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ORIGINAL ARTICLE

Assessment of Hygiene Status of Medical and Surgical Units Among Hospitals of Nowshera Swat & Peshawar Districts of Khyber Pakhtunkhwa Pakistan

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ABSTRACT

Objectives: Hygiene practices helps a lot in the prevention of infection among the admitted patients and an important component of infection prevention and patient safety. The aim of this study was to assess the hygiene status of medical and surgical units of selected hospitals in District Nowshera, Swat and Peshawar Districts, Pakistan.

Material and Methods: It was a cross-sectional descriptive study, carried out in hospitals of Nowshera, Swat and Peshawar Districts, from August 2021 to February 2022. Data was collected from 60 medical and surgical units. A structured questionnaire was used to collect data, and face-to- face interviews were conducted with healthcare workers and patients. Finally results were presented in form of tables.

Results: 64.66% of health care staff practice hand hygiene measures; and most of the surgeons (81.67%) were not satisfied with provided scrubbing materials. 46.67% of patients were satisfied with the prevailing hygiene status; 96.67% with health services. Moreover, 56.67% of patients wash hands before eating; 31.67% of sweepers satisfied with provision of materials, and surgical site infection rate was 13.33%. Furthermore, 63.33% of units collect waste daily; whereas only 18.33% had waste separation. 68.33% had isolation chamber for infectious cases; 36.67% screened patients for HIV/AIDS; and only 11.67% didn't change fomites on daily basis.

Conclusion: It was concluded that the hygiene status of selected hospitals was satisfactory. Moreover, the hygienic status showed strong relationship with type of unit; number of sweepers; waste collection frequency and frequency of fomites change and thus needs strategies to increase awareness and motivation of health care staff with an aim to reduce the incidence of hospital infections.

Keywords: Hygiene Status, Infection, Medical, Surgical, Hospital

INTRODUCTION

Hygiene is the set of practices aimed to preserve health and healthy living and thorough and frequent hand washing is considered as important determinant to reduce nosocomial infections and a significant key factor of infection control and patient safety [(1)]. The hygiene practices reduce the spread of infection in hospitals. The infection control and hospital epidemiology are akin to public health practices in the particular health-care delivery system. In hospital settings, direct contact is the main route responsible for spread of infection. In a survey conducted in Iran by Askarian M et al., 2006; showed less compliance of health care staff with personal hygiene practices [(2)].

Many international studies supported that personal protective equipments prevents infections by creating physical barrier and protects against hazards. Moreover, it is better to wash the hands and/or use antiseptics before and after attending an infected case. Microorganisms are transmitted in hospitals by several routes and thus standard isolation protocols are adopted to prevent transmission of microorganisms in hospitals [(3)]. Furthermore, a study was conducted by Khan MU & Siddiqui KM., 2008; in Aga Khan University Hospital; Karachi and found that approximately 70% of health care providers showed compliance towards hand hygiene [(4)].

Nosocomial infections are a major source of morbidity and mortality among patients in hospitals; and needs strict adherence to infection control and patient safety practices [(5)]. Hospital hygiene status and waste management are of utmost importance in infection control and healthcare epidemiology. In a study of Vermeil T et al., 2019, and published in Journal of Hospital Infection; found that lack of waste separation, absence of prevention rules, waste collection, temporary storage, lack of waste disposal, insufficient training of personnel, lack of personal protective equipments & their usage are the factors affecting hygiene status in hospitals [(6)].

A study was conducted in Saudi Arabia; and found that satisfaction level of patients varies with the provision and compliance of services rendered by hospitals [(7)]. Moreover, in a study conducted by Dudhamal VB et al., 2021, found that most of the health care staff had adequate adherence to hospital hygiene practice [(8)]. Furthermore, a study was conducted in Iran by Razavi et al., 2005; at a teaching hospital, found surgical site infection rate of 17.4% among the admitted patients [(9)].

Pakistan is a developing country with high prevalence of nosocomial infections. The improper hygiene and health care waste management practices pose a significant risk to admitted patients. Therefore this cross sectional study was planned to assess the hygiene status of medical and surgical units of Nowshera, Swat and Peshawar Districts of Khyber Pakhtunkhwa Pakistan; and to compare with hospital hygiene standards and to inform the concerned authorities with an aim to improve the hygiene status of hospitals.

MATERIAL AND METHODS

After ethical approval, a descriptive cross-sectional study was carried out among the selected hospitals of district Nowshera, Swat and Peshawar from August 2021 to February 2022. In total n=60 medical and surgical units were selected. After extensive literature review, different parameters were selected for infection control and patient safety. A structured questionnaire was used to collect data from doctors, patients, paramedics and administrative staffs. Moreover, most of the questions were filled feasibly after observation of the different units as in each hospital all the services and facilities are same. Furthermore, we filled proforma from the hospital administration. The data obtained was tabulated and presented in tables using Statistical Package for Social Sciences Version 24 (SPSS.v24, Chicago, IL, USA); and finally results were presented in form of tables.

RESULTS

Table 1: Showing Frequency Of Determinants Of Hygiene Status & Infection Control Measures Among Hospitals (n=60) Of Nowshera Swat & Peshawar Districts Of Khyber Pakhtunkhwa Pakistan

Hygiene status & Infection Control Determinants	Variable	F	%
Type of Unit	Medical	35	58.33
	Surgical	25	41.67
Type of Ventilation in Unit	Central	32	53.33
	Windows	20	33.33
	None	8	13.33
Number of Sweepers/ Shift	1	19	31.67
	2	31	51.67
	> 2	10	16.67
Frequency of Waste Collection/ Day	1	15	25.00
	2	36	60.00
	> 2	9	15.00
Frequency of Waste Collection on Sundays	1	45	75.00
	2	2	3.33
	None	13	21.67
Method of Cleaning of Fomites	Water Only	38	63.33
	Chemical (Phenol)	11	18.33
	Water & Soap	7	11.67
	None	4	6.67
Frequency of Fomite Change	Daily	53	88.33
	Weekly	4	6.67
	Monthly	3	5.00

Table 2: Showing Frequency Of Determinants Of Hygiene Status & Infection Control Measures Among Hospitals (n=60) Of Nowshera Swat & Peshawar Districts Of Khyber Pakhtunkhwa Pakistan

Hygiene status & Infection Control Determinants	Yes Frequency (%)	No Frequency (%)
Surgical Site Infection Rate	8 (13.33%)	52 (86.67)
Isolation Chamber in the Unit	41 (68.33)	19 (31.67)
Providing Patient Protective Equipment for Patients	0 (0.00)	60 (100)
Patient Satisfied from Unit Hygiene Status	28 (46.67)	32 (53.33)
Patient Satisfied from Health Services	58 (96.67)	2 (3.33)
Patient Wash Hands Before Eating	34 (56.67)	26 (43.33)
Doctor Wash Hands before Patient Examination	11 (18.33)	49 (81.67)
Doctor Wash Hands after Patient Examination	29 (48.33)	31 (51.67)
Patient Taking Pre-Op Bath	2 (6.67)	28 (46.67)
Investigation Done for Minor Procedures	43 (71.67)	17 (28.33)
Pre op Investigation HbsAg/ Anti HCV Antibody	58 (96.67)	2 (3.33)
Investigation Performed for HIV/AIDS	22 (36.67)	38 (63.33)
Surgeons Satisfied With The Scrubbing Material	11 (18.33)	49 (81.67)
Sweepers Satisfied with the Administration	47 (78.33)	13 (21.67)
Sweepers Satisfied With Materials	19 (31.67)	41 (68.33)
hospital Waste Management Committee	52 (86.67)	8 (13.33)
Waste Collection	38 (63.33)	22 (36.67)
Waste Separation At Collection Site	11 (18.33)	49 (81.67)

DISCUSSIONS

According to our study; among the selected hospitals medical and surgical units, the hand compliance was 18.33%; while the majority of Doctors (83.67%) didn't follow the hand hygiene practices. Thus our study compliance rate was less as compared to international studies of Suen LK et al., 2019, & Solomon A et al., 2021; showing 27.5% and 39.4% of hand compliance among the health care workers in hospitals [1, 10]. In a study conducted by Vermeil T et al., 2021; found a strong significant relationship of hand hygiene practices and infection rates among health care settings [6].

In a study conducted internationally, found that most of the doctors showed satisfaction over the free provision and quality of scrubbing, infection control and prevention resources [11]; whereas in our study, only few surgeons (18.33%) were satisfied regarding the provision and quality of scrubbing materials in hospitals (Table No. 2).

In our study, approximately 46.67% of patients from surgical & medical units of hospitals showed satisfaction with the hygiene practices. Moreover, in a study conducted internationally showed that only 25% of patients were satisfied from the hygiene practice [12]. Furthermore, in an study international study conducted in 2019 revealed that 64% of patients were satisfied from infection control and hygiene status of the hospital units [13]. Thus in our study; the patients satisfaction regarding hygiene status was less as compared to study of Bouzid M et al., 2018 [14]; and more as compared to study of Dudhamal VB et al., 2020 [8]. But interestingly almost all the patients of Medical and Surgical Wards were satisfied from the treatment facilities of hospitals and thus our study findings were high as compared to previous studies of Shakir M et al., 2020; and Sreenivas & Babu; 2018 [15, 16].

In our study; 56.67% of the patients from surgical & medical units washed hands before eating food whereas in a study published in Infection Control & Hospital Epidemiology, in 2014; revealed 100% compliance of patients to wash hands before eating and drinking [17]. In an international study of Buccheri C et al., 2007, and published in BMC Health Services Research; found that patients were satisfied regarding the hand washing before any type of food intake during hospital admissions [18].

In an internationl study, conducted by Kilic M et al., 2020; published in Journal of Human Health Research, found that approximatelly all of the bedsheets were changed on daily basis [19]; whereas in our study only 88.34 % of medical and surgical units changed their bedsheets daily and only 6.67% of units changed their bedsheets on weekly basis. Moreover, in our study, in most of the minor units, the bedsheets were not changed on Sundays (15.67%). Furthermore, our study findings were more as compared to study of Doshi M et al., 2022 (23%) [20] and less as compared to study of Butler JP, 2018 study (90%) [21].

In internationally studies of Touray M et al., 2021 & Azeem N et al., 2018; found that 78.33% of the sweeping and genetorial staff were satisifed from the hospital administration regarding provision of sweeping materials and duty hours and overime payement [22, 23]; whereas in our study, only 78.33% of the sweepers showed satisfaction from hospital administration. Moreover, only 31.67% were only satisfied regarding provision of sweeping materials on time. Furthermore, the remaining, 21.67% were not satisfied from hospital administration due to long duty shifts and non-payment for overtime duties (Table No. 2).

In our study, most of the units had two sweepers i.e. one for morning and one for night shifts (Table No. 1); and only few units had only one sweeper and thus our study had less number of sweepers in hospitals as compared to studies of Shabir S & Gani A., 2020; and Karpagam S & Dsouza J., 2021 [24, 25].

In our study, almost all the medical and surgical units had facilities for waste collection but the frequency of waste collection showed variations i.e. one time waste collection per day in 25% units; two times in 60% and only 15% showed more than two times per day (Table No.). In studies of Singh N et al., 2022; and Dehghani MH et al., 2019; found that higher the frequency of waste collection from the hospital wards and chambers results in less number of nosocomial infections among the hospitals [26, 27]. Moreover, proper waste management protocols and committees help a lot in the prevention and control of infections and improve patients safety in hospitals. Furthermore, our study waste collection frequency was more as compared to studies of Sahiledengle B; 2019; & Oli AN et al., 2016 [28, 29]; and less as compared to study of Akkajit P et al., 2020 [30].

In an international study of Fan PE et al., 2020; published in World Journal of Clinical Cases found that almost all of the units had isolation chambers for serious patients [31]. Moreover, in

another study of Gammon J et al., 2019; it was found that more than 75% of medical and surgical wards in hospitals had isolation chambers [32]; whereas in our study, 68.33% of the surgical & medical units had isolation chambers (Table No 2).

According to our study, none of the medical and surgical units provided personnel protective equipments e.g. goggles, masks, caps and gloves to the admitted patients; whereas in international studies of Fennelly KP., 2020 & Parbhoo AN et al., 2021; it was found that 32% and 76% respectively of the admitted patients were provided free personnel infection protective materials and was made available mandatory for admitted hospital patients [33, 34].

In our study, all the medical and surgical units send fomites i.e. bed lining, pillow covers, and bed-sheets to laundry for washing purposes. Moreover, the doors and windows were cleaned by cloth only (63.34%); chemicals (30%) and not cleaned at all (6.67%) (Table No. 1). In international studies conducted by Chinn RY & Sehulster L., 2003; and Gola M et al., 2019; found that almost all the doors, windows and floor was cleaned with water and chemicals on daily basis [35, 36]. Moreover, in our study, only 6.67% of patients had history of pre-op bath; whereas in studies conducted internationally revealed that most of the admitted patients took pre-op bath before surgery [37]. Furthermore, in our study the surgical site infection rate was 13.67% among the selected hospitals; whereas in studies conducted internationally found 1.6% to 45% of surgical site infection rates among the operated cases [38, 39]; thus our study findings of surgical site infection rates were less as compared to study of Fromentin M et al., 2022 [38]; and high as compared to studies of Versporten Aet al., 2018 [40].

In our study, 70% of medical and surgical units had centralized system for cooling and heating purposes during extremes of temperatures, whereas in an international study of Gennis I., 2021; revealed that almost all of the medical and surgical units had centralized internal cooling and heating system arrangements [41].

CONCLUSIONS

It was concluded that the hygiene status of selected hospitals of district Nowshera, Swat and Peshawar, Pakistan was satisfactory. Moreover, the satisfaction level of doctors, patients and sweepers was moderate to high frequency regarding infection control measures. Furthermore, the hygienic status showed strong relationship with type of unit; number of sweepers; waste collection frequency and frequency of fomites change and thus needs strategies to increase awareness and motivation of health care staff to improve the hygiene status of medical and surgical units and also to reduce the incidence of hospital acquired infections among the admitted patients. Thus it's of huge importance to increase awareness and motivation of health care staff through training and refresher courses regarding hygiene practice compliance.

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