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**'COMPARATIVE STUDY ON HEPATITIS C OCCURRENCE IN HEALTH STAFF
(DOCTORS, NURSES AND OTHER HELPING STAFF) IN FOUR DIFFERENT
HOSPITALS OF THE TWIN CITIES ISLAMABAD-RAWALPINDI
(CMH, MH, QIH AND PIMS)'**

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ABSTRACT

Background: The pathogens like viruses and some bacteria which are reside in our blood pose a great threat and have potential to cause serious diseases. These organisms have high potential of cause's diseases to those people who are in easy to these microbes. Such microorganisms are therefore classified as a potential occupational health hazard for Health care workers (HCWs) across the world. These pathogens are very much active in causing disease to people who are attached to the hospitals in anyway special to those people who are working inside hospitals like

doctors, nurses and all other paramedical staff the Health care workers (HCWs) has mentioned a list of 20-25 organisms. These microbes are so lethal and harmful that they can even cause a disease in spite of all the most progressive equipment's, apparatuses and other protective measures. There are some protective measures which have been suggested by HCWs to protect working staff from these easily attacking microbes especially viruses of hepatitis B and C. there are many harsh and severe results of Hepatitis C such as liver damage because of invasion of cancerous cell of live.

Objectives: The current research study was designed to investigate the Hepatitis C prevalence in different hospitals of Islamabad like Military Hospital (MH), combined military hospital (CMH) and some other civil hospital such as, Quid-e-Azam Hospital and Pakistan institute of Medical Sciences (PIMS). The data was collected from different staff of the hospitals such as nurses, doctors and other staff in order to minimize the risk association of the disease Transmission.

Design of Research Work: Different samples (n=400) were collected including 260 male and 140 female individuals from Islamabad in all the mentioned hospitals in the duration of nearly 8-10 months from March 2018 to November 2018 in which Doctors, Nurses, and all other helping staff (Laboratory technicians, Operation Theatre Staff) Approximately 400 samples were collected from all the mentioned four hospitals.

Results: Out of these 400 samples were selected for the study including 260 male and 140 female candidates. The general information of these subject such residence, literacy and gender are mentioned in the result section. Out of these 400 samples 290 were identified by RAID method while 110 were analyzed ELISA method. Out of these 110 samples which are examined by ELISA indicated that 14 samples showed no reactivity (Nonreactive), 94 were reactive and 02 samples were neutral (Borderline) while in case of RAPID 257 sample were nonreactive, 24 reactive and 09 samples were on borderline (Neutral). The explained illustration is present in Result section of main text.

Conclusion: The research was designed to investigate the core cause of Hepatitis in Medical staff of different Hospitals of Islamabad. These results shows that the role of doctors, nurses and other medical staffs rule is crucial in preventing and controlling Hepatitis C (HCV) and some of the preventive measure must be undertaken.

Keywords: ELISA, Rapid, Microbes, Viruses, Pathogen, Biosafety

INTRODUCTION

Both Hepatitis B and C are posing a great threat to the health of human being not only in Pakistan but all over the world. According to the current report on prevalence of Hepatitis B reported that it affect is affecting approximately 380 million people all over the globe and nearly 1.4 million people are affected with Hepatitis C which ends with death of the individual annually [1, 2]. Hepatitis C virus is cause of the live damage that occurs during the last stage of hepatitis. The viruses for both Hepatitis B and C were identified and established during 1988. Approximately 2.3-4.7 million HCV patients diagnosed were because of infection not properly monitored [3]. Hepatitis C causes an unidentified interaction for persisting in one's body for more than 10-15 year without being identified by its symptoms. There are many other complications which are related to Hepatitis such as, esophageal vaices, Cirrhosis and ascites etc. [4]. Hepatitis has an invasion in all most every part of the world such as America, United Kingdom, Japan and India and Pakistan. In Japan there is 1.86 per 100.0000 individuals each year, like this in Republic of China about 10 % of the total Chinese population is affected with Hepatitis C. In Pakistan the estimated value of Hepatitis C is about 7 million individual are

affected with Hepatitis C [5]. Pakistan National Survey on Hepatitis C Shows that form northern part of Pakistan 5.1 % of the individuals who have ever donated blood were suffering from Hepatitis C. The Seroprevalence estimated value of Hepatitis C is almost 1, 70 million of the total population which is increasing day by day [6]. The literature shows that in Pakistan there are very few people who are suffering from Hepatitis C which includes drug abusers, blood donors, professionals and chronic liver disease patients all have the total of 40 % of the whole population of Pakistan [7]. The rate of Hepatitis C is more in those areas which are less developed (Rural area) [8]. There are many reasons for increase rate of Hepatitis C in rural areas such as lack of awareness, proper health care, lack of attention from families and frequent use of drugs [9]. The study carried on Hepatitis C from Khyber Pakhtunkhwa (KP), Pakistan showed that there are marked variation in the rate of Hepatitis C occurrence in all provinces of Pakistan and Khyber Pakhtunkhwa (KP) having the least rate of 1.1 % of the total 15.1 % [10, 11].

MATERIAL AND METHOD*Collection of Samples*

The current study was carried out from March-2018 to November 2018 in different hospitals of the twin cities Rawalpindi-Islamabad. These hospitals include Quid-e-Azam Hospital, combined Military Hospital, Pakistan Institute of Medical Sciences (PIMS) and Military Hospital. The sample size was 400 working individuals of these hospitals including male and female staff.

Sample Selection

The samples were selected randomly from all staff starting from lower staff of the hospital to the upper staff (Doctors). The ratio was not fixed for collection of samples so total of 400 samples were collected including doctors, nurses and other staff. Although the total number of male and female staff was counted containing (Male n=260 & Female n=140).

Blood Sample Collection

Blood samples were collected from these individuals by staff nurse of the hospitals concerned. Before taking blood the skin was rinsed with sterilizing agent that was 95% ethanol solution. A syringe of 5 cc was used for collection was blood and then the blood was kept for some time to facilitate clotting. The clotted blood was then centrifuged at the speed of 3000 revolution per minute (rpm) in order to collect serum and the debris was discarded.

Detection Process of antibodies against HCV (Anti-HCV Antibodies)

For detection of antibodies against HCV Rapid test method of analysis was used in the samples in all these hospitals. The techniques and processing methodology was kept same for all samples in order to avoid any confusion. For detection of anti -bodies quality chromatographic immunoassay was used in all subjects.

Confirmation of Positive Samples through ELISA

All the samples which showed positive result were subject to ELISA (enzyme-linked immunosorbent assay) for confirmation of the results.

RESULTS

The current study includes 400 samples of the individuals (Male n=260 & Female n=140) who were working in four different hospitals of the twin cities Islamabad-Rawalpindi including Quid-e-Azam Hospital, Military Hospital (MH), combined Military Hospital (CMH) and Pakistan Institute of Medical Sciences (PIMS), Islamabad. The detail information of the Hospital, Male and Female individuals are given in (Table 1).

In the grand total of 400 hospital staff 110 were analyzed through ELISA and 290 were analyzed by Rapid Test Method. 110 samples were subjected to ELISA showed 14 (13%)

nonreactive and 94 (87%) samples were found reactive and 02 (1.8%) samples were neutral or borderline which is clearly indicated and 290 samples which were analyzed through Rapid shows that 257 (85%) of the samples were non-reactive, 24(9%) were reactive and 09 (samples) showed neutral results or borderline which can be easily demonstrated in (Fig 1) and also mentioned in (Table 2).

In total of 118 individuals including both male and females who were detected positive for the Hepatitis C Virus (HCV) includes male and female both. The reactivity and non-reactivity of the sample was checked which shows that in total of 118 individuals showed that including 95 males and 23 females. Out of these 95 males 79 (7%) were found nonreactive and 15 (13%) were reactive and in case of females total of 06 females candidate samples were found reactive and the other 18 samples were nonreactive. The gender wise distribution of reactive samples is shown in table in (Figure 2) & (Table 3) as well.

Below graph (Figure 03) shows that in all incidences of reactive the reason and causes were different such as, in some cases it was because of blood transfusion while in other cases it was because of surgical operation and also because of mishandling of needle and syringes. The table indicates that no individual was suffering from AIDS inside having no illness record. Blood transfusion was a reason in 2 individuals while 10 individual have showed no record of illness due to transfusion. In surgical operation 3 individual were infected and 6 have no result for any disease. In case of occupational needle stick 4 individuals got suffered and 9 were having no effect.

Some general Characteristics of the subject were studied involved in the study such as Gender, Literacy and their Residence. Out of 400 65% of the subject were male and 35 % were female. The literacy rate in these collected subjects was 100 % as they were working staff. In these individuals 277 (69.25%) were belonging to Urban area while 123 (30.75) were Rural area resident which are clearly illustrated in Table (5).

Table 1: The table mentioned below shows all the collected samples, names of Hospitals and number of the Male and Female individuals from which blood was collected. The Total number of Male individuals was (n=240) and that of female (n=160) having a grand total of 400 individuals who took part in the study as samples donor

S NO	Name of Hospital	No of Individuals	Male	Female
1	Quid-e-Azam Hospital	75	40	25
2	Military Hospital (MH)	40	25	24
3	Combined Military Hospital (CMH)	90	55	36
4	Pakistan Institute of Medical Sciences (PIMS)	195	120	75
Grand Total		400	240	160

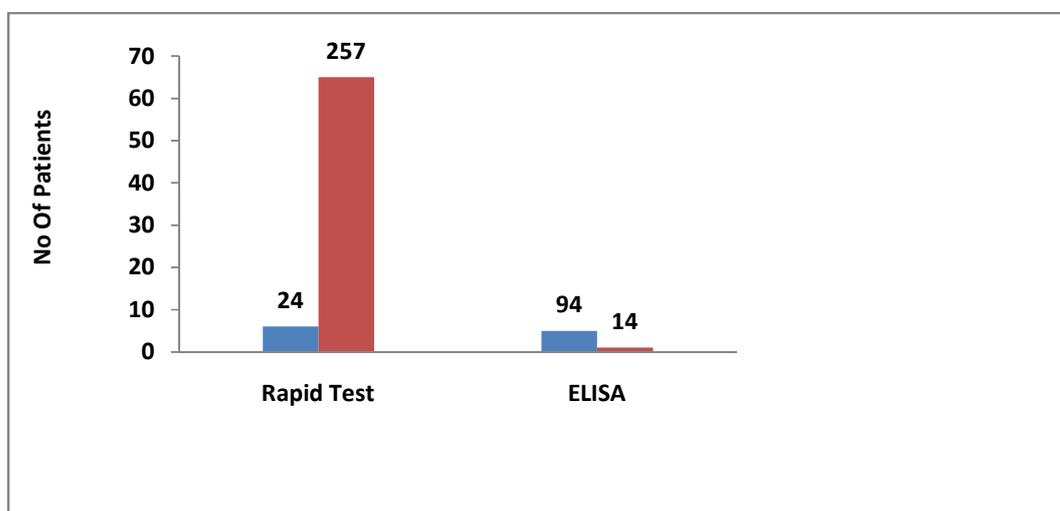
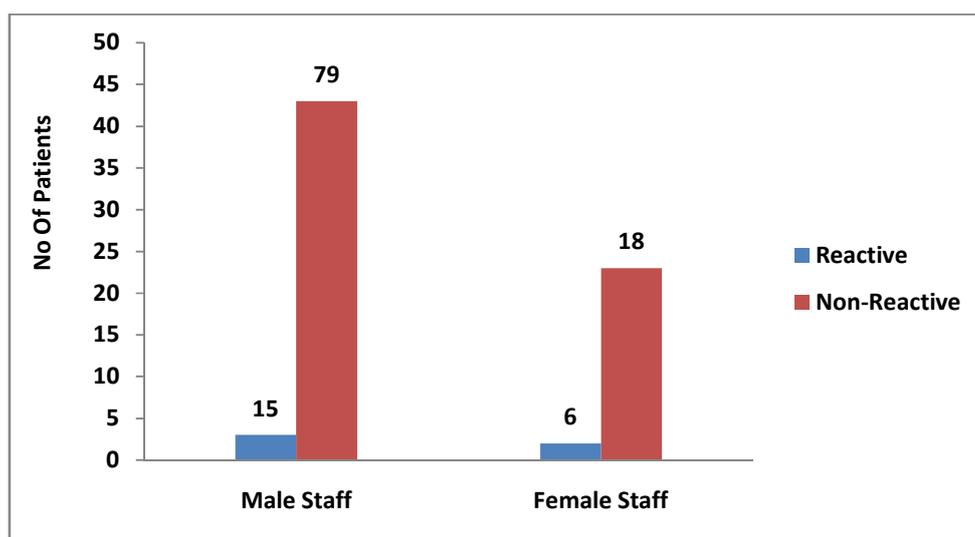


Figure 1: The above figure demonstrates the total samples which were examined by both Rapid and ELISA

Table 2: The incidences of HCV in examined in different hospital staff by ELISA and Rapid kit method showing reactive, nonreactive and neutral (borderline samples)

S.NO	Method	Total Numbers of Samples Examined	No. of Non-reactive samples (%)	No. of Reactive Samples (%)	No of Borderline (%)
1	ELISA	110	(13%) 14	(87%) 94	(1.8%) 02
2	RAPID TEST	290	(85%) 257	(9%) 24	(3%) 09



Figures 2: This figure describes the number of Male and female staff which shows reactive and nonreactive samples.

Table 3: This table identifies total of 118 samples of male and female in which 15 (13%), 6 (5%) and 79 (7%), 18 (14%) were reactive and nonreactive samples respectively

S. NO	Total Number of Samples	Male Staff		Female Staff	
		Reactive (%)	Non-Reactive (%)	Reactive (%)	Non-Reactive (%)
1	118	15 (13%)	79 (7%)	06 (5%)	18 (14%)

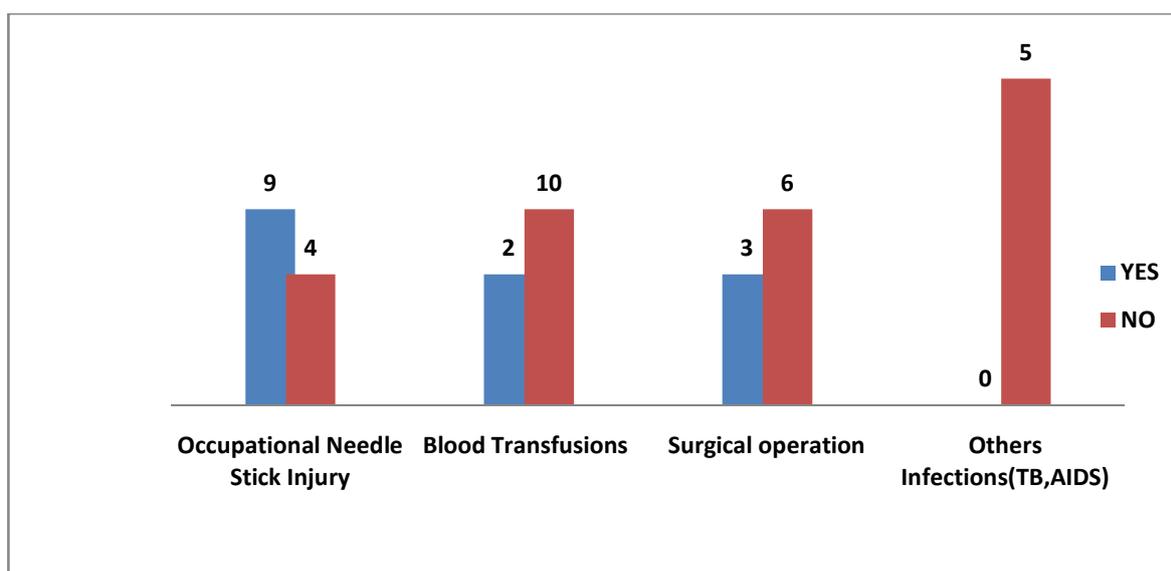


Figure 03: Number of individual subject having illness (YES/NO) in four different incidences such as, Occupational Needle Stick Injury, Blood Transfusion, Surgical operation and other infections TB/AIDS

Table 4: Table 4 indicates the number of individual subject having illness (YES/NO) in four different incidences such as, Occupational Needle Stick Injury, Blood Transfusion, Surgical operation and other infections TB/AIDS

S NO	Incidents	No of Cases with no illness record (NO)	No of the Individuals having illness previous record (YES)
01	Occupational Needle Stick Injury	04	09
02	Blood Transfusion	10	02
03	Surgical operation	06	03
04	Other infections TB/AIDS	05	00

Table 5: Table 5 contains some general information regarding the subject of the studies including residence, literacy and Gender

Gender	No of Individuals	Percentage (%)
Male	260	65%
Female	140	35%
Literacy		
Literate	400	100%
Illiterate	0.00	0.00%
Residency		
Urban	277	69.25%
Rural	123	30.75%

DISCUSSION

The importance of HCV studies have greatly enhanced during the last decades in Pakistan. Because of diverse geography and different cast the prevalence of HCV could not remain constant throughout Pakistan [12]. There number are barriers to investigate the actual patient numbers of HCV due to which there is a constant and regular increase in HCV occurrence and Prevalence which is becoming threatening [13,14].

In this study included hospitals effective measure were already under practice due to which some hospital shows very less number of affected individuals because of improved level of administration which are focusing on clean environment for patients and staff. But there are still some more effective measures to be taken. It was reported that as compared to previous studies the situation have been greatly improved [15, 16, 17].

The occurrence of HCV have been previously reported in in Pakistan in population level the report of the data which was investigated showed that 5.31% - 7.5 HCV positive individual in the report. [18]. The study reported a high level of occurrence of HCV in Rawalpindi and Islamabad which was almost 15 individuals in every 250 individual in Rawalpindi and 14 in every 218 individual in Karachi [19]. The Differences

in the current studies and the previous reported studies from different areas of Pakistan shows the variation because of the geographical and environmental differences [20, 21].

The study was carried out to investigate the role of Hospital staff in HCV prevalence and also to bring about some awareness towards this key problem. The awareness procedure includes an early detection or screening of HCV, and to undertake every possible preventive measures.

There are some many other reasons for high number of HCV patients in Pakistan as the facility of a prophylactic vaccine for HCV [22, 23]. Second reason for daily base increase in HCV is the use of the unwanted and unrelated equipment in various health risks involving processes such making Shave, using unnecessary medicine and regular drug use [24, 25].

Current study shows alignment in some of the key finding of increase susceptibility of Hepatitis C Virus (HCV) such as, transfusion of unchecked blood, reuse of already used things like shaving razors, Syringes, towels, tooth brushes etc. All these are daily routine finding in Pakistani population because of lack of awareness. The process of Screening of Hepatitis is lengthy and cost effective and laborious task. There is no fruitful result in

case of treatment of Hepatitis C treatment so the main thing to be focused on as the precaution and preventive measures for Hepatitis C.

There is an ought most need for educating people about Hepatitis C Virus, Symptoms and Prevention and routine precaution that can help the people at gross root level and also which are in everyone access.

CONCLUSION

This study was designed to investigate the main and key causes to the increasing level of Hepatitis C on daily bases. The Study identified the crucial role of Hospital staff, Care about injection and uses of syringes and other daily routine hospital usage things like gown, lab coats, gloves and syringes.

RECOMMENDATIONS

Cleaning of using places on daily bases, such as laboratories, operation theatre on continuous bases.

Proper observation of Biosafety levels (1, 2, and 3).

Careful handling of the used material such as, syringes, gloves and seizers.

To make sure of the safe drainage and disposal of used things.

Conflict of Interest: The authors declare no conflict of interest.

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