



ASSESSMENT OF SAFE INJECTION PRACTICES IN A TERTIARY CARE HOSPITAL: A CROSS-SECTIONAL STUDY FROM CHHATTISGARH

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ABSTRACT

Background: Unsafe injection practices are associated with transmission of blood-borne pathogens. The present study was undertaken to determine the knowledge and practice about safe injection among injection providers in a tertiary care hospital.

Methods: a cross-sectional survey of sixty two nurses was done in their working hours and 2119 observations were made in pre-designed pre-tested proforma.

Results: Injection provider's knowledge about risk of transmission of pathogens like HIV was 77.4%, for HBV was 33.8%, and for HCV was 1.6%. While knowledge about unsafe injection practices like reuse of same needle was 98.3% and reuse of same syringe with needle changed was 96.7%. Risk practices observed were providers did not wore gloves (43.1%), did not washed hands (70.3%), shredding of needle not done after use (91.7%), syringes and needle were placed on a surface or carried any distance prior to disposal (64.4%), injection provider reached into a mass of used needle and syringes (36.6%) and recapping of needle was done (33.1%).

Conclusion: The results indicates knowledge about safe injection practices was sufficient, despite that unsafe practices associated with risk to provider and community was seen.

Key words: Injection providers, Knowledge, Practice, Safe injection.

INTRODUCTION

WHO defines safe injection practices as one that does not harm the recipient, does not expose the provider to any avoidable risk and does not result in waste that is dangerous to other people. ¹ This is achieved by administering an injection using a sterile device (syringe, needle, etc), adopting sterile technique by a qualified and well trained person and discarding the used devices in a puncture proof container specially designed for appropriate disposal. Any breach in the process makes the injection unsafe. ²

The widespread incidences of blood borne diseases, which are often the result of infection due to unsafe

injection practices, have been an important public health problem worldwide. ³ Global estimates arrived at mathematical models have suggested that unsafe injections account for 32% new hepatitis B virus (HBV) infection, 40% of new hepatitis C (HCV) virus infection and 5% of new HIV infections. ⁴ Available information suggests that the use of injections in developing countries is common and often unnecessary. ⁵ Sizeable studies in India have identified unsafe practices and blood borne viral infections have been attributed to unsafe injection practices. ^{6,7}

The problem of unsafe injections is complex and multi-factorial. ⁸ Many injections are given unnecessarily because patients value them superior (more

efficacious and fast acting) in comparison to oral medications, and health care practitioners over prescribe them.⁹ Further, knowledge regarding injection safety among injection prescribers, providers and consumers is often subnormal.^{10,11} Thus this study was conducted to assess the knowledge and practice about safe injection among injection providers in a tertiary care hospital.

MATERIAL AND METHODS

A cross-sectional study was done on injection providers (nurses) in tertiary care hospital of Raipur city, Chhattisgarh, India. Nurses who were engaged in nursing care in wards and administering injections in OPD like immunization room were taken as study subjects. Pilot study was conducted in one of the ward of same hospital. Proforma was then edited and finalized for final survey. Two sets of proforma were used. One set had open ended questions for assessment of knowledge of injection providers and other set had closed ended questions to record the process of injection administration.

Sample size was calculated using the formula $4PQ/L^2$ where prevalence, P (=70). The prevalence of unsafe injection practice is 70% according to national study done in 2004¹². L (maximum allowable error) taken was 3%, and Q is (100 - P) i.e.30. Thus total observations to be included came out to be 1904. Twenty one wards and three OPD's were selected for study purpose. Selected wards were of 10 departments (namely obstetrics & gynaecology, orthopaedics, medicine, surgery, ophthalmology, ENT, paediatric surgery unit, paediatrics, neuro-surgery and cancer). Three OPDs included were ANC OPD, immunization room and injection room.

Predesigned pretested proforma was filled by interviewing injection providers. Observations pertaining to process of injection administration done by injection provider were recorded after interrogation. Data collection was done twice in a day, 4 hours per day for two week. The responses and observations recorded in paper were later entered in databases. Microsoft MS-excel was used for analysis. The observations were then interpreted in actual figures and percentages.

Study definition: For study purpose, injections were considered as any medications that were injected either intravenously or intramuscularly or subcutaneously; intravenous (IV) fluid administration was also included.

RESULTS

Background about injection providers: The study assesses the injection administration process in a tertiary care hospital. For this, 62 nurses were observed during their working hours in wards and OPD's. Almost two third (62.9%) of the providers were of age group 30-35 years. Rests one third were either above thirty five years or below thirty years. All were trained and most (93.5%) of them were retrained within 1 year of survey. All the providers had knowledge about safe injection practices through trainings. Provider's knowledge about risk of transmission of HIV (77.4%), HBV (33.8%) and HCV (1.6%) by unsafe injection practices was found. Knowledge about unsafe injection practices that carry the risk were reuse of same needle (98.3%), reuse of same syringe with needle changed (96.7%) and even single use of plastic syringe & needles are not safe (8%) was seen.

Observations pertaining to safe injection practices: Risk practices associated with injection administration process had been divided into three categories namely practices prior to, during and after injection administration. In the first category which included risk practices prior to administration, almost half (43.1%) of the providers did not wore gloves and more than two-third (70.3%) providers did not washed hands before giving injection to the patients. Absence of swabbing vial top / ampoule before drawing the drug, selection of proper route and site for injection and use of disposable syringes only was found. (table-1)

In second category, risk practices observed during injection administration were needle left on vial top to withdraw additional dose (23%). Practices observed in lesser frequency were touching of needle (2.5%), reusing syringe by changing the needle (0.23%) and syringes loaded with multiple doses and multiple people were injected (0.04%). (table-2)

Table 1: Risk practices observed prior to injection administration (N=2119)

Risk practices observed prior to injection administration	Observations (%)
Washing of hand before injection not done.	1489 (70.3%)
Gloves not used.	915 (43.1%)
Swabbing of vial top or ampoule was done.	00
Proper route and site of injection was not selected.	01 (0.1%)
Disposable syringes were not used.	00
Swab not used to sterilise injection site.	838 (39.5%)

Table 2: Risk practices observed during injection administration (N=2119)

Risk practices observed during injection administration.	Observations (%)
Needle was left on vial top to withdraw additional dose.	489 (23.0%)
Touching of needle was done.	54 (2.5%)
Reusing of needle was done.	00
Reusing syringe by changing the needle was done.	05 (0.23%)
Syringes loaded with multiple doses and multiple people were injected.	01 (0.04%)

Table 3: Risk practices observed after injection administration. (N=2119)

Risk practices observed after injection administration.	Observations (%)
Recapping of needle was done.	702 (33.1%)
Used syringe was left in area accessible to public.	306 (14.4%)
Used syringe was left in area where children can play with it.	271 (12.7%)
Syringes & needle were placed on a surface or carried any distance prior to disposal.	1366 (64.4%)
Injection provider reached into a mass of used needle and syringes.	775 (36.6%)
Puncture proof container for disposal was not used.	109 (5.1%)
Shredding of needle not done after use.	1944 (91.7%)

In third category, practices by which the provider herself and people in the hospital were at risk were kept. Recapping of needle was done (33.1%) and injection provider reached into a mass of used needle and syringes (36.6%) which make the provider vulnerable. Other practices like shredding of needle not done after use (91.7%), syringes and needle were placed on a surface or carried any distance prior to disposal (64.4%), , and used syringe was left in area accessible to public (14.4%). Thus, placing attendant and visitor at risk of getting infection. (Table 3)

DISCUSSION

The present study conducted in tertiary care hospital on sixty two nurses who were all trained and 93.3% were re-trained within one year of survey. Despite this, practices that were unsafe and associated with risk were observed. Safe injection practices should be observed from injection preparation to its final disposal after its use. Even before injection preparation, washing of hands with soap and water or with antiseptic solution is a prerequisite. Our study finds 29.7% hand washing and 66.9% gloves wearing practices prior to injection administration.

In another study done in Benin City, Nigeria¹³ where nursing staff had poor knowledge of injection safety there 68.9% used disposable gloves sometimes and 28% did not use it. Also 20.5% did not wash their hands regularly. Similarly hand washing practice before injection administration was absent in study done in primary health care settings of Bangladesh.¹⁴ In Ilorin study, none of the primary health care workers wore gloves during immunisation session. Although more than half (57.4%) had more than ten years of experience.¹⁵

Practice after injection administration like recapping of needle after use was seen in one-third (33%)

observations. Lower prevalence of recapping of needle after use was seen in similar studies done in tertiary care hospital of Kolkata West Bengal (42.5%), Burkina faso (28%), Oman (28%) and Swaziland (31%).¹⁶⁻¹⁹ In contrary, Nigerian cross country survey observed 80% needle recapping because the survey involved all levels of health care in the country.²⁰

In a similar study conducted on 40 staff nurses of urban health centres of Surat municipal corporation area found only 14 (35%) nurses were actually wearing gloves during the injection procedure, 32 (80 %) of them used spirit swab both before and after the injection and 20 (50 %) of them recapped the needle after injection by using both the hands. This activity enhances the risk of having needle stick injury. The percentage of needle stick injury among nurses came to be 65%.²¹

Despite in-job training and years of experience practices harmful with respect to care takers and visitors were observed. Used needles seen in other places outside puncture proof containers like left to public access (14.4%), seen near children area (12.7%) and placed on surfaced prior to disposal (64.4%). Shredding of needle was not done in 91.7% observations and puncture proof container for disposal was not used in 5.1% observations in our study.

Immediate disposal of used needles and syringes in a puncture proof sharps container or use of needle remover was not observed in more than two third (81.5%) of the health facilities in Bangladesh.¹⁴ Thus sharp injuries happened frequently among injection providers and medical waste handlers.

Surprisingly, in our study injection providers were aware of risks associated with unsafe injection practices and had even experienced needle stick injuries (66.1%). This shows their lack of concern and seri-

ousness towards the risk of transmission of blood borne viral diseases.

CONCLUSION

Our findings highlight on safe injection practices in tertiary care hospital where in training and retraining activities are timely done. Intervention like supportive supervision on proper usage of injection equipments is needed. Further, efforts should be done at provider and beneficiary level to reduce the unnecessary and avoidable use of injections. Finally rational and safe route of treatment modality should be enforced.

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