Original Article

Safe Injection Practices

Assessment of the Knowledge and Factors Affecting Safe Injection Practices among Health Care Providers in Public and Private Sector Health Facilities of Tehsil Gujar Khan Rawalpindi Pakistan

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ABSTRACT

Objective: The study aimed at assessing the knowledge of health care providers and identifying the factors affecting knowledge about safe injection practices.

Study Design: A cross sectional study.

Place and Duration of Study: This study was carried out at Gujar Khan, District Rawalpindi from July, 2011-October, 2011.

Materials and Methods: 37 health care facilities (72.7% private and 27.3% public) were selected conveniently. 110 Health Care Providers (HCP's) were selected on the basis of availability. HCP's who were involved in clinical work for more than six months were included. Permission was obtained from ethical committee of Health Services Academy and the owners of the health care facilities. The knowledge of the HCPs was assessed through specifically developed scoring scheme and was categorized into good, fair and poor, while the factors affecting knowledge were assessed by applying Chi-square tests. .($p \leq 0.05$).

Results: 70% of the HCPs had fair, 20.1% had poor and only 9.1% had good knowledge. Good knowledge was seen in doctors and graduate nurses. Poor knowledge was observed in non-certified HCP's. 57.3% had never heard about the use of Personal protective equipment (PPE), 93.6% heard of the availability of vaccination for HBV and 58.2% of them were vaccinated against HBV. 57.3% had never heard of safe injection policy guidelines. 55.5% HCPs had ever received any needle prick injuries. Cadre (p=0.000) and professional education/training in medicine (p=0.002) were significant factors.

Conclusion: The overall knowledge of the HCPs was above average, non certified HCP's had poor knowledge. Cadre (p= 0.000) and Professional education/trainings (p=0.002) were significant factors affecting knowledge.

Key Words: Needle prick injuries, Safe injections, Knowledge, Health care provider, public and private sector hospitals

INTRODUCTION

Unsafe injection practices result in a substantial burden of preventable blood-borne viral (BBV) disease. The World Health Organization defines 'a safe injection' as one that does not harm the recipient, does not expose the provider to any avoidable risk, and does not result in any waste that is dangerous to the community[1]. 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[2]. The safe injection practices by the health care providers, including the proper disposal of used injection equipment, are therefore a concern for the entire healthcare sector[3]. The World Health Organization (WHO) estimates that 12 billion injections are given annually, 5% of which are administered for immunization and 95% for curative purposes[4]. Even in developed countries, such as the United States, the challenge of consistently providing safe care is not always met, as evidenced by increasing reports of outbreaks that have been associated with unsafe injection practices and related break downs in basic infection control[5].

Studies conducted in 19 developing countries show that the prevalence of unsafe and unnecessary injections was very high among the general population[6]. Theoretical knowledge and technical competency of health care providers, medical conditions and management policies of the health facility are important indirect influences on safe injection practices[7]. Irrational and unsafe injection practices are rife in developing countries[8]. Unsafe injections currently account for a significant proportion of all new hepatitis B and C infections[9].

Interventions are needed to obtain a reduction of injection prescription among private health care providers who prescribe most of the injections received by the population[10]. In a review conducted by Simonsen and colleagues, the number of injections for 13 developing countries representing five regions including Pakistan was estimated. The average number ranged from 0.9 to 8.5 per person per year with highest prevalence (8.5) in Pakistan[11].

In some developing countries children < 5 receiving large number of injections, almost all had given by private health care providers. Most of these injections were found to be given unnecessary[12]. Sterilization techniques are poor and the final disposal of used injection materials present a problem that increases the risk of transmitting diseases to the entire community[13].

MATERIALS AND METHODS

This study was conducted in a period of 3 months (July, 2011-- October, 2011). This study was conducted in 37 different health care facilities of Tehsil Gujar Khan, District Rawalpindi. Gujar Khan Tehsil, head-quartered at Gujar Khan, is one of the seven Tehsils (sub-divisions) of Rawalpindi District in the Punjab province of Pakistan. It is administratively subdivided into 33 Union Councils and according to the 1998 census has a population of 493,000. This cross-sectional study was carried in 37 Health Care facilities of Tehsil Gujar Khan out of which 9 were the public and 28 were private health facilities. Facilities were selected on the convenience basis and 110 respondents were selected from these health facilities. Each HCF had potentially 3-4 health care providers and we interviewed them on the basis of availability. We interviewed those HCPs who ever available at that point in time on the current day. Respondents were interviewed by the data collectors through a specifically designed closed ended questionnaire. Data was collected using standardized methods referred to the World Health Organization safe injection assessment guidelines and national guidelines. A pre-testing was done before administering the data collection instrument to assess the suitability of the tool applied and we conducted 10 interviews for pre testing, the tool was understood by the respondents and we found no major modifications. Data was entered into SPSS software version 16.0 for analysis. Descriptive statistics(frequencies, percentages, cross tabulations and chi square) were applied to calculate for different variables. Knowledge assessment was analysed by applying a Knowledge scoring scheme in the light of literature review. A classification of knowledge was set in poor(0-60%), fair(61-85%) and Good(86%-99%) categories. Variables who gave $p \leq 0.05$ were considered significant. Study approval was taken from Institutional review board, Health Services Academy. Official permission from the respective public and private health care settings was sought. An informed consent was taken prior to administration of Questionnaire.

RESULTS

We approached 140 individuals to complete the required sample of 110 HCP's from 37 health facilities of Tehsil Gujar Khan. The response rate was 78.5%. The sample proportion was taken as 27.3% respondents from Public and 72.7% respondents from private sector. Male respondents were more frequent (66.4 %) among the study population.

The mean age of the respondents was 34.8 years with SD ±10.2. Maximum numbers of subjects were in young age group 52(47.3%). 20.9% of respondents were medical doctors. Maximum subjects had work experience of >10 years (39.1%). Majority of the HCPs were intermediate and graduates. 62.8% of the study population was having professional degree or diploma but 37.2% were doing practice without it. Among sample size only 39.09% of the HCP's had ever attended training/workshops/seminars on safe injection before (Figure 1).

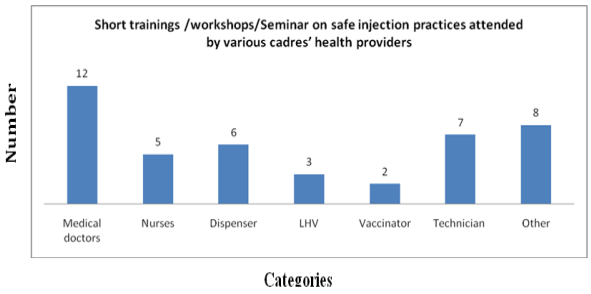

Figure No.1: Number of short trainings /workshops/ Seminar on safe injection practices attended by various health care providers (Total number of trainings=43).

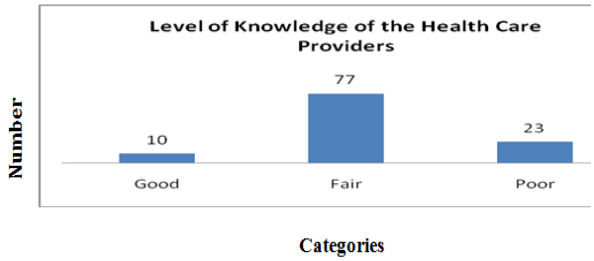

Figure No.2: Knowledge scores of the health care providers (n=110).
Good = 86% and above, Fair = 61% to 85%
Poor = 60% and below

55.5% of the respondents had ever received any needle prick injuries. Only 43% of the respondents were aware that vaccination can prevent blood borne infection to occur if needle prick injury happens, and 26% were aware of wearing gloves before giving injections to prevent spread of blood borne infections, due to contaminated used syringes and spillage of blood during, i.v procedures. 97% of the respondents knew that single use disposable syringes should be used and

the 3% said about the autodisable syringes are the safest one to use for giving injections. 42% recommended that boiling should be the preferred method for sterilization, while 43% were not sure about the best method of sterilization of syringes. Only (53.6%) knew that needle should not be recapped after use. Regarding the final disposal of used syringes only 27(24.5%) knew that incinerator should be the best option for disposal. 63(57.3%) of the subjects had never heard about the use of PPE (Personal protective equipment) for handling the used syringes and sharps. 103(93.6%) of the subjects had heard of the availability of vaccination for HBV but only 64(58.2%) of the health care providers were vaccinated against HBV. 63(57.3%) had not heard of safe injection policy guidelines.

Among the total study participants, 70% had a fair knowledge; only 9.1% had good knowledge about safe injection practices. Doctors had better knowledge as compared to other professionals. HCPs in the poor category of knowledge were mainly those who had not received proper professional education.

Table 2 describes how important is the professional education for gaining a good knowledge. Out of ten HCPs six were the doctors in category of good knowledge which is 60% of the good knowledge category. Doctors and nurses had fair knowledge.

Table No. 1: Cadre wise knowledge of Health Care Providers

	Poor	**Fair**	**Good**	**Total**	**P value**
	n(%)	n(%)	n (%)	n (%)	
Medical doctors	0	17 (73.9%)	6 (26%)	23	
Nurses	2 (12.5%)	10 (62.5%)	4 (25%)	16	
Dispenser	5 (27.7%)	13 (72.2%)	0 (0%)	18	
LHV	2 (18.185%)	9 (81.8%)	0 (0%)	11	0.000
Vaccinator	0 (0%)	2 (100%)	0 (0%)	2	
Technician	1(0.9%)	10 (90.9%)	0 (0%)	11	
Other	13 (62.06%)	16 (37.9%)	0 (0%)	29	
Total	23 (20.9%)	77 (70%)	10 (9.0%)	110	

Table No.2: Impact of professional education on knowledge

Knowledge Status	**Graduate (MBBS)**	**Graduate (Nursing)**	**Diploma**	**No Professional education/Training**	**Total**	**P value**
Fair	17	4	32	24	77	
Good	6	0	2	2	10	0.002
Poor	0	0	8	15	23	
Total	23 (20.9%)	4 (3.6%)	42 (38%)	41 (37.27%)	110	

DISCUSSION

This study showed that majority of the HCPs working in the study areas were young workers and male (65%). This is important because our study sample was mainly drawn from private sector where young males get easily adjusted on small salaries due to less education and unemployment in developing countries like Pakistan. The unregistered non medical HCPs had the highest proportion (26.4%) was mainly working in private sector, which indicates the unregulated medical practices. This study revealed that though more than 60% proportion of the respondents had not attended trainings/workshops on injection safety but there is high awareness of safe injection practices which is a favorable factor to initiate a training or educational program to have a baseline idea, more over there are other sources of enhancing knowledge like media, T.V and radio as well actively involved in increasing the knowledge of the people, similar findings were reported by O.A Bolarinwa1[14]. Respondent's knowledge of National policy Guidelines on safe injection was poor (40%).

This is comparable to similar study carried out by Medubi et al in one tertiary health institution in Ilorin and in study conducted by Logez S, et al in Mongolia[15,16]. This fair level of knowledge will serve as a good background that could be built upon for subsequent trainings for HCPs in a developing country like Pakistan. The poor knowledge of 20% of the study participants is probably due to the difference in the groups of health care providers that were involved and working without any proper education and training in medicine and those who had received trainings for not more than one year. It also agrees with a study conducted among HCPs in Saudi Arabia, where two third of the study participants had poor knowledge[17]. This poor knowledge implies that the HCPs do not understand the in-depth knowledge of consequences of unsafe injections, which is needed for behavioral change towards safe injection practices. Notably, the study also revealed that professional education (p=0.002) is also a significant factor to play an important role to increase the knowledge of the young health care providers. Similar findings are also revealed in studies conducted by Gina Pugliese[18]. Contrary to

some other studies, this study did not reveal significant association between knowledge of HCPs and the factors like work experience and workshops attended on safe injection practices but the possibility of over reporting of knowledge cannot be excluded at the same time. Some studies has revealed these factors affect the knowledge as the studies conducted by O.A Bolarinwal[14], Hutin Y[1] and Pundit NB[19] that had less than a year of working experience had poor knowledge and those with over 5 years of working experience had fair knowledge compared to those between 1 to 5 years of working experience where many (85.7%) of them had good knowledge of injection safety. This could be adduced to the fact that new recruits into heath sector are still learning and undergoing practical. The importance of training on injection safety practices as a requisite to address unsafe injection practices cannot be ignored.

CONCLUSION

The study revealed that knowledge of injection safety among HCPs in tehsil Gujar Khan is above average but with a significant gap on their in-depth knowledge of safe injection practices. Cadre and professional education / training in medicine are important influencing factors for a good knowledge, though the importance of work experience cannot be left unnoticed. It is recommended that the knowledge and practices gap among HCPs should be bridged through regular and on the job training, supported by Information Education and Behavior Change Communication programs by the health departments in Pakistan.

Abbreviations: BBP, Blood Borne Pathogens; BBV, Blood Borne Viruses; CDC, Communicable Disease Control Centre; EMR, Eastern Mediterranean Region; HBV, Hepatitis B virus; HCP, Health Care Provider; HCV, Hepatitis C Virus; HIV, Human Immunodeficiency Virus; IM, Intramuscular; IV, Intravenous; NSI; Needle Prick Injuries; PPE, Personal Protective Equipment; SIGN, Safe Injection Global Network; SPSS, Statistical Package for Social Sciences; WHO, World Health Organization; UNICEF, United Nations International Children's Emergency Fund.

Competing Interest: The authors declare that they have no competing interests.

Acknowledgment:
We are thankful to all the study participants who gave their precious time. We are thankful to the administrations of public sector and owners of private sector health facilities of Tehsil Gujar Khan for their kind cooperation during research and data collection. We are also thankful to our teachers at Health Services Academy who guided in the light of their Knowledge and experience.

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