.71
Duration of employment in current job (years)	2.92±0.27

Table 3: Frequency of type of surgeries (n=55)

Type of surgery	No.	%
General surgery	15	27.3
Orthopedic	15	27.3
Gynaecology	10	18.2
Urology	7	12.8
Plastic	5	9.0
Cervical lymph node biopsy	1	1.8
Cystolapexy	1	1.8
MRI	1	1.8

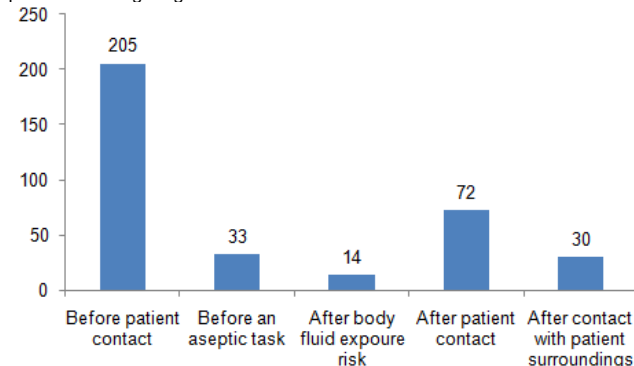
Table 4: Overall hand hygiene performance (n=354)

Hand Hygiene Parameter	No.	%
Opportunity adherence to HH guidelines	57	16.1
Opportunity not adherence to HH guidelines	297	83.9

Table 5: Comparison of hand hygiene opportunities to hand hygiene practice

Hand hygiene opportunities	Hand Hygiene Practice				Total	P value
	Use of an alcohol-based hand rub	Hand washing with plain or antimicrobial soap and water	Failure to do a hand action (Missed)	Failure to wear Gloves (Missed)		
Before patient contact	3 (1.5%)	15 (7.3%)	48 (23.4%)	139 (67.8%)	205	0.0005
Before an aseptic task	2 (6.1%)	8 (24.2%)	4 (12.1%)	19 (57.6%)	33	0.008
After body fluid exposure risk	2 (14.3%)	3 (21.4%)	5 (35.7%)	4 (28.6%)	14	0.140
After patient contact	15 (20.8%)	6 (8.3%)	27 (37.5%)	24 (28.6%)	72	0.0005
After contact with patient surroundings	1 (3.3%)	2 (6.7%)	20 (66.7%)	7 (23.3%)	30	0.0005
Total	23 (6.5%)	34 (9.6%)	104 (29.4%)	193 (54.5%)	354	

Fig. 1: Frequency of hand hygiene opportunities available to health care providers during surgeries



DISCUSSION

Hand hygiene represents a new term in the healthcare vocabulary emphasizing the central role an organizational hand hygiene program has in preventing health care-associated infections (HAIs). It replaces the narrow term "hand washing." The efficacy of

hand disinfection in reducing nosocomial infections was initially demonstrated by Semmelweis in 1941⁹. Adherence to hand hygiene recommendations is the single most important practice for preventing the transmission of microorganisms in health care, and directly contributes to patient safety^{10,11}. This situation gets even more severe in low income countries where health care system is already facing immense issues¹²⁻¹⁴. Good hand hygiene practice can be easily implemented and followed in all health care systems; its compliance can be proved a challenge especially in developing countries¹⁵.

This study showed that the overall adherence to hand hygiene practice according to WHO guidelines was 16.1% while 83.9% were not according to WHO HH guideline. Different studies were conducted in different regions of the world and showed different results. European studies demonstrated 33-65% of the variance in results¹⁶⁻¹⁸. Another meta-analysis and systematic review conducted by Luangsanatip et al¹⁹ proved that compliance with HH was only 38.7%. Likewise, study was Sacar et al²⁰ showed the same in which effective hand washing was observed in only 45% of the cases. Although these compliance rates were low but it appeared to be still higher than present study. Another study conducted in Turkey showed that only 12% of the medical personnel's were frequently washing their hands. In various studies, the better compliance rate among nurses as compared to

the doctors²¹⁻²³. In present study, contrary results was found in doctors were washing their hands more regularly as compared to the nurses and paramedic staff.²⁴ An interesting result was also found in which HCWs prefer to use hand hygiene before patient contact. It can be inferred from that HCWs prefer to protect patients in contrast to protect themselves²⁵⁻²⁷.

World health organization and center for disease control and prevention guidelines recommend directly notice hand hygiene compliance and their product consumption.²⁸ In present study, researchers also tried to measure compliance through direct observation. Compliance and product consumptions appeared to be improved when HCWs get to know they were under observation.

CONCLUSION

The poor hand hygiene compliance was frequently noticed among health care workers. Hand hygiene should be an educational priority and it needs to be implemented effectively. Therefore, hand hygiene resources is an integral part for better strategic and improvement strategy.

Conflict of interest: Nil

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