

ORIGINAL ARTICLE

Assessment of knowledge and practices on injection safety among service providers in east Godavari district of Andhra Pradesh

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Objectives: To assess the Knowledge and Practices among service providers regarding injection safety and its safe disposal in East Godavari District of Andhra Pradesh. **Materials and Methods:** Cross-Sectional study conducted in one year from March 2010 to February 2011 among health care providers at all levels that is Primary, Secondary and Tertiary levels of public sector selected randomly in the five revenue divisions of East Godavari District with sample size based on 4PQ/L² formula found to be 300; Representing 30% doctors (90), 30% staff nurses (90), 30% MPHWH (F) (90) and 10% Lab-Technicians(30) and data is obtained by semi- structured questionnaire; Analyzed by using SPSS software version 16.0 at p<0.05 significance level.

Results: In the present study knowledge of various service providers was enquired into and practices were also observed in various aspects of injection safety. Knowledge on washing hands before giving injection was 45.6% but when it comes to practice it was observed only among 18.2%; Similarly knowledge on use of hub-cutter after giving injection was found to be 33.9% but when practice of using hub-cutter was observed, it was only 20.5%; Knowledge on safe disposal of used syringes was 53.8% but the practice was found to be poor (21.7%). Similarly Knowledge on use of color coded bags according to guidelines was 65.8% but when practice was observed it is poor (20.6%). All these differences were statistically significant with p<0.05. **Conclusion:** In the present study Patient preference is the main indication for injection; Knowledge of universal precautions, use of needle destroyer after giving injection and correct method for final disposal of sharps was less; whereas Knowledge of complications of unsafe injections, diseases transmitted through needle stick injuries, importance of hepatitis B immunization and Post Exposure Prophylaxis was good. Unsafe practices like not washing hands, not wearing gloves, not cleaning the site of injection and touching the needle while/ before giving injection were seen. Harmful practices like recapping of needles, re-using of syringes were observed. And also disposal of injection related waste was not according to guidelines.

Key Words

Knowledge; Injection safety; Practices; Service providers; East Godavari District.

Introduction

In modern medical care, injections occupy an important role. In all health care facilities invasive procedures are often followed for prophylactic, diagnostic and therapeutic purposes. In addition, in this modern society injections are abused by drug addicts exposing themselves to various infections like Human Immunodeficiency Virus (HIV) and Hepatitis B Virus (HBV).

These injections are provided by various trained, not properly trained and untrained persons in hospitals,

health centers and immunization centers on a daily basis. In addition, in the laboratories blood is drawn by laboratory technicians for diagnostic purposes. Often these paramedical workers don't follow safety precautions there by endangering the patients and community at large and also exposing themselves to needle prick injuries.

A safe injection is an injection that does not harm to the recipient (e.g.: no abscess formation), does not expose the health worker to any risk (e.g.: needle stick injuries) and does no harm to the community (e.g.: unsafe disposal of waste).

According to WHO estimates approximately 16 billions of injections are given annually across the world. Majority of these injections are not warranted but given by providers indiscriminately [1]. Most injections, more than 90%, are given for therapeutic purposes while 5 to 10% are given for preventive services, including immunization and family planning. Over 63% of total injections administered in India were found unsafe. The majority of therapeutic injections are unnecessary. Unsafe injections expose patients to risk of disability and death. One third of all injections in India carry a risk of transmitting blood borne viruses. Reuse of injection devices without adequate sterilization is of particular concern as it may transmit HIV, HBV and HCV.

Giving injection safely is considered a routine nursing activity. The safe segregation, collection, transport, storage and disposal of injection related waste is also integral part of the life cycle of injection devices.

In India the magnitude of injection administration is phenomenal there by making these practices as a public health problem. Nearly 2/3rd of injections given are unsafe according to 'Injection Practices in India' - a study conducted by IPEN (India CLEN Programme Evaluation Network) in 2002-2003 [2]. As a result of this study, Model Injection Centers were started in some selected medical colleges in our country and these centers have started giving training in safe injection practices to various paramedical professionals and also doctors both in private and public sector. The Rangaraya Medical College, Kakinada was also a Model Injection Centre and participated in injection practices study conducted in India by INCLEN, New Delhi.

Aims & Objectives

Study was carried with the aim of knowing the problem of injection administration in public sector and to provide data to the district health administration with the idea that they could encourage some measures to strengthen safe injection practices and initiate some behavior change communication message to influence the community at large towards lesser demand of injections.

Material and Methods

It's a Cross- Sectional study conducted in one year from March 2010 - February 2011 among health care providers in all Health facilities providing injection treatment to its clients at all levels in East Godavari district, Andhra Pradesh.

Using the sample size formula- $4PQ/L^2$ - the sample size was calculated to be 267 service providers who are associated with injection administration. However 300 service providers are included in this study, as more number of injection providers are available in the study area at the time of my visit. All of them represent the public sector Health facilities in the district. The injection prevalence was taken as 60% [2]. The permissible error was taken at 10% keeping resources in mind and a probability level of $P=0.05$

The service providers included in the sampling frame are doctors, nursing staff, Lab-technicians and MPHWS (F) as they are routinely involved in injection practices. Service providers were contacted personally and their knowledge and skills are recorded in the semi-structured instrument.

The district has five revenue divisions and health centers were randomly selected; two PHCs from each revenue division - total 10; one area hospital from each division – total 5; In medical colleges – only available Government medical college present in the district was included. Among the 300 service providers selected for the study- 30% doctors (90), 30% MPHWS (F) (90), 30% nurses (90), and 10% lab-technicians (30) (as some health centres are without lab-technicians, we took only 10% of total sample) were included in this study. The data was analyzed using SPSS software and appropriate statistical tests were applied as and when necessary.

Results

In the present study results are expressed in terms of Knowledge and Practices of service providers in injection safety.

Knowledge of service providers: In the present study, 48.7% of the health care providers cited patient preference as the main indication for injection; Knowledge of complications (blood borne infections like HIV, HBV, HCV; systemic reactions rash, syncope and local reactions like abscess and nerve injury) due to unsafe injections is good (84.3%) among all service providers. Knowledge of universal precautions was found to be observed in 30.7% of service providers. Nearly two thirds (65.7%) were unaware of guidelines for safe injection practices. Knowledge on complications due to needle stick injuries (HIV, HBV, HCV and blood parasitic infections) was found to be good among all service providers and it is 87.3%; 67.7% of service providers have knowledge of Post exposure prophylaxis (PEP). Half (52%) of the service providers don't know about

reactions following injections. Only 27.7% knew about the correct disposal of sharps; Knowledge on availability of sharp pit was found among 67.7% of providers. (Table 1)

Practices of the service providers in the injection area including disposal of injection related waste: In the present study majority (98.7%) of service providers were using disposable and Auto Disable syringes (for Government supported Immunization); however use of glass syringes by 1.3% of service providers, anesthesiologists was observed (it's purely an observation). 57.3% of providers were using multi-dose vials, out of them 21.5% were leaving the needle to draw additional doses of medicine or vaccine. Touching the needle while / before giving injections was observed in 12.3% of providers. Only half of the (52.7%) service providers were cleaning the injection site before giving injections due to inadequate supply of disinfectant (alcohol). Injections were given by correct technique in only 72.3% of providers. Two handed recapping of needles after giving the injections was observed in 40.7% of providers. In the present study 39.3% of service providers have at least one needle stick injury in the past 12 months. Needle stick injuries sustained from HIV and HBsAg positive persons were 17% among different providers. But PEP has been received by only 11.8% of providers who have sustained needle stick injuries from HIV and HBsAg positive individuals due to due to inadequate supply of PEP drugs. Re-using of syringes was observed in 14.3% of service providers and the syringes were reused by flushing with water due to inadequate supply of syringes. Indiscriminate disposal (in and around the hospital or along with the general waste) of used syringes was seen in 19%; Disinfection of the used syringes was not done by majority (88.3%) of the providers

The given figure shows, knowledge and practices of service providers in various steps of injection practices. Knowledge of service providers on hand washing before giving injection is 45.6% (CI:37.2-54.0), but the practice was seen only in 18.2% (CI:14.4-22.0); Likewise knowledge on use of needle destroyer / hub cutter after giving injection was 33.9% (CI:21.3-46.5) and practice of using it was seen only in 20.5% (CI: 17.7-23.3) of providers; Knowledge on safe disposal of used syringes that is by hub cutting & disinfection before disposal was found to be 56.2% (CI:51.6-60.8), but practice of safe disposal of used syringes was observed only in 21.3% (CI:15.1-27.5); Knowledge on disposal of injection

related waste in the color coded bags according to guidelines was found to be 65.8% (CI: 55.6-76.0), but when it comes to practice it was observed in 20.6% (CI:14.8 -26.4) of providers; Knowledge on the importance of preventive Hepatitis B immunization was 71.1% (CI: 65.7-76.5) and the practice of having at least three doses of Hepatitis B immunization was 41.7% (CI: 38.1-45.3); All these differences were found to be statistically significant at 95% confidence level with $df=1$, $P<0.05$. (Figure 1)

Discussion

In the present study, 48.7% of the health care providers cited patient preference as the main indication for injection. Vong S et al [3], Kotwal A et al [4] and Pandit NB[5] had also observed similar indication for injection. In the present study knowledge on complications due to unsafe injections was good (84%-100%) among doctors when compared to others. These findings are in line with that of other studies [3,6]. Regarding knowledge on complications due to needle stick injuries, it was found to be good (87.3%) similar to the study of Rajiv saini et al.,(7) In the present study majority (87%) of service providers have knowledge regarding availability and usage of color coded bags which is in line with Deo DS et al[8] study. In the present study only 27.7% knew about the correct disposal of sharps and it is more in other studies [9].

In the present study majority (98.7%) were using disposable and AD syringes. It is consistent with other studies [3,6,10,11,12] In this study only 18.2% service providers are washing their hands and wearing gloves before giving injections. Bhattacharya et al [13] in their study it was found to be very poor (5.1%). In the present study service providers were seen touching the needle while / before giving the injections was less (12.3%), where as in the study of Bhattacharya et al [13] it is very high. In the present study, 57.3% of providers were using multi-dose vials. Among the providers, who were using multi-dose vials, 21.5% were leaving the needle to draw additional doses of medicine or vaccine. Similar findings were observed in other studies [6]. In the present study indiscriminate disposal of syringes was seen in 19%. It is in the range of 10%-60% in other studies.(14,3,4,11,9) In this study, at least three doses of Hepatitis B vaccination has been received by 41.7% of the providers, Overall proportion of providers receiving hepatitis B immunization is less in all studies [4,15,16]. In the present study needle stick injuries were sustained by

39.3% of service providers. In other studies it was found to be in the range of 28.1%-61.4% [17,4,16,18,19].

Conclusion

Based on above observations it was concluded that Patient preference is the main indication for injection; Knowledge of universal precautions, use of needle destroyer and final disposal of sharps was less; whereas Knowledge of complications of unsafe injections, diseases transmitted through needle stick injuries, importance of hepatitis B immunization and PEP was good. It is good to see majority were using disposable syringes. Unsafe practices like not washing hands, not wearing gloves, not cleaning the site of injection and touching the needle while/ before giving injection were seen. Harmful practices like leaving the needle in multi-dose vials, recapping of needles, re-using of syringes were observed. Even though Color coded bags were seen at majority of injection sites, disposal of injection related waste was not according to guidelines. Disinfection and proper disposal of used syringes and needles were not practicing.

Recommendation

Dissemination of information, education and communication (IEC) materials and behavior change campaigns targeting patients and health workers is recommended and Continuing education on universal precautions and steps in safe injection practices are recommended. Re-orientation training / sensitization of health personnel at periodic intervals should be done. Strict monitoring to carry out hub-cutting, disinfection of used syringes and needles, use of color coded bins for final disposal of injection related waste according to the guidelines. A topic of injection safety should be included in the under-graduate medical and nursing curriculum. At the end of present study, Author has conducted a training programme to raise awareness on safe injection practices for all service providers in the study area. Practical guidance on giving medication and hands on training for terminal disposal of injection related waste was also done. Distribution of IEC materials and guidelines on safe injection practices were followed.

Limitation of the study

As the study has been conducted only in the Government sector, not included the private sector which also contributes to the present problem of unsafety in injection practices further service

providers are not evenly distributed as very few lab-technicians are available in the study area.

Relevance of the study

Present study shows the magnitude of unsafety in the current injection practices and it signifies the importance of improving the knowledge on injection safety practices.

Authors Contribution

SG: Study design, Data collection & Compilation, finalization of manuscript; SP: Statistical Analysis, Drafting of manuscript.

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Tables

TABLE 1 KNOWLEDGE OF SERVICE PROVIDERS

Knowledge on	Having correct knowledge	Not having correct knowledge	Total
Indication for giving injection	154 (51.3%)	146 (48.7%)	300 (100%)
Complications of unsafe injections	253(84.3%)	47 (15.7%)	300
Universal Precautions	92 (30.7%)	208 (69.3%)	300
Availability of guidelines on safe injection practices	103 (34.3%)	197 (65.7%)	300
Complications due to needle stick injuries	262 (87.3%)	38 (12.7%)	300
Post Exposure Prophylaxis	203 (67.7%)	97 (32.3%)	300
Disposal of sharps	83 (27.7%)	217 (72.3%)	300

Figure

FIGURE 1 KNOWLEDGE AND PRACTICES OF SERVICE PROVIDERS ON INJECTION SAFETY

