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Research Article

A STUDY TO ASSESS INJECTION PRACTICES IN CIVIL DISPENSARIES

Bhargo Leena¹, *Tiwari Ranjana², Chouksey Mahendra³, Bhatia Manohar¹, Jain Swapnil¹, Tiwari Sakshi⁴

¹PG Student, ²Professor, ³Asst. Professor, Department of Community Medicine, G.R. Medical College, Gwalior (M.P.) India,

⁴M.B.B.S. Student, G.M.C.Bhopal (M.P.) India.

*Corresponding author email: drranjana.tiwari50@gmail.com

ABSTRACT

Background: About 16 billion injections are administered each year worldwide, and at least half of them are unsafe. India contributes 25-30% of the global injection load. A majority of curative injections are unnecessary. Estimates suggest that at least 50% of the world's injections administered each year are unsafe particularly in developing countries. **Methods and materials:** The Present study was a cross-sectional study done for 3 months in all the Civil Dispensaries to Assess the Knowledge, Skill and Practices of Health Care Providers working at Civil Dispensaries regarding "Safe Injection Practices" and also to compare the differences between the knowledge and actual practices among Health Care providers of District Gwalior. **Result:** A total of 35 Health Care Providers were taken in the study. All of them knew that the gloves should be worn during injection procedure but only 4 (11.43%) actually worked during the process. 10 (28.57%) knew that the gloves should be worn for both personal and patient safety. 5(14.29%) did not know anything about blood borne viral diseases i.e. Human Immuno Deficiency Virus, Hepatitis B and Hepatitis C which could be transmitted to the Health Care Providers. **Conclusion:** There was a great disparity between knowledge and practices of Health Care Providers regarding injection practices. Efforts are to be needed to be done in this regard for the benefit of both Health Care Providers and the patients.

Key words: Blood Borne Infections, Gloves, Injection practices, Safe injection, Waste disposal.

INTRODUCTION

Injections are among the most commonly used medical procedure with an estimated 16 billion administrations each year worldwide. An overwhelming majority (90%-95%) of these injections are administered for curative purposes.¹ Immunization accounts for around 3% of all injections.² According to Indian Programme Evaluation Network Study, 03-06 billion injections are administered annually in India.³ Estimates suggest that at least 50% of the world's injections administered each year are unsafe, particularly in developing countries. Most of the curative injections are unnecessary, ineffective or inappropriate.⁴

According to WHO "A safe injection does no harm to the recipient, does not expose the healthcare worker to any risk, and does not result in waste that puts the community at risk".⁵ Hence, safe injection practices involves administration of rational injection by a qualified and well trained person using a sterile device (syringe, needle etc), adopting sterile techniques, and discarding the used devices in a puncture-proof specially designed container for appropriate disposal. Any breach in the process makes the injections extremely unsafe and hazardous to Health Care Providers as well.⁶ More than 90% of

these infections are occurring in developing countries, and most of them are preventable.⁷

Today injections are one of the most common health care procedures in both formal & informal health care sectors. Though in some developing countries & especially in tertiary health facilities^{8,9} patients prefer injections because they believe them to be more effective. They also believe that doctors regard injections to be the best form of treatment. In turn doctor's over-prescribes injections because they believe that this satisfies patient best, even though patients are often open to alternatives.¹⁰ Additionally, knowledge regarding injection safety among injection prescribers, providers and consumers is often suboptimal.¹¹⁻¹³ Poor injection technique can cause abscess, nerve palsy, subcutaneous nodule, subcutaneous atrophy, hyper pigmentation, muscle contracture and fibrosis

MATERIAL AND METHODS

The present study was a cross sectional Qualitative study consisted of assessing the knowledge of Health Care Providers and observation during injection procedure (Subcutaneous or Intramuscular or Intra dermal but not intra articular), took place for a 3 months period from August 2013 to October 2013 in all the Civil Dispensaries of District Gwalior. **Ethical Approval:** The study was approved by the Ethical Committee of the College.

A list of all the Civil Dispensaries was taken from the Office of Chief Medical Health Officer, District Gwalior and also the details of Health Care Providers working in injection room and immunization room were also taken. There was a total of 15 Civil Dispensaries in the City of Gwalior providing primary Health Care Facility to the people. Among these three are working as a maternity home providing both primary Health Care and Maternal Care. Form each Civil Dispensary (In 11 Civil Dispensaries 2 Health Care Providers (11x2=22) are posted while in 2 Civil Dispensaries which are working as maternity home 5 are posted so 5x2 =10 while in 1 Civil Dispensary there is only 1 Health Care Provider posted while in 1 Civil Dispensary which is working as maternity home 2 Health Care Providers are posted) (22+10+1+2=35).Health Care Providers were interviewed depending on their work place so a total of 35 Health Care Providers were taken for the study.

Data Collection: Injections practices are very common in all the Civil Dispensaries in Gwalior City. The data collection method comprises of two components. First components were observational in which the field researcher observed the complete injection technique starting from patients entering to the injection room or immunization room and leaving either of the rooms. The researcher was given primary training of how ideal injection practice should commence and was also given both theoretical and practical knowledge about the 'safe injection practices' (WHO tool regarding safe injection practices were used). Maximum patients were tried to be observed as possible so that the final data comes to be as near to the reality as possible. The data is not entered then and there with the pen so that it was felt that this may cause unnecessary anxiety to the Health Care Provider.

In the Civil Dispensaries the injection room and the immunization room runs in the same room, but for the immunization days that is Tuesday and Friday vaccination was also given along with the routine injection practices. If any patient comes for any injection he is also given injections if required. The Health Care Providers participated in pre-structured in depth interviews regarding their views and experiences related to injection safety, awareness about the different blood borne diseases spread by faulty injection techniques and risk to the Hospital Staff associated with these faulty injection techniques. After observing the injection session of the Health Care Provider who were involved in the injection procedure were also interviewed. The interviews were conducted at private room using pretested questionnaire. The questionnaire was based on the research objective, review of literature and direction of discussion with the Health Care Provider. After the complete formation of methodology of research, pilot testing was conducted in 02 randomly selected Civil Dispensaries of the city. After collection of the data both observational and interview components further literature review was conducted and appropriate and suitable changes were made to the questionnaire and also after the complete process to each Health Care Providers of each Civil Dispensaries corrective measures in a supportive supervision style was done so that these measures could be followed in future for the safe injection practices for the benefit of both Health Care

Providers and the patients. The data was collected, analyzed and interpreted.

Statistics: The statistics used in this study are percentages and chi square.

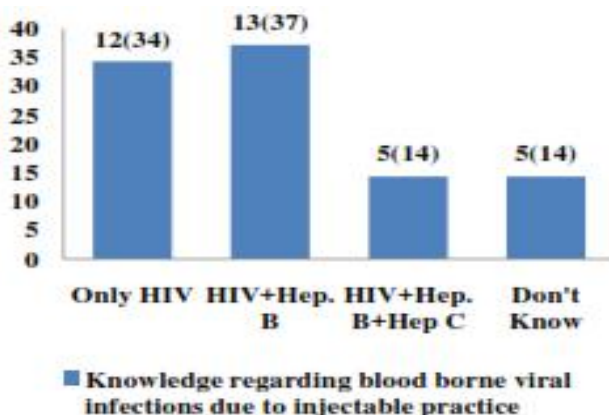
RESULTS

A total of 35 Health Care Providers of Civil Dispensaries was involved in the present study. All of them were cooperative throughout the study. The maximum % of the Health Care Providers were of more than 50 years of age that is 10 (28.57%) and were having more than 10 years work experience i.e. 22 (62.86%) as shown in Table No.1.

Table 1: Showing the Age and Duration of experience of Health Care Providers working at Civil Dispensaries.

Age in Years	No. of participants (n=35)	
	No.	%
20-25	02	5.71
25-30	05	14.28
30-35	08	22.86
35-40	01	2.86
40-45	04	11.43
45-50	05	14.29
>50	10	28.57
Total	35	100.00
work experience in years		
1-5	6	17.14
5-10	7	20.00
>10	22	62.86

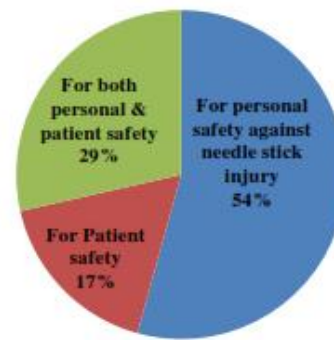
All the Health Care Providers working in these Civil Dispensaries were females and all of them did not had any formal training for safe injection practices. As shown in Fig.1, 5(14.29%) did not knew regarding blood borne viral infections.



$X^2 = 43.6, df = 3, p\text{-value} = 0.00$

Fig 1: Bar showing the knowledge of Health Care Providers regarding blood borne viral infections due to injectable practices at Civil Dispensaries.

Reasons of Knowledge of wearing the Gloves



$X^2 = 11.4, df = 2, p\text{ value} = 0.003$ Significant

Fig.2: Pie Showing Awareness of Knowledge regarding Reasons of Wearing Gloves before giving injection by Health Care Providers working at Civil Dispensaries.

Table 2: Showing the knowledge of Health Care Providers regarding use of personal safety measures for giving Injections and disposal of Injection waste generated after giving injection.

Knowledge regarding Injection Practices and Disposal of Injection related waste by Health Care Providers	(n=35)	
	Yes (%)	No.(%)
Wash hands before giving the injection	35 (100%)	00
Wear gloves during Procedure	35(100%)	00
Check expiry date before giving the injection	35(100%)	00
Use cutter to open the Ampoule	35(100%)	00
Use syringe from unopened packet	35(100%)	00
Clean the site before giving the injection	35(100%)	00
Recapped needle after giving injection	00	35(100%)
Bent the needle after giving the injection	00	35(100%)
Use hub cutter	35(100%)	00
Immediately after the procedure, disposed sharps waste	35(100%)	00

Table 2, all the Health Care Providers had the 100% knowledge regarding use of personal safety measures for giving injections and also regarding disposal of injection waste generated after giving injections.

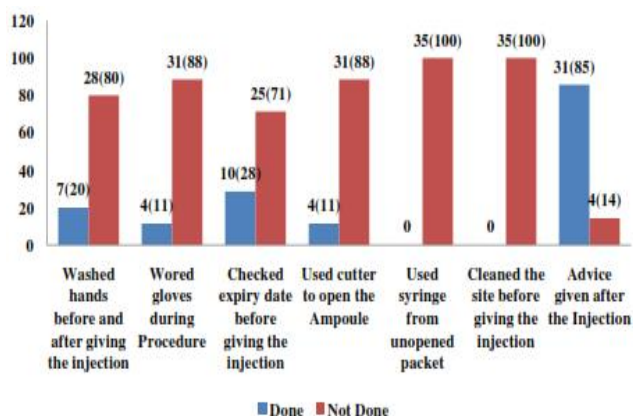
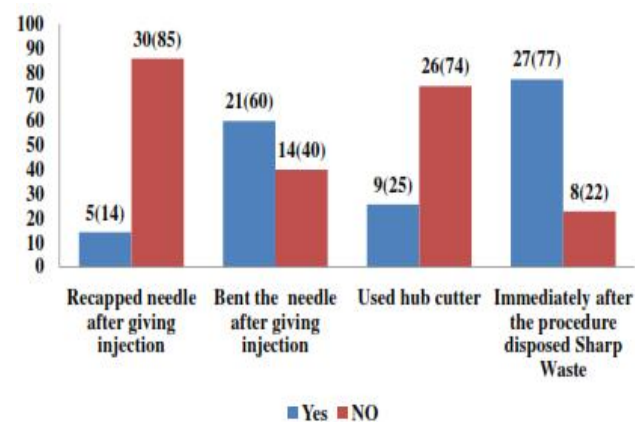


Fig.3: Showing the different Skills used regarding use of safety measures for giving Injections by Health Care Providers at Civil Dispensaries.

As shown in Fig. 3, there was a great disparity between their knowledge and actual practices of Health Care Providers regarding injection practices. The positive part of the skill in the injection practice was that 35(100%) used syringe from unopened

packed and also cleaned the site by the spirit swab before giving the injection. These swabs were already prepared and kept in a plastic box which is used consecutively for two or three days till the box is emptied.



$X^2 = 36.5, df=3, p\text{-value}=0.000$

Fig. 4: Bar Showing the different Skills used for disposal of waste generated after giving injections

Table: 3 Showing the Details of Waste Disposal of Safe Injection Practices.

A	Details of Waste Disposal	Yes		NO		p -Value
		No.	%	No.	%	
	Depiction of Written Guidelines regarding Waste Disposal	9	25.71	26	74.29	
	Availability of Colour Coded Boxes	27	77.14	8	22.86	
B	Details of Colour Coded Boxes (n=27)					
	Original Colour Coded Boxes	8	29.62	19	70.38	$X^2 = 8.96, df=1, p\text{-Value}= 0.003$
	Iron bucket/ Plastic bucket/ Iron dustbin used for Waste Disposal	19	70.38	8	29.62	
C	Knowledge regarding use of Colour Coded Boxes for immediate disposal of injection related waste (n=35)	8	22.86	27	77.14	
D	Skill of using different Colour Coded Boxes for the waste generated during injection practices (n=8)	3	37.5	5	62.5	

DISCUSSION

The present study regarding use of safe injection practices done in all the Civil Dispensaries of Gwalior showed that all the Health Care Providers were females, which was dissimilar from the study of A.A. Mahfouz et al¹² in which only 35.5% were females.

In the present study, none of the Health Care Provider had taken training in safe injection practices which is quite similar to the study done by Choudhary et al¹⁴ in which 73% of the providers were not trained, but in the study of M.C. Shill et al¹³ only 5 (16.7%) of the

Health Care Provider were trained. The knowledge of blood borne viral diseases of HIV, Hepatitis B, Hepatitis C was only seen in 5 (14.29%) of Health Care Providers and also 5 (14.29%) of the Health Care Providers were not knowing regarding the transmission of blood borne viral diseases. In the study of Shill M C et al¹³ who expressed that 78.3% had knowledge of Hepatitis B vaccine, 62.09% of Hepatitis C vaccine and 69.02% of HIV. The knowledge of blood borne viral diseases was quite low in comparison to the other studies.^{2, 10, 15}

The knowledge regarding the injection procedure was 100 % in this study which was similar to the study of Ashish Naik et al¹⁵ Also in his study ¹⁵ 65% of provider had the knowledge not to recapped the needle while in this study it was 100 %. The cutaneous nerves with close proximity with injection in the dorsogluteal site are the branches of the subcostal nerve (T12), dorsal rami of lumbar nerve, dorsal rami of sacral nerve, Inferior cluneal nerve, and posterior femoral cutaneous nerve.

The reasons of wearing the gloves for personal safety against infection as seen in Ashish Naik et al¹⁵ was 60% for personal safety, 25% for patients safety and 15% for personal and patients safety but in this study it was quite low.i.e. 54%, 17% and 29% respectively. Oladimeji Akeem et al ¹⁶ stated that 20% provider washed their hands before and after giving the injections, Omorogbe Vincent E ¹⁷ stated 78.07%. But in this study it was only 07 (20%) which was quite low.

In the present study only 4 (11.3%) wore gloves during the procedure while in the study of Ashish Naik ¹⁵ 35.0% wore gloves during the procedure 31 (88.57%) did not wear gloves which was almost 50% in comparison to the study done by Varun Agarwal¹⁸. In a study of Rehan H.S. et al ¹⁹ who stated 61.6% of the providers did not wore gloves and 44.7% by Muralidhar et al.²⁰ Who did not were gloves during the injection procedure. The upper outer quadrant of gluteal region is to be chosen while dorsal gluteal region is to be avoided as it lies in close contact with sciatic nerve and superior gluteal artery.

In the study, 25 (71.43%) of the Health Care Providers checked the expiry date of the injection while 10 (28.57%) did not checked assuming that if the injections has been supplied it has been taken for granted that it would not have been expired. In the study of Choudhary A et al.¹⁴ Who stated that 84.5% providers used new syringe for giving the injections while in another study A.A. Mahfouz et al ¹² and M.C. Shill¹³ which stated that 100.00% providers used new syringe for giving the injections which was similar to this study also.

In the present study 31(88.57%) did not used cutter to open the Vial/ ampoule which was a negative aspect but Rehan H.S. et al.¹⁹ study quoted that 44.4% providers opened the ampoule with the solid object. In the present study 30 (85.72%) of Health Care Providers did not recapped the needle after the

injection while only 5 (14.28%) recapped it. Review on this aspect by Ashish Naik ¹⁵ . Rehan H.S¹⁹, Omoragbe Vincent E.¹⁷ Muralidhar et al ²⁰, Oladimeji et al¹⁶ all stated that 50. 12.2%, 23%, 66.3%, 86.7%, respectively providers recapped the needle. Subcutaneous injection goes into the fatty tissue below the skin and require a smaller shorter needle. The needle i.e. 1/2" to 5/8 of an inch long with a gauze of 25to 30 is usually sufficient. Intramuscular goes into the muscle below the subcutaneous layer so the needle must be thicker and longer to ensure that the medicine is being injected into proper tissue,. 20 or 22 gauze, needle that is an inch or one and half inch long are usually appropriate.

In the present study 21 (60%) of the Health Care Providers were bending the needle after the injection which was quite high while in the study of A.A. Mahfouz et al¹² only 11.3% provider were bending it. The use of hub cutter was not done in 26 (74.39) cases, while only 09 (25.71%) used it.

In the present study 8 (32.0%) Health Care Providers immediately disposed the injection waste in the provided dustbin and the use of color coded was quite low but in the study of Oladimeji et al ¹⁶ who stated that 95.2% provider used color coded boxes for immediately disposing the injection waste.

CONCLUSION

There was a great difference between the theoretical knowledge and the practical knowledge of health care providers during injection practices. Enough efforts are required in this regard for training for Safe Injection Practices for the benefit of both health care providers and the patients.

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Conflict of interest: None

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