

Safe Injection Practices in Health Care Workers of Identified Hospitals

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ABSTRACT

Objective: To investigate the frequency of safe injection practices and its associated factors among healthcare workers of different hospitals in Rawalpindi/Islamabad.

Setting and Duration: This cross-sectional study was undertaken in PESSI hospital Rawalpindi, PIMS and Polyclinic hospital Islamabad in three months period from July to September 2015.

Methodology: The study population consisted of doctors, paramedical staff and nurses of identified hospitals. The study sample was selected by consecutive sampling method. The study was done by assessing safe injection practices on the basis of aseptic techniques, needles/syringes handling, and sharps safety. A total of 210 healthcare professionals including doctors, paramedical staff and nurses were part of the study. A structured questionnaire was used as tool. The data was collected through pretested questionnaire. It was analyzed and summarized using SPSS. Percentages were used in the analysis and interpretation of the results.

Results: Only 75.2% health professionals had a practice of hand hygiene prior to handling and preparing medications, 89.5% professionals were using original packaging of needles and syringes. A large number of professionals 88.6% had a practice of preparing the skin at the injection/insertion site with the appropriate antiseptic, (98.1%) of the professionals, responded that they use sterile, single use syringes always for any type of injection or infusion. Majority of participants were aware of aseptic techniques while handling needles/syringes and sharps while administering drugs. However sharp disposal handling was compromised due to lesser availability of infrastructure and disposal facilities.

Conclusion: Healthcare professionals should be updated regularly on changing standards of safety in their practice. There is a need for healthcare workers to be regularly updated on changing safety standards in their practice. Also hospitals must be encouraged to train their employs. Furthermore, it is important to assess healthcare professionals to ensure safe injection practices.

Keywords: Safe injection practices, needles, syringes, blood borne pathogens, injection, aseptic technique, administration of injections.

Introduction

Usually there are two roots of medicine administration, oral and injectable. Both of the methods are very commonly practiced in healthcare settings from diagnosing the disease to treatment and prevention of illness. ¹ A huge number of population is receiving injectable medicine due to different

reasons every year throughout the world. But its use is more common in low resource countries. Pakistan is among the countries where the rate of injected medicines is on the top in the world. The spread of infectious diseases through unsafe injection practices has been a global concern.

Medication is an essential human need during disease. These medicines are available in form of injection's tablets, syrups, suspensions and suppositories etc. injection contribute a major role in human health. ³

Injections can be given by intra muscular, subcutaneous and intravenous, with increase in medical practices, it's important to avoid complications of and promote safe practice of injection.⁴ Arterio-venous fistula, cellulitis abscess formation fat atrophy, spread communicable a blood born disease like HCV and AID. Safety of both patients and nursing staff is equally important, but this all is possible by ensuring safe practice of injection. ⁵

Injection overuse and unsafe injection practices is one of the important cause of failures in global health. Unsafe injection is thought to be the major cause in spread of blood borne pathogen spread, which is causing almost 8-16million hepatitis B infection, 2.3-4.7 million hepatitis C infection and 80000-160000 HIV/AIDS infections. The initial phase of these infections are asymptomatic so unsafe injection practices are underestimated. ⁶

The burden of these preventable diseases was first recognized by WHO due to the outbreaks of hepatitis in high income countries, which led to advancements in injections and single use syringes and vials were introduced. Still low income countries of Africa, Indian Subcontinent and some Asian countries like Mongolia have the highest reported cases of these preventable diseases mostly due to the reuse of needles and syringes and inadequate sterile procedures. ⁷

In Pakistan, studies show that due to reuse of syringes and needles by qualified and unqualified physicians, the burden of these preventable is increasing specially in the south Punjab and Sindh region. Studies also show that availability of used injections and drips from clinics and hospital as garbage is also one of the leading cause and also causing disease in garbage handlers. This study targets to seek information regarding safe injection practices from outpatient department, ER (emergency room) and staff within the wards to get the knowledge that what are the instructions which are not taken under consideration by the staff at the time of injection administration which may be causing disease. ⁸

Common safety practice include aseptic technique proper site selection wait for 2-3 minute after apply a septic solution not to touch after application of a septic solution. Proper disposal of syringes cutting the needle. The purpose of this study is to promote safe injection practices in

community so that we can be able to avoid complications due to un-safe injection practices.

Methodology

This cross sectional survey study was started after taking approved from Institutional research committee at Islamabad Medical and Dental College Islamabad to estimate the frequency of safe injection practices. The study was conducted in Social security hospital Rawalpindi (PESSI), Pakistan Institute of Medical Sciences (PIMS) and Polyclinic hospital Islamabad. The Study population was medical officers, nurses of identified hospitals. Permission from Department of Community Medicine and informed individual consent was taken from all participants. The confidentiality of the participants was sustained throughout the study period.

A total sample of 210 participants were selected on the basis of consecutive sampling. The study was carried out in three-month duration (July- September 2015). A self-developed questionnaire was used to assess the practice of medical officers and nurses regarding safe injections. Pilot study was carried out and it was amended in the light of pilot study. The main sections of the questionnaire were designed to identify the practice of participants regarding aseptic techniques, needles/syringes, vials, solutions, practice related to blood glucose monitoring and safety related to sharps. All sections have specific questions linked to specific aspects.

Data was entered in software SPSS version 21. Overall frequencies of health professionals practicing safe injection practices was estimated as well as factors affecting safe injection practices. Qualitative data was analyzed in the form of frequency and percentages.

Results

According to the results of this study health professionals performing hand hygiene prior to accessing supplies, handling and preparing medications was 75.2%. In the study sample 89.5% professionals were using original packaging of needles and syringes. A large number of professionals 88.6% had a practice of preparing the site of injection with the help of suitable antiseptic. Almost all (98.1%) of the professionals interviewed, responded that they always give injection or infusion with new sterile syringes and use them only for one patient. About all the respondent professionals (96.2%) claimed that they never administered medication from the same syringe or needle to

more than one patient. They also said that only changing the needle but not the syringe was unacceptable in their practice. (Table I)

Questions	Frequency	Percentage
Hand hygiene performed prior to accessing supplies, handling vials, and IV solutions and preparing, medications.		
Yes	158	75.2
No	52	24.8
Needles and syringes are stored in their original packaging/wrapper. They are not stored unwrapped, as sterility cannot be assured.		
Yes	188	89.5
No	22	10.5
Skin at the injection/insertion site is prepared with the appropriate antiseptic, which is allowed to dry on the skin.		
Yes	186	88.6
No	23	11
Sterile, single use syringes are always used for any type of injection or infusion. Manufacturer prefilled syringes are always used for only one patient.		
Yes	206	98.1
No	2	1
Medications are never administered from the same syringe or needle to more than one patient. Changing the needle but not the syringe is unacceptable.		
Yes	202	96.2
No	5	2.4

The practice of removing the sterile needle/cannula and/or syringes from the packaging just prior to use was implemented by (95.2%) of the health professionals included in the study. When these health professionals were asked about their practice of disposing needles/sharps at the point of use, 95.2% professionals responded in positive and said that they have proper containers located conveniently in the areas where sharps are used. On inquiring about the containers for sharps, whether they are leak-proof, puncture-resistant and are red/orange in color or labeled with a biohazard label, a large number of respondents (91.9%) replied in positive.

Similarly a huge number (85.2%) of respondents were in favor that sharps containers are emptied/replaced with 2/3 full or when the "full" level is reached on the container. In response to the question regarding the safety of sharps containers, and their position and location areas for easy disposal with restricted access of pediatrics, a large number

(88.6%) of respondents replied that they were satisfied, as given in table II.

Questions	Frequency	Percentage
The sterile needle/cannula and/or syringes are removed from the packaging just prior to use.		
Yes	200	95.2
No	10	4.8
Needles/sharps are disposed of at the point of use. Containers are located conveniently in areas where sharps are used.		
Yes	200	95.2
No	9	4.3
Sharps disposal containers are leak-proof, puncture-resistant and are red/orange in color or labeled with a biohazard label.		
Yes	193	91.9
No	17	8.1
Sharps containers are emptied/replaced with 2/3 full or when the "full" level is reached on the container.		
Yes	179	85.2
No	25	11.9
Sharps containers are either wall mounted or otherwise stabilized so they won't tip over. They are located in areas that allow for easy disposal while assuring access is restricted in pediatric and behavioral health settings.		
Yes	186	88.6
No	24	11.4

Different parameters were associated with each other and it was found that there was no significant relationship between aseptic injection site and sterile single used syringe (p-value 0.984). There was significant relationship between removal of packaging of needles and syringes and use of sterile single use syringes for any type of injection (p value 0.010). A significant relationship was found between antiseptic applied on injection site and skin site which is not touched before injecting medicine (p value 0.001). There was significant relationship between disposal of needles and sharps and convenient location of sharps containers (p value 0.000). Similarly there was significant relationship between replacement of sharp containers and their easy location (p value 0.000).

Discussion

In recent years, there have been great focus on safe injection practices. This study was an attempt to look in to

number of parameters to check safe injection practices in different hospitals. The following three research parameter were checked through questionnaire to assess safe injection practices: (i) Aseptic techniques (ii) handling needles/syringes and (iii) Sharps handling.

Even though results this study shows overall safe injection practices in hospital which included in this study but there is still need to improve safe injection practices as well as prevent diseases that could be transmitted from unsafe injections, citing themes such as improper disposal of injection equipment, reuse of injection equipment, and using unsterilized equipment. Others provided themes more general to unsafe healthcare practices such as improper use of gloves and lack of hand hygiene; while a few cited things as being examples of unsafe injections. These results are encouraging because despite the less focus on "safe injection practices" most participants were able to respond with positive with safe injection practice. While participants were aware of safe/unsafe injection practices, they were also familiar with the specific protocols being used for safe injection practices. These practices can further be enhanced and fool-proofed by implementing with education along with dissemination of promotional health materials.⁹ The spread of infections are usually caused by unsafe injection practices. There are many reasons of this practice including economic reason due which many trained and untrained professionals reuse the injection equipment's on a number of patients. Effective interventions are required to minimize these practices and reduce the risk of spread of infections. Many studies have shown the significant improvement in misconceptions regarding hepatitis B and C and its spread. In a study it was noted that at baseline only 9% respondents, declared the unsafe injections as definite cause of Hep. B and C and this rate increased significantly after intervention to 78%.⁹

In Askarian and Malekmakan's study it was concluded that most of safe injection practices were under reported.¹⁰ Smith and Leggat who found that most of safe injection practices had relation with needle stick injuries. As most of needle stick injuries had occurred when the safe injection practices were not taken under consideration.¹¹ Parallel results have been obtained by previous studies and CDC.¹² Another comparative study about unsafe injection practice was done among nurses in two hospitals in Ibadan, Nigeria. The study was about knowledge, attitude, and practice of injection safety, and leaving syringes and needles loosely at the place of use in wards and units. The results found that

50-60% of the respondents claimed that they never left the syringes and needles opened on patient's bedside. Most (30.9%) of respondents in both hospital had a view that they leave sharps loosely for reuse on the same patient some time.¹³

To report the purposes of receiving repeated injections and different practices used in clinics for injections, a research study found that a huge number 81% of the patients on day of interview received the injections. Among these patients the serum sample was positive for antibodies against hepatitis C in 44% patients and against antibodies of hepatitis B virus 19% of the samples were positive. The rate of hepatitis C was more prevalent in patients receiving more injections. Similarly, the preference of injectable was observed in 44% patients when oral and injected medication was equally effective. The use and trend of injections is required to restraint with safe and clinically indicated methods to prevent infections related to injections in low resource countries including Pakistan.¹⁴ Studies have observed significant relationship between knowledge and age, sex and nurses experience.¹⁵

World Health Organization reported that estimated 12 billion are given every year and in these injections only 5% are for immunization purposes and remaining 95% are administrated for therapeutic purposes. Blood born viruses infections are main risk for both staff and patients due to unsafe injection practices including reuse of syringes and needles. These unsafe practices are very common in health settings of low income countries. Due to these unsafe injection practices it is estimated that up to 160000 patients get infected with human immunodeficiency virus (HIV), 4.7 million with hepatitis C and 16 million with hepatitis B infections. There are many risk factors which are responsible for this practice including sociocultural, structural and economic factors. This issue has been ignored from international organizations, governments, community organizations and health administrators. Similarly, health workers, working on prevention of HIV AIDS did not concentrate on this major issue.¹⁶

Nevertheless, it was expected that health care workers should know that reuse of injection devices on patient can predispose the patients as well as healthcare providers to risk of blood borne diseases.

Conclusion

The result of the study shows that the doctors, nurses and paramedical staff who participated in this study had

good knowledge and practices towards injection safety. It can be concluded that level of safe injection practices was very good in almost every scenario under discussion. Health care workers had knowledge regarding safe injection practices which led to better aseptic techniques, safe handling of needles/syringes and proper disposal of sharps.

Nevertheless, their practice of injection safety can further be improved by increasing availability of safety engineered injection devices, improving reporting mechanism as well as availability of policy guidelines regarding safe injection practices. The patients and the community too may suffer some degree of hazards if injections are not administered in a safe way.

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