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Pre-Interventional and Post-Interventional Analysis of Knowledge, Attitude and Practice Regarding Hepatitis B & C among Prison Inmates of Malir Jail, Karachi, Pakistan

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Authors' contributions

This work was carried out in collaboration among all authors. Authors AMWM, SAF, JN, IB, MA and WH designed the study, wrote the protocol, and wrote the first draft of the manuscript. Author SM supervised the study and refined the written content and supervised the literature search. Author SN performed the statistical analysis. Author SA managed the analyses of the study. All authors read and approved the final manuscript.

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ABSTRACT

Background: Hepatitis B and Hepatitis C being the most prevalent and preventable infectious disease in Sindh with prison inmates being a major risk group.
Aims: To assess the knowledge, attitude and practice of this deadly debilitating disease.
Study Design: Interventional Study
Place and Duration of Study: It was performed in Malir Jail, Karachi, Pakistan in which 128

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prison inmates participated. The research was done in three phases for the duration of 1 month.
Methodology: In first phase a pre-intervention questionnaire was filled which assessed the basic knowledge regarding hepatitis, its spread and prevention. In the second phase an elaborate audiovisual presentation was given with detailed explanation to all the participants about hepatitis B and hepatitis C. In the third phase a post-intervention questionnaire was filled.
Results: On assessment, the results showed that before intervention prisoners lacked basic knowledge about hepatitis and after the intervention their knowledge and awareness improved significantly with a *p-value of <0.001*.
Conclusion: It is concluded that prison inmates of Malir jail Karachi lacked basic knowledge of hepatitis B and hepatitis C and with substantial repeated interventions this preventable infectious disease could be prevented.

Keywords: Intervention; Karachi prison; Hepatitis B; Hepatitis C; spread; prevention.

1. INTRODUCTION

Hepatitis is a severe communicable disease with a complicated pathology of liver which disturbs its normal function. It is caused by Hepatitis B and Hepatitis C virus known as HBV and HCV respectively.

With a passage of time the seriousness and the complication of the disease progressively increases, which is a concerning point for the international community especially in the developing countries such as Pakistan. According to World Health Organization (WHO), 240 million people globally are infected with HBV and 150 million people globally are infected with HCV. In southeast Asian region there are about 100 million known cases of HBV and HCV carriers .Pakistan is highly endemic with HBV with nine million people infected with HBV and its infection rate is on a steady rise [1,2]. HCV prevalence in the population at large is at about 5%—one in every 20 Pakistanis has been already exposed to HCV infection [3].

Among the community, the prison inmates tend to incline more towards developing HBV and HCV as prisons are typically overcrowded, offer limited access to health care, and harbor high rates of airborne and blood-borne diseases [4-6]. Inmates often come from marginalized populations, such as injecting drug users (IDU) or persons with high risk sexual behaviors (including sex workers), who are already at an increased risk for these infections [5,7].

Pakistan has seen a steady rise with the number of cases arising in prison setting across the four provinces but Sindh in particular has the highest number of incidence [8, 9].Although the Sindh AIDS Control Program has developed service delivery packages for prison inmates and drug users for the prevention of HIV/AIDS in major prisons of Sindh province, including District Jail Malir [10]. However, there is no provision for screening for hepatitis, nor are effective control measures in place.

Therefore, in reference to all the above stated facts and recent research studies proving HBV and HCV being an endemic in the region [8,9]. This interventional study aims to assess the level of awareness and generate baseline understanding regarding transmission of HCV and HBV among the prison inmates of Malir Jail Karachi.

2. MATERIALS AND METHODS

2.1 Setting

Malir Jail Karachi.

2.2 Study Population

All convicted adult male prisoners

2.3 Study Design

Pre and post cluster randomized interventional trial (using educational tool as material).

2.4 Sample Design

According to jail authorities, approximately 1000 convicted prisoners were in the Malir Jail Karachi at the time of research. The jail for male prisoners had approximately 15 wards and each ward had multiple barracks. For the proposed research we used cluster randomized sample size formula by using open epi software version 3. We used simple random number generation as starting cluster point [1-15] and from the generated number we selected every third

barrack till reaching the desired sample size. We selected 5 barracks randomly and conducted the pretest followed by interventional exercise followed by post test to see the impact of intervention by using Wilcoxon signed ranks test.

2.5 Inclusion Criteria

- Prior consent is necessary.
- Adults aged 20-55.
- Eligible candidates should be a prisoner of Malir Jail Karachi.

2.6 Exclusion Criteria

- Doesn't consent
- Medically unfit based on Jail health authority
- Imprisoned for < 2 years.

3. RESULTS AND DISCUSSION

Our research was conducted on 128 participants whose mean age group was 30.28 ± 9.62 years [Table 1].

Out of these 128 participants 66 (51.6%) were totally uneducated and out of remaining 62 participants i.e. (48.4%), 19(14.8%) participants had primary education, 41 (32%) studied till matriculation and only 2 (1.6%) studied above matriculation [Fig. 1]

Regarding the knowledge of participants about HBV & HCV, the source of information was asked from them, 57 (44.6%) participants chose that they heard about these diseases and their signs and symptoms from their friends and family, 51 (39.8%) responded for TV advertisements, 11 (8.6%) responded for newspaper and 9 (7%) responded for internet. [Fig. 2].

We asked the participants regarding their attitude towards the disease that if they ever have symptoms of HBV & HCV whether they will go to medical doctors, hakims, homoeopathic doctors or spiritual healers.

In pre-intervention questionnaire 91.4% participants responded that they will visit the medical doctor if they have symptoms of HBV or HCV. This percentage increased upto 95% in post intervention questionnaire. Second option chosen was of hakim and none of them opted for homeopathic doctor or spiritual healer [Table 2].

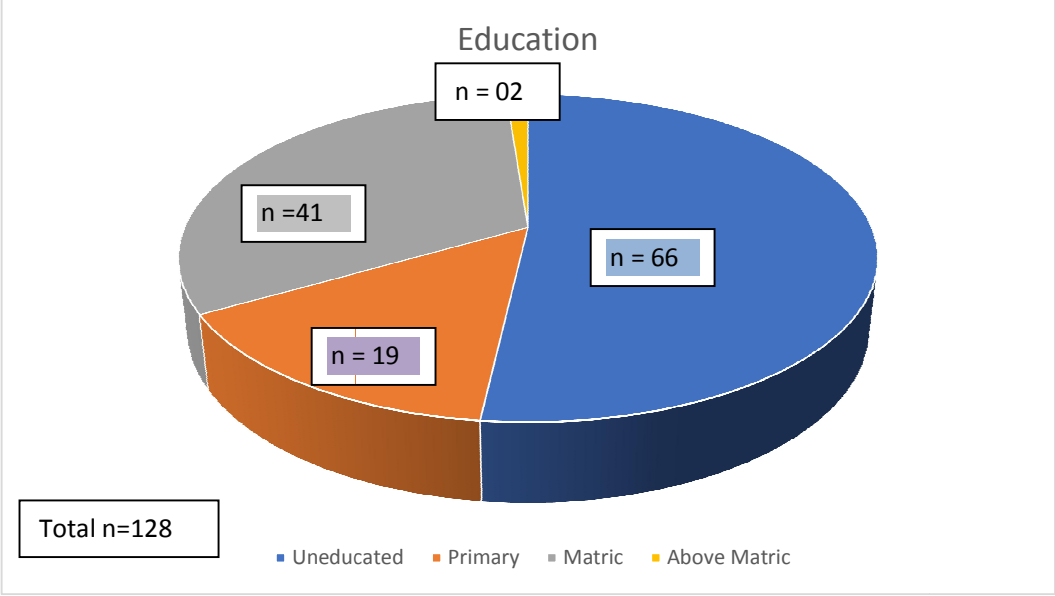

Fig. 1. Educational details of study participants

Table 1. Mean age of study participants (n=128)

Variable	n	Mean ± SD
Age (years)	128	30.38 ± 9.616

n = no. of participants; SD = standard deviation

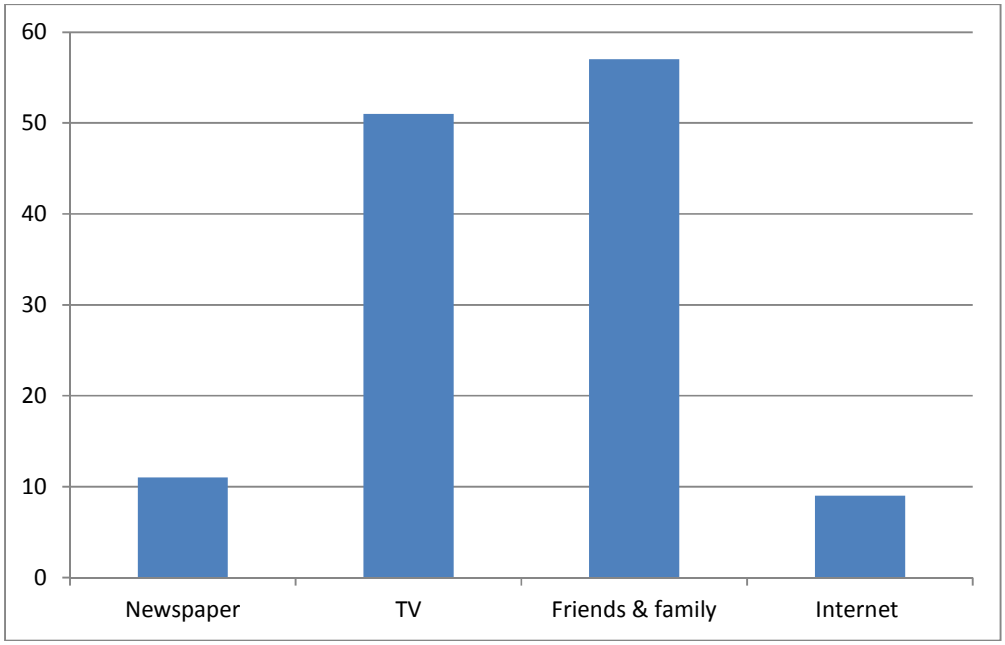

Fig. 2. Source of information about HBV & HCV

Table 2. Pre-interventional and post-interventional difference in attitude of study participants towards treatment approach by using descriptive analysis

Variable	Pre-interventional questionnaire		Post-interventional questionnaire	
If You Have symptoms of hepatitis B or C It is better to consult	**Frequency (n)**	**Percentage (%)**	**Frequency (n)**	**Percentage (%)**
Medical doctor	117	91.4	113	95.0
Hakim	11	8.6	6	5.0
Homeopathic	0	0	0	0
Spiritual healer	0	0	0	0
Total	128	100	119	100

n = no. of participants

There are several risk factors that predispose to HBV & HCV, knowledge of which always help the health professionals to identify the high risk individuals. Study statistics showed that 76 (59.4%) were not vaccinated against Hepatitis B. 44 (34.4%) participants shared razors with other mates. When asked about protected sexual intercourse, 91 (71.1%) participants said they don't use condom for casual sex.

Table 3. Summarizes the responses to other risk factors as chosen by study participants.

While attempting post-interventional trial our sample was decreased from 128 to 119 as the remaining 09 prisoners did not appear for some reasons. Post-interventional analysis showed that 119 (100%) prisoners agreed that vaccination is important and those who were not vaccinated made their minds to get vaccinated. 109 (91.6%) prisoners said that they will not share razors with others in future. 97 (81.5%) prisoners said they will use condoms in future. Overall we found much betterment in post-interventional results. Table 4 summarizes the responses to other habits as chosen by study participants.

Fig. 3 shows the difference of pre-interventional and post-interventional changes in practices & attitudes of prisoners regarding vaccination for hepatitis, having protected sex and sharing of razors. Fig. 3a shows pre-interventional attitude and practice of prisoners and Fig. 3b shows post-interventional changes in their attitudes.

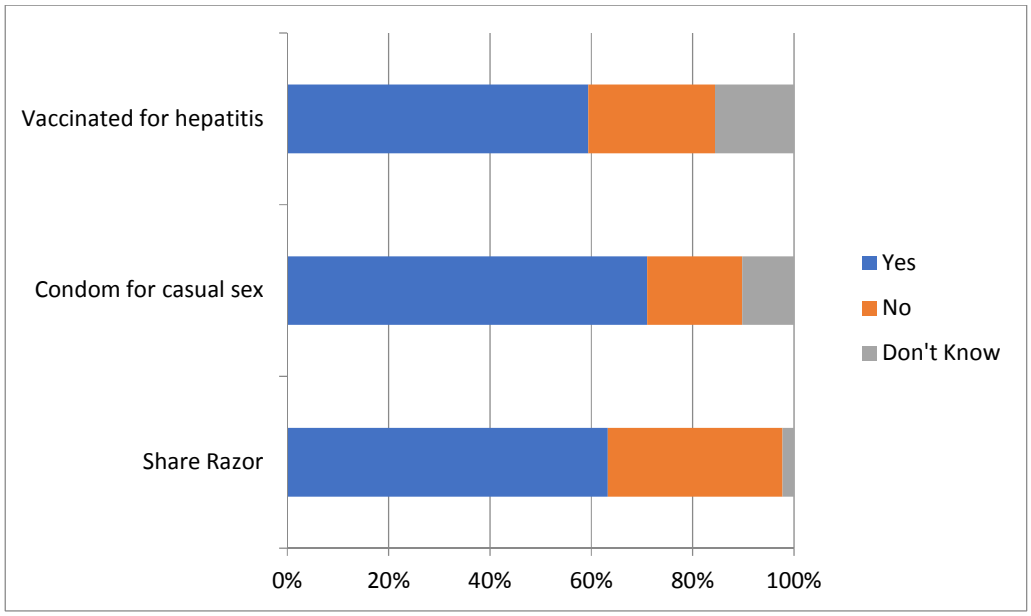

Fig. 3. Pre-interventional practices versus post-interventional practices
Fig. (3a). Pre-interventional graph

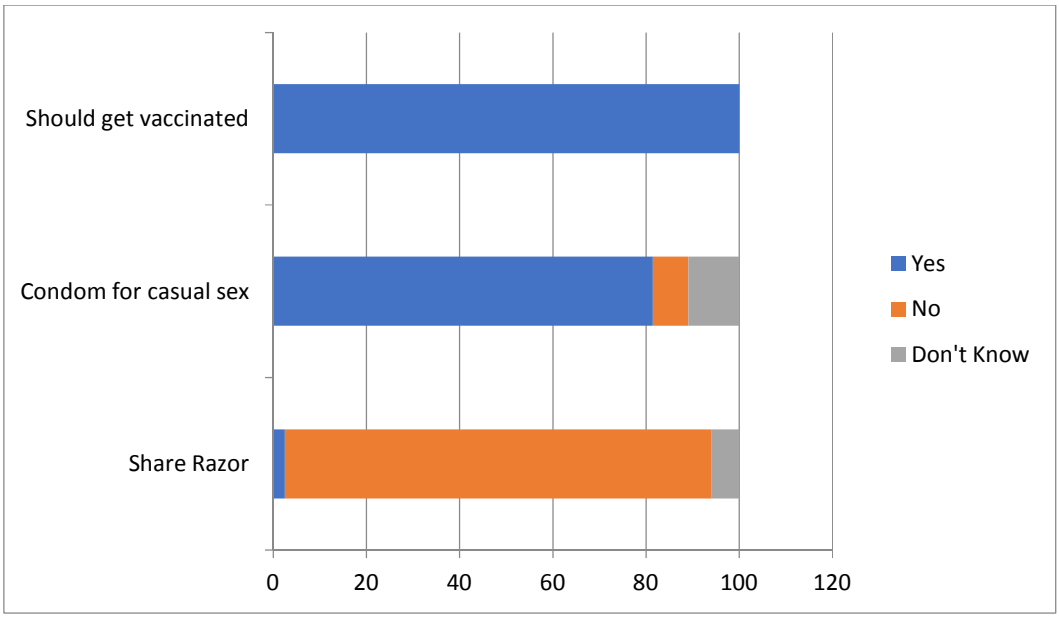

Fig. 3. Pre-interventional practices versus post-interventional practices
Fig. (3b). Post-interventional graph

Change of knowledge and attitude related to Hepatitis B and Hepatitis C after the intervention among 119 respondents had a P-Value of <0.001 after applying Wilcoxon signed-rank test [Table 5].

Here, Fig. 4 shows the overall analysis was done about this interventional impact on the participants regarding its usefulness, understanding to the information provided and time given to them for easy understanding and clarifying their queries.

Table 3. Practice among Prisoners by using descriptive analysis

Variable	Frequency (n)	Percentage (%)
Have you ever received Hepatitis Vaccine?		
No	76	59.4
Yes	32	25.0
Don't know	20	15.6
Partner received HB vaccine		
Not Applicable	44	34.4
No	50	39.1
Yes	20	15.6
Don't know	14	10.9
Children received HB vaccine		
Not Applicable	48	37.5
No	43	33.6
Yes	24	18.8
Don't know	13	10.2
Share comb with others		
No	60	46.9
Yes	63	49.2
Non-disclosure	5	3.9
Share nail cutter with others		
No	54	42.2
Yes	70	54.7
Don't know	4	3.1
Share toothbrush with others		
No	83	64.8
Yes	38	29.7
Don't know	7	5.5
Share razor with others		
No	81	63.3
Yes	44	34.4
Don't know	3	2.3
Use condom for casual sex		
No	91	71.1
Yes	24	18.8
Non-disclosure	13	10.2
Have multiple sex partners		
No	89	69.5
Yes	34	26.6
Non-disclosure	5	3.9
Have Tattooing done on body		
No	103	80.5
Yes	34	17.2
Don't know/ Non-disclosure	5	2.3
Ever used Injectable drugs		
No	109	85.2
Yes	17	13.3
Don't Know/ Non-disclosure	2	1.6
Ever take any drug by snorting		
No	75	58.6
Yes	51	39.8
Don't know	2	1.6
Ever involved in bloody fights in jail		
No	104	81.3
Yes	21	16.4
Don't know/ Non-disclosure	3	2.3

n = no. of participants

Table 4. Willing to change practice by using descriptive analysis

Variables	Frequency (n)	Percentage (%)
Get vaccine after screening		
Yes	119	100
No	0	0
Already vaccinated		
Partner should receive vaccine		
Yes	118	99.2
No	1	0.8
Children should receive vaccine		
Yes	118	99.2
no	1	0.8
Share comb in future		
Yes	4	3.4
No	105	88.2
Don't know	10	8.4
Share nail cutter		
Yes	3	2.5
No	106	89.1
Don't know	10	8.4
Share toothbrush in future		
Yes	2	1.7
No	107	89.9
Don't know	10	8.4
Share razor in future		
Yes	3	2.5
No	109	91.6
Don't know	7	5.9
Use condom in future		
Yes	97	81.5
No	9	7.6
Don't know	13	10.9
Share preventive information with family and friends		
Yes	119	100
No	0	0
Don't know	0	0

n = no. of participants

Hepatitis B and Hepatitis C is a prevalent disease in Sindh and prisoners are a major risk group due to their lack of awareness and knowledge about this preventable infectious disease. A review article published in 2015 evaluated all the studies appearing on PubMed in the last decade assessing a positive relation between the HCV prevalence and prisoners worldwide. This study indicated a high HCV mortality in prisoners as compared to the free population, also indicating a high reinfection rate in the treated prisoners especially IVDUs (intravenous drug users) [11]. Another study in Sindh focusing primarily on prevalence of Hep C highlighted prisons at high risk 12.8% when compared to general national prevalence of only 4.9% [8]. A similar study to assess prevalence of viral hepatitis in central jail in Karachi highlighted that intervention is necessary to control this viral disease in this high risk group. Although small sample size limited the scope of this research it made clear that HCV is more prevalent compared to HBV [9].

It is not surprising that half of the prisoners that comprised our sample size were uneducated and the rest either attained primary education or studied till matriculation. Whereas in another

study in which Anjum S et al tried to asses level of awareness regarding hepatitis between rural and urban population of Sindh they found out that participants from rural areas were more informed about all aspects of viral hepatitis. [12] Although only half of the prisoners were incarcerated twice or more, two-thirds were imprisoned for a duration of greater than six months, which is an ample time period for a normal person to be infected with HBV and HCV.

According to our study prison inmates identified newspaper, television, friends and family as their primary source of information regarding hepatitis B and Hepatitis C. But even in this era where most information and learning is a click away ninety percent prisoners denied any role of internet as the source of knowledge for hepatitis B and hepatitis C.

Even though more than ninety percent prisoners agreed to be treated by doctors, few were still adamant to be treated by a Hakim if they ever got infected by hepatitis B or hepatitis C. Asaf K et al while conducting a cross sectional study in Lahore made it clear that although participants in this community had ample knowledge about hepatitis B, they had misconceptions regarding vaccination and choice of treatment as most preferred non-medical treatment such as spiritual healing, homeopathies and hakim [13]. Contrary to this study in Lahore, by our research we found that a significant number of prisoners, about ninety percent preferred medical treatment by doctors if they ever got hepatitis.

Vaccination is one of the most effective method of primary prevention from hepatitis B. Although more than two-thirds of the prisoners were never vaccinated for hepatitis B, a substantial number of prisoners lacked the knowledge about even existence of a vaccine for prevention of Hepatitis B.

Table 5. Change of knowledge, attitude and practice related to HBV and HCV after the intervention among 119 respondents by using Wilcoxon signed-rank's test

Variable	Pre-Intervention Median (IQR)	Post-Intervention Median (IQR)	*Z* statistics	*P*-Value
Knowledge HBV	16 (17)	26 (2)	-9.470	<0.001
Knowledge HCV	15 (18)	23 (2)	-9.473	<0.001
Attitude	9 (8)	13 (4)	-6.293	<0.001

IQR= interquartile range

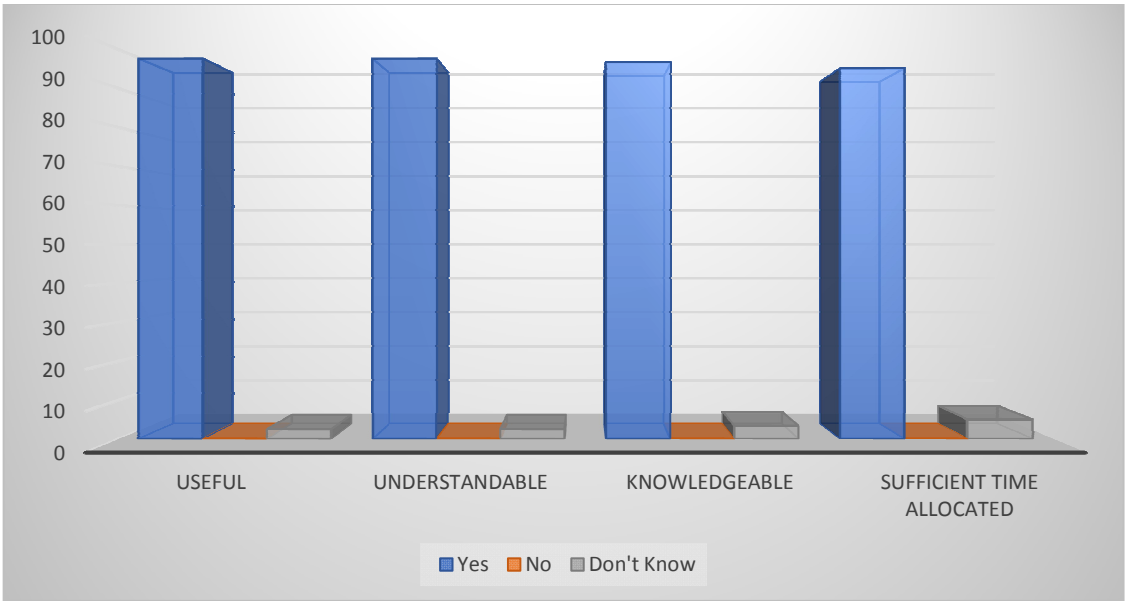

Fig. 4. Feedback regarding intervention session

Sharing of personal items is an important cause of the spread of HBV and HCV, which is worrisome cause 54.7% shared their nail cutters with others, 29.7% shared their toothbrushes with others and 34.4% shared their razors with others. Unprotected sexual intercourse as 71.1% doesn't use condom for casual sex and having multiple sexual partners as 26.6% is alarming, as it may form the pillars for the spread of HBV and HCV.

Another study in Balochistan focusing primarily on prevalence of Hep B, Hep C, HIV and TB highlighted prisons at high risk through which we can interpret that it is the ill practices that makes prisoners more compromised and prone to get infected with such diseases [14]. According to a cross sectional study in the prisons of Iran it was found that prevalence of HBV infection is directly proportional to the use of injections while prison stay. Identifying IV drug abuse as a major risk factor for the spread of viral hepatitis supported by other studies as well [15-17]. In male prisoners of Karachi it was found that Hep B and Hep C are more prevalent as compared to T.B, HIV and syphilis, which highlights that prisoners are at high risk for infectious diseases [10].

A study by Muhammad Qadeer et al suggests that amendments in prison rules should be made in order to get control over these debilitating diseases [18]. The same was suggested by another study by Connoley et al in UK [19].

Although we expected a larger percentage of prisoners who had ever used injectable drugs it was surprising that only 13.3% ever used injectable drugs. Post intervention it was shocking to observe that 100 % prisoners had the will to get vaccinated for HBV after proper screening and 99.2% would even get their partner vaccinated, 81.5% would use condom for casual sex, 91.6% would never share their razors with others which establishes the efficacy of our intervention.

These diseases can be prevented by giving education of risk factors, modes of transmission and vaccination. Such suggestions are also supported by many studies done worldwide. [17,20,21]

More than ninety percent prisoners commended our intervention and agreed that it was understandable, useful, knowledgeable and sufficient time was allocated.

High prevalence of HBV and HCV in this region along with preventable nature of the disease has made it imperative to intervene and provide awareness about risk factors and severity of disease, which was the basis for our study.

4. CONCLUSION

Hepatitis is a communicable disease imposing serious threat with significant mortality and morbidity. For this reason, we conducted an interventional study to assess the level of awareness regarding its mode of transmission.

According to which we concluded that the prison inmates of Malir Jail, Karachi lacked basic knowledge of Hepatitis B and C and its mode of transmission.

5. FUTURE RECOMMENDATIONS

The study was conducted to raise awareness of Hepatitis B and C among prisoners. It is thus recommended that future studies should be conducted more often including a larger population. The time allocated between pre and post intervention should be more and prisoners should be personally trained to conduct such awareness sessions among themselves.

6. LIMITATIONS

Larger sample size would have given more strength to our obtained values.

CONSENT

Informed consent was taken before filling the questionnaire

ETHICAL APPROVAL

It was approved by ethical review committee of Jinnah Medical & Dental College, Sohail University, Karachi Pakistan.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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