Journal of Saidu Medical College 2015; 5(2)

KNOWLEDGE AND PRACTICES REGARDING INFECTION CONTROL AMONG HEALTH CARE PROFESSIONAL OF SAIDU TEACHING HOSPITAL

MUHAMMAD ISHAQ[1], QARIBULLAH[1], EJAZ AHMAD KHAN[2], MUJEEB UR REHMAN[3].

1. Department of Community Medicine, Saidu Medical College, Swat.
2. Health Services Academy, Islamabad
3. Department of Pharmacology, Khyber Medical University Peshawar.

ABSTRACT

BACKGROUND: Hospital Acquired Infections (HAI) is infection which patients get during their treatment, and later time of stay in the hospitals. There are almost 1.4 million patients who suffer from this condition every day. The World Bank (WB) reports the infectious disease burden around 20.4%. To minimize the risk of infections during the hospital stay, it imperative that infection control practices are well in place and being practiced by the healthcare professionals.

OBJECTIVE: The current study is designed to assess Knowledge and Practices (KP) of the health care professionals regarding infection control in Saidu Teaching Hospital (STH).

MATERIAL & METHODS: This cross sectional study was conducted in the Saidu Group of Teaching Hospital (SGTH), Swat, Khyber Pukhtoon Khwa (KP) during the months of October to December 2013. Randomly selected sample size of 198 Health care workers, 80 medical doctors, 100 nurses, and 18 laboratory technicians/paramedical staff. Purpose-built, adopted and pre-tested questionnaire administered to study population. Frequencies, percentages and scored for the Knowledge and Practice (KP) variables calculated. Analysis Of Variance (ANOVA) was used to compare average scores of the Knowledge and practices (KP).

RESULT: A total of 198 subjects participated in the current study among those 40% were doctors, 50% nurses and 10% were paramedical staff. Less than 50% scores were considered having poor knowledge while 50-75% were good and >75% were considered having excellent knowledge. A total of 21 items regarding Knowledge were asked. Most (85%) of the doctors reported excellent knowledge. About half (52%) of nurses reported excellent knowledge and more than (38%) of paramedical staff remained excellent in knowledge. When cross-tabbed, overall doctors obtained 86.6% score for knowledge while nurses got 76.2% scores and 73.2% score remained for paramedical staff. All the three groups statistically differed from one another for knowledge part (p=0.006, F=5.610).Regarding the respondents' practices, when compared for mean scores, doctors were found to be having better practices than the other two groups (p=0.033, F=3.814).

COCLUSION: Doctors in Saidu Teaching Hospital (STH) have better knowledge and practices than other healthcare cadres for infection control measures.

KEY WORDS: Infection control, health care professionals, Saidu Teaching Hospital, Swat.

INTRODUCTION

Infections acquired in health care settings or hospitals are called Nosocomial infections or Hospital Acquired Infections (HAI). This is a common cause of morbidity and mortality especially in developing countries, and is the major threat to patient safety[1]. Nosocomial infections sometimes complicate patient care, enhance cost of treatment and prolong stay in hospital. Due to poor infection control practices in developing countries, this the major issue in health care administration. In the absence of reliable data on the subject, this is difficult to have accurate estimates of the overall burden of the issue. The main reasons for poor quality of data are; absence of uniform diagnostic criteria

and non-existence of proper surveillance systems in most of the countries. The estimated global incidence of nosocomial infections is approximately 1.4millions per day[2].

Infection control is the basic step in biosafety and better health care in hospitals. In developing countries like Pakistan, due to poor infection control practices, while receiving treatment for other conditions, patients are at great risk of acquiring infections in hospitals. Patients usually acquire infections due to poor standards of infection control which are important in health care settings at all levels. Any person who comes in contact with infected/contaminated surfaces in hospitals, patients, their body fluids and equipment used for their medical or surgical care, has high risk of getting infection if infection control is not assured[3]. All health care staff, including doctors, paramedical staff, nurses, administrative staff, laboratory staff and general public are at great risk of acquiring infections from patients. Health care staff must be trained in basic infection control techniques. Implementation of infection control strategies and its regular monitoring & evaluation must be ensured at every level in hospitals. Infection spread is the major issue and to prevent and control infectious diseases, infection control measures must be a high priority and should be implemented at all levels in a hospital. Patients and their surroundings must be kept free of infection. Patients often move from one hospital to another as part of continuum of care increasing the risk of getting and spreading infections. Biosafety measures (to protect patients, health staff and environment) are of prime importance in controlling spread of infections[4].

In Pakistan, we have double burden of disease i.e. both communicable and non-communicable diseases are prevalent. Infectious diseases are believed to be one of the major medical problems and the main cause of morbidity and mortality. Health authorities are not sufficiently trained and equipped to implement infection control strategies and have limited resources to tackle infectious diseases like Congo Cremains Hemorrhagic Fever (CCHF), AIDS, viral influenza etc. In developed countries, infection control practices are effectively applied, even then 10% of hospitalized patients get infection in hospitals[5]. The incidence of nosocomial infection in Pakistan could be much greater than the expected level and adopting some basic measures could significantly reduce the risk.

Transmission risk of infections mostly occurs from one patient to another in indoor patients and intensive care units because we don't have proper segregation of patients even in tertiary care hospitals and also we don't have proper referral system in place. Intensive care units in big hospitals are present but unfortunately infection control practices are not being practiced at all. Monitoring and evaluation system is totally lacking.

Patients having long-term need for blood transfusion like Thalassemia and hemodialysis patients are at risk of blood-transmitted infections. Blood banks and laboratories inside hospitals and outside the hospitals are considered as the main sites from where infections like viral Hepatitis B & C are frequently transmitted through blood products transfusions to other patients spatially transfusion dependent patients (Hemophilia and thalassemia). According to a study conducted at Iran, 44.7% thalassemia and 31.5% hemodialysis patients were infected with HCV[6]. Due to poor quality of blood screening and poor sterilization of dialysis, dental and surgical instruments, developing countries like Pakistan have high burden of viral hepatitis.

Hospitals, while providing services to community are the prime sources of generating waste with inclusion of approximately 25% infectious while 75% of non-infectious nature which comes under the category of municipal waste. However 25% infectious waste if not treated properly, provides a great threat to patients, the Hospital staff, community and environment at large[7]. Infected sharps are

disposed directly to municipal waste and scavengers are at great risk of needle stick injuries that in turn gets infection like viral hepatitis.

Very limited published information regarding infection control practices among health professionals in district SWAT, Khyber Pakhtun Khwa is available. According to the World Bank (WB) report, infectious disease burden is 20.4%[8]. Infection control practices are very essential for controlling the infectious diseases. All healthcare settings, regardless of the level of care provided, must make infection prevention a top priority and must be equipped and committed to observe and ensure Standard Precautions, recommendations and guidelines. The current study is designed to assess Knowledge and practices regarding infection control among health professionals in Saidu teaching hospital. This information will be very helpful for the health managers and policy makers to implement policies for the prevention and control of infectious diseases.

METHODOLOGY

This descriptive cross sectional study was carried out in Saidu Teacing Hospital (STH) from October to December 2013. A sample size of 198 (80 Medical doctors, 100 Nurses and Laboratory 18 technicians Paramedical staff) was selected using online sample size calculator (Raosoft sample size calculator) with 95% confidence level and 5% margin of error[9]. Simple random sampling method was used for sample size.

A pre tested adopted questionnaire was used for data collection. The questionnaire had questions about knowledge and practices regarding infection control. Health professional doctors, nurses and paramedical staff were interviewed after accepting informed consent. After data collection, data were cleaned and entered into SPSS 16. Finally data analysis was performed.

Variables used, qualitative variables, use of personal protective equipments, use of mask, use of gloves, use of gown ,syringes recapping, use of syringe cutters, proper segregation practice, hand washing, knowledge about standard procedures quantitative variables, age, experience for data analysis, frequencies for all the variables cross tabulations and comparisons were carried out. Percentages were calculated and analysis of variance (ANOVA) was used for comparison of average scores.

Ethical considerations

Approval from internal review board of Health Services Academy was obtained to conduct the study. Afterwards, permission from the Medical Superintendent (MS) of the concerned study area was obtained. Written informed consent was obtained before interviews of the participants.

Operational definitions:

Health Care Professional

A health care professional is an individual that provides preventive, curative, promotional or rehabilitative health care services in a systematic way to individuals, families or communities. An individual health care professional may be a health care professional within medicine, nursing, or allied health professions. Health care providers may also be a public/community health professional i.e. doctors & paramedics[10].

Inclusion Criteria

Permanent staffs including medical doctors and paramedics

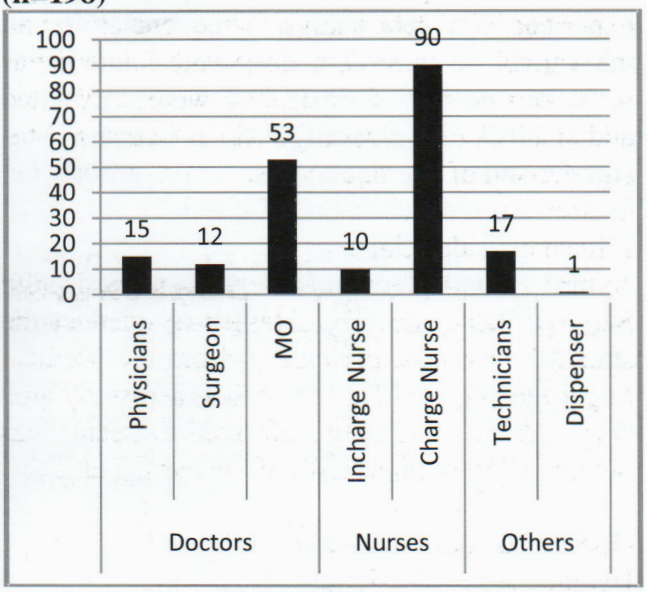
Exclusion criteria

On leave doctors, nurses, paramedics during the study period and Lower Cadre staff i.e. sanitary workers were excluded from the study.

RESULTS

A total of 198 subjects participated in the current study, among those 40% were doctors (19% physicians, 15% surgeon and 66% were medical officers), 50% were nurses (90% charge nurses and 10% Incharge nurses) while remaining 10% were others (Dispenser 6% and 94% technicians).

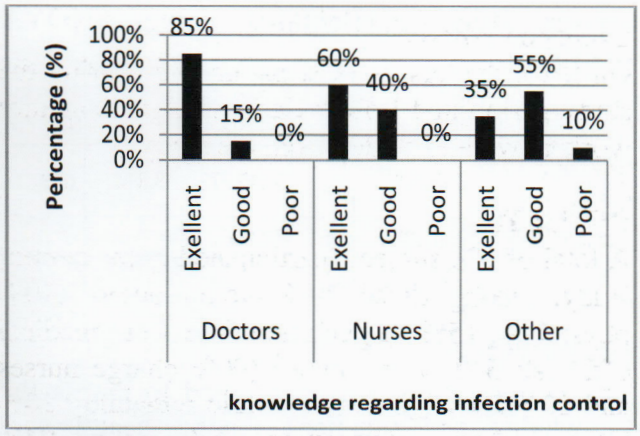
(Fig 1) Distribution of the study subjects (n=198)



4.1 Health Professionals knowledge about the infection control:

From all the study participants 21 questions were asked regarding knowledge of infection control practices and it was found that the knowledge of the doctors was relatively better than other staff including nurses and paramedical staff.

Fig 02: Comparison of Knowledge about infection control among Health care professionals (n=198)



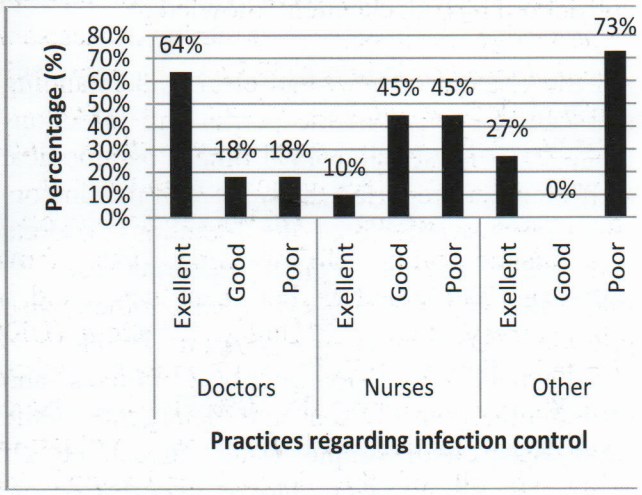
Out of the total doctors 85% have excellent knowledge while 15% have good knowledge regarding infection control. Less than 50% scores were considered having poor knowledge while 50-75% were Good and >75% were considered having excellent knowledge.

All the doctors (100%) had clear understanding and knowledge about the germs and infections while 71% nurses and 44% others paramedical staff members reported the same. All the doctors had the knowledge that the secretions, excreta and other patient related material can be infectious and 60% nurses 83.3% others also provided the similar information. In case of blood spell, 63% Doctors, 60% Nurses and 66.7% others use water and detergents while some wash with simple water, bleach etc. if accidently touch patient blood, majority of the study participants reported wash hands with soap and water. Knowledge about Personal Protective Equipment (PPEs) was reported by the respondents as Doctors100%, Nurses 45% and other 66%. About the infection control precautions, 100% Doctors, 60% Nurses and 50% other told that gloves and gown are included in contact precautions. About needle stick injury (NSI), 60% Doctors, 50% Nurses and 55% others told that if they get needle stick injury, they take all necessary steps i.e. wash with soap and water, put spirit swab, report to immediate supervisor in writing and get investigations for HCV, HBsAg& HIV.

Health Professionals Practices regarding infection control.

Eleven checklist questions were observed regarding practices of infection control and it was found that the practices of the doctors were better than the nurses and other paramedical staff. Out of the total 64% doctors have excellent practices while 18% have good practices and 18% reported poor practices towards infection control.

Fig 04: Practices regarding infection control among Health professionals (n=198)



It was observed that 81% doctors, 60% Nurses and 44% other staff were practicing hand washing before any procedure. Doctors were practicing proper hand washing steps more frequently than the nurses and other study participants.

Most of the participants were using gloves during procedures (doctors 93%, Nurses 70% and others 83%). After removing gloves, 97% doctors washed their hand and similar practice was observed in other study participants as 85% nurses and 77% other. Disinfectants use for skin preparation prior to injections or IV line, were observed in 68% doctors, 44% nurses and33% other staff. Recapping of used needles was observed in Doctors (56%), Nurses (70%) and other (88%). Syringe cutter was used by a small proportion of the study participants i.e. Doctors 43%, Nurses 45% and others 44%. Sharps were mostly disposed in to the specified sharp container by the study participants i.e. Doctors (81%), Nurses (65%) and other staff was not aware about recommended sharps disposal. Doctors (87%) were putting sharps like surgical blades into sharps containers while most of the nurses and other staff were not practicing proper sharps disposal. Details are available in table 6below:

Knowledge of the doctors regarding infection control practices was better than nurses and other paramedical staff and they got 86.6% (1455.8/1680) score. Subsequently nurses have relatively better knowledge than others 76% and other got 73% score. Practices were found better in doctors 76% as compared to nurses 55% and others 46%. Statistically the difference was significant in the three comparison groups i.e. doctors, nurses and others. (Table 1-3)

Table1: Comparison of the Mean knowledge and practice among Health professionals (n=198)

Group	Knowledge			Practices		
	Total score	Score gained	Percent (%)	Total score	Score gained	Percent (%)
Doctors	1680	1455.8	86.6%	880	668	76%
Nurses	2100	1666	76.2%	1100	611	55%
Others	378	277	73.2%	198	91	46%

Table 2: Comparison of Knowledge scores among study participants using ANOVA (n=198)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2000.794	2	1000.397	5.610	.006
Within Groups	10699.429	60	178.324		
Total	12700.222	62			

Table 3: Comparison of Practices scores among study participants using ANOVA (n=198)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4600.545	2	2300.273	3.814	.033
Within Groups	18092.000	30	603.067		
Total	22692.545	32			

DISCUSSION

The current study was conducted to assess the knowledge and practices among health care workers. The study identified that HCWs including doctors, nurses and other paramedical staff have excellent level of knowledge. The response rate by each stratum of doctors, nurses,

and paramedical staff differ significantly and doctors have better knowledge of infection control as compared to other two categories. The response rate by participants was 100% as the questionnaires were collected by the researcher by self it is possible that since the participants knew the researcher it was easier to get their cooperation. A study conducted in Botswana in Princess Marina showed that the number of working hours and knowledge of the subject may influence non-response rate[11]. It is also believable that the nurses who did not respond may have poor knowledge of the subject[12]. A possible explanation for the relatively low response from nurses might be due to the reason that most nurses are over-worked and found it difficult to find time to complete the questionnaire[13]. Doctors answered 71% knowledge questions excellently while nurses 52% and other paramedical staff remained 62%. Specific area where the practice of the doctors remained poor were the use of alcohol based hand rub for hand hygiene. The results are almost similar to the study conducted in Ethiopia for assessing knowledge level of health care providers[14].

It was observed that infection control practices were not been properly implemented and practiced by most of the nurses and other paramedical staff.

Study participants showed deviations from optimal practice, particularly among nurses and other paramedical staff was observed. Despite high mean scores, only 16%, 14%, and 0.3% of staff surveyed answered all knowledge and behavior questions correctly. These findings are markedly lower compared with similar surveys from Iran (66%, 52%, and 20%, respectively) and Italy (53% knowledge) [15].
The same survey of Nepalese HCWs identified good levels of knowledge and positive attitudes toward infection control but deviations from optimal practice, particularly among medical staff, suggesting ample space and opportunity for improvement. Specific areas where knowledge of the participants especially of nurses and paramedical staff was lacking include risk of infection associated with critically ill patients, invasive devices and patients related material. Knowledge of Methicillin-Resistant *Staphylococcus Aureus* (MRSA) was poor; only 86% of doctors and 25% of nurses had heard of MRSA. This is in comparison with a study conducted at UK which reported 100% awareness among HCWs. Self-reported compliance with hand-washing was above average (70%), and higher than that found in staff surveys from the United Kingdom (UK), United States (US), and France, where compliance was reportedly 50%. However, hand-washing practice differed by profession; although all of the doctors understood the importance of hand washing; only about half complied with recommended practice. These results are consistent with findings in UK studies[16].

Behavior of the staff is very much important in implementation of infection control strategies. A study was conducted in Nepal found a response rate much high (80%), it was not possible to compare characteristics of non-responders. According to the study, 27% of the Nepalese HCWs were trained in infection control. Technical knowledge of infection alone may be insufficient for infection control; practical trainings and practice well address such issues[17]. This study provides good evidence for behavioral change of health staff. There was an overall response rate of 58.5%. The response rate was considered to be acceptable since a response rate of 75% using a questionnaire is considered to be extremely good[18].

According to another study conducted at African countries, a lower response from nurses (53.4%) reduced the overall response rate since doctors had a response of 69.2% and laboratory staff had a response rate of 76.9%. A lower response rate from nurses (42.2% ([54/128]) working in the Ekurhuleni Metro was found in another South African study (Africa, 2010). In contrast, a higher response rate (84.3% ([253/300]) was

obtained from nurses working in the Tshwane Metro in Gauteng, South Africa[19].

COCLUSION AND RECOMMINDATIONS

Doctors have excellent knowledge regarding infection control as compared with the nurses and other paramedical staff. Also doctors were excellent in practices regarding infection control in comparison with nurses and other paramedical staff. Infection control and prevention knowledge of the Health staff including doctors, paramedical staff and nurses be enhanced through proper trainings and motivation. Paramedical staff and nurses are at great risk of Needle Stick Injuries (NSI) most of them are not aware of the protocol of needle stick injury and not reporting to higher authorities. All Health Care staff including doctors should be trained and motivated to prevent it and follow proper steps in case of the incident of needle stick injury. Also to immediately report to immediate supervisor in written.

Most of the staff other than doctors were found agreed with the wrong statement that self-safety and infection control is the responsibility of Management. Their concepts of responsibilities need to be improved through refresher trainings and workshops. Proper component of Biosafety (includes Self safety, patients safety and environmental safety) be included in the infection control trainings and the concepts of Health Care Workers be developed towards positive attitudes and practices. Proper trainings about Health Care Waste Management, Sharps disposal and injection safety be conducted at all levels of health care.

It was observed that all the categories (Doctors, Nurses and Others) remained poor in syringe cutting practice with syringe cutter. Nurses were not regularly using disinfectants for skin preparation before injections and other kinds of medical procedures. They should be motivated and their knowledge in this regard must be enhanced.

REFERENCES

1. Centers for Disease Control and Prevention; Hospital Acquired Infections and Readmission Rates in PA February 2011 www. phc4.org/reports/chroniccare/10/docs/chroniccare2010report.pdf.
2. A practical guide, Prevention of hospital acquired infections, 2nd edition, World Health Organization, 2002 WHO/CDS/CSR/EPH.
3. Collins AS. Preventing Health Care–Associated Infections. In: Hughes RG, editor. Patient Safety and Quality: An Evidence-Based Handbook for Nurses. Rockville (MD): Agency for Healthcare Research and Quality (US); 2008 Apr. Chapter 41. Available from: http://www.ncbi.nlm.nih.gov/books/NBK2683
4. Siegel JD, et al., the Healthcare Infection Control Practices, Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Setting 2007.
5. Emily R. M. Sydnor and Trish M. Perl, Hospital Epidemiology and infection control in Acute Care Setting ClinMicrobiol, 2011 January; 24(1): 141–173.
6. Hassanshahi G et al., Post-transfusion-transmitted hepatitis C virus infection: a study on thalassemia and hemodialysis patients in southeastern Iran, 2011 Jul;156 (7):1111-5. doi: 10.1007/s00705-011-0950-y.
7. Clinical Waste in Developing Countries, An analysis with a case study of India, and A critique of the Basel - TWG guidelines by Basel Action Network (BAN) & Health Care Without Harm (HCWH) - April, 1999
8. Sofola OO, Savage KO (2003) Assessment of the compliance of Nigerian dentists with infection control: a preliminary study. Infect Control HospEpidemiol 24:737- 740.
9. www.raosoft.com/samplesize.html
10. World Health Organization, 2003. Quality and accreditation in health care services. Geneva http://www.who.int/hrh/documents/en/quality_accreditation.pdf
11. Overview: Risks and prevention of sharp injuries in healthcare personnel. Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program. Center of disease control. 2004 [cited January 12, 2008]; Available from: www.cdc.gov.
12. Alter M J. Occupational exposure to hepatitis C virus: a dilemma. Infect Control HospEpidemiol 1994; 15: 742-744.
13. Calver J. Occupational Health Services. Am J InfectControl. 1997; 25: 363-365.
14. WajuBeyene, ChalliJira, and MorankarSudhakar; Assessment of Quality of Health Care in Jimma Zone, Southwest Ethiopia. Ethiop J Health Sci. 2011 August; 21(Suppl 1): 49–58.
15. Rajasekaran M, Savignanam G, Thirumalaikolundusubramainan P. Injection practices

in Southern part of India. Public Health 2003; 117: 208-213.

16. Needlestick injuries. Diseases, disorders and injuries [cited January 15, 2008]; Available from: http://www.ccohs.ca/oshanswers/diseases/needlestick_injuries.html.
17. PriyamvadaPaudyal, PadamSimkhada, and Julie Bruce, Infection control knowledge, attitude, and practice among Nepalese healthcare workers doi:10.1016/j.ajic.2007.10.026
18. Cervini P. Needlestick Injury and Inadequate Post-Exposure Practice in Medical Students. J Gen Intern Med 2005; 20(5): 419-421.
19. Gershon R R, Karkashian C, Felknor S. Universal precautions: an update. Heart Lung 1994; 23(4): 352-358.

CORRESPONDENCE ADDRESS

Name: Dr. Muhammad Ishaq
Address: Department of Community Medicine, Saidu Medical College, Saidu Sharif Swat.
Email: drishq@hotmail.com
Cell No: 03339475860