CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3376799

Available online at: http://www.iajps.com *Research Article*

STATUS OF HEPATITIS B VACCINATION AMONG HEALTH CARE WORKERS & PROFESSIONALS IN TWO HOSPITALS OF LAHORE, PAKISTAN

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Article Received: June 2019 **Accepted:** July 2019 **Published:** August 2019

Abstract:

Healthcare Workers have a high risk of occupational exposure to many blood-borne diseases including HIV, Hepatitis B, and Hepatitis C viral infections of these Hepatitis B is not only the most transmissible infection, but also the only one that is preventable by vaccination.This study was conducted to estimate the prevalence of Hepatitis B virus infection in healthcare workers (HCWs) employed at the Lahore general hospital and Gulab Devi hospital Lahore.

This cross sectional study was done at Lahore General hospital and Gulab Devi hospital.Total 400 health care workers were included. All health care workers were interviewed using a pre-structured questionnaire to find out the vaccination status of these health care workers and the reasons for not getting vaccinated. A total of 400 health care workers were approached to participate in the study. Out of 400 (sample size) 65.8% were vaccinated while 34.2% were not vaccinated against Hepatitis B. Amongst this group 8.5% received one dose, 22.0% received two doses, 53.2% received three doses and 16.3% were not sure about the number of doses they received. Reasons of not vaccination were no one informed them (18.1%) , 17.4% said that they were not-vaccinated due to non-availability of vaccination, 1.4% due to high cost, 1.4% due to religious beliefs, 7% due to side effects, 42.8% were forgotten and 18.1% said that they have some other reasons for non-vaccination

Due to low and delayed HBV vaccine-compliance, HCW continue to be at the risk of occupational HBV. Health education highlighting occupational risk of HBV, accessibility of vaccine and mandatory vaccination of HCW is recommended to increase HBV vaccine compliance among health care workers.

Key Words: *Health Care Workers, Vaccination status, Vaccine –compliance.*

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Please cite this article in press Hafiz Muhammad Kashif et al., ***Status of Hepatitis B Vaccination among Health Care Workers & Professionals in Two Hospitals of Lahore, Pakistan.,*** *Indo Am. J. P. Sci, 2019; 06(08).*

INTRODUCTION:

Hepatitis B, an infection due to Hepatitis B virus (HBV) is a global public health problem and the tenth leading cause of deaths globally (Varsha Singhal, Bora et al. 2011). According to an estimate, nearly 2 billion population is infected with HBV worldwide that results in 350 million chronic cases and 2 million annual deaths (Shagufta Hussain, Patrick et al. 2010).The number of suspected hepatitis B carriers in Pakistan is approximately five million with a prevalence ranging from 1.4-11% (weighted average2.4%), (Mohammad Tahir Yousafzai, Rubina Qasim et al. 2014) thereby ranking Pakistan in the intermediate HBV prevalence zone.

HBV is transmitted by body fluids, such as blood and serum, and can exhibit vertical transmission from mother to child.Sexual transmission, vertical transmission, and unsafe injections, including intravenous drug use, are the most common routes of infection for HBV.Household contact and occupational health-care exposure to blood products and hemodialysis are other risk factor(Asif, Raza et al. 2011).Health-care workers (HCWs) are reported to have the highest occupational risk for HBV infection.

Although the incidence of hepatitis B infection has drastically reduced after the introduction of effective vaccination, modification of high-risk practices and possibly a decrease in the number of susceptibleperson, yet about 400 million people worldwide are carriers of hepatitis (R.C 2006). The acute and chronic consequences of Hepatitis B infection aremajor problems both in developed as well as developing world.In Pakistan, although efforts have been made to vaccinate health professionals, many individuals in situation of risk do not have vaccinations or do not complete the vaccination schedule.

Immunization with hepatitis B vaccine is the most effective means of preventing hepatitis B infection and its consequences. The recommended strategy for preventing this infection is selective vaccination of persons with identifiable risk factors. The Advisory Committee on Immunization Practices (ACIP) recommends hepatitis B vaccine for every one 18 years of age and younger as well as for adults over 18 years of age who are at risk of hepatitis B infection (Nasir, Khan et al. 2000).

As per estimates, only 18% of HCW of South East Asia including Pakistan are vaccinated against HBV (Hafeez-ur-Rehman Mengal 2008).There are 35millionHCWs worldwide, and percutaneous injuries have been estimated to result in approximately 66,000 hepatitis B viral infections per year (Ibrahim and Idris 2014). Transmission of infection is rare in persons who have been immunized and transmission rate is high as 30%among those who are not immunized.

Although the World Health Organization has recommended vaccination against HBV since 1997, some countries do not follow this recommendation because of the high cost of the vaccine(Carvalho, Schinoni et al. 2012).In countries where vaccination is performed on large scale, the epidemiology of HBV infection and its morbidity and mortality have decreased dramatically.Measures have been proposed to minimize HBV exposure in health professionals. Knowledge regarding the Hepatitis B virus and safety precautions is needed to minimize the health caresettings acquired infections among health personnel.

At least 85 – 90% of HBV associated deaths are vaccine preventable.Risk of acquiring HBV infection and status of Hepatitis B vaccine in developing countries have been poorly quantified, particularly the data regarding the risk to different categories of HCWs, like nurses and supporting nonprofessional staffs, which clean the wards and instruments, is scarce(Memon, Ansari et al. 2007).

Hence the study was designed to look into the situation with the hope that findings will help the infection control committee in formulating the policies at Pakistan Institute of Medical Sciences (PIMS) Islamabad. The vaccination status of Pakistani primary HCWs has not been studied before. The present study is aimed to assess the vaccination status of HCWs and reasonsfor non-vaccination and to awareness about Hepatitis B inHCWs.

Health Care System aspects:

Health Department is the key department entrusted by the people of Pakistan with the fundamental responsibility for the health of communities and the entire population. Health Department delivers primitive, preventive as well as curative health care services of Primary Health Care level to Tertiary Health Care level.

Free of cost consultation, diagnostic facilities and medicines are provided to the patients particularly focusing on the poor and marginalized segments of the society. Health Department also provides free of cost preventive measures including immunization vaccine for preventable diseases like;

- Polio

- Tuberculosis
- Diphtheria
- Whooping Cough
- Tetanus
- Hepatitis-B
- H-Influenza
- Measles

Besides measures to prevent, treat and control other communicable diseases and Epidemics / Disasters, these vaccines are provided through Expanded Program on Immunization (EPI) for children under 2 years and pregnant women. Health department is producing its own trained and qualified Human Resource keeping the HR development needs and requirements of Health Care Infrastructure in mind.

Hepatitis "B" has emerged as major Public Health Problems in Pakistan. It has been estimated that every 13th Pakistani is potentially infected with either Hepatitis B or C. According to estimates, overall prevalence of Hepatitis B is 3-4 % (6 million infections) respectively in Pakistan. With these facts it is estimated that about 15 million people somehow harbor hepatitis viruses in their bodies. The situation of infectious hepatitis is even much worse. The annual liver admissions and mortalities in established GI & Liver Centers ranges from 25-35% in various parts of the country. All these put economic burden on health costs in budgets.

Keeping in view the significance of this health problem, the Government of the Pakistan has approved PC-I for Prevention and Control of Hepatitis covering the period 2009 to 2012, and allocated a sum of Rupees 2286.23 million for the above period.

Objectives

- Control the transmission of Hepatitis B.
- Reduce the mortality caused by the Hepatitis B.
- Provide free treatment to the poor and deserving patients.
- Educate and create awareness about the mode of transmission of disease.
- Capacity building through orientation and training of health professionals.
- Provide free Hepatitis B vaccination to the high risk group in the Pakistan.
- Strengthen laboratory and screening facilities in the Pakistan.

Activities

- Hepatitis B vaccination to infants and high risk groups (ongoing).
- Increase awareness among the public by using all channels of communication.
- Develop, produce and disseminate health education material.
- Arrange training workshops for physicians, pathologists and medical superintendents.
- Implementation of Hospital Waste Management rules 2005.
- Provide medicine, vaccine, lab consumables, regents, safety boxes and syringe cutters etc.

Rationale of study:

Health care workers (Doctors, Pharmacists, Nurses, Lab technicians)are always in direct contact with patients and are vulnerable to the acquisition of this infectious disease. They are involved in blood transfusion, injections and surgical operations in their practices. They should be aware of the risk involved in the treatment procedures and should take appropriate precautions in dealing with patients.

Prevention of HBV is a public health priority and immunization with hepatitis B vaccine is the most effective mean against hepatitis B infection. Any individual after receiving the full 3 doses series of HB vaccination develops protective antibodies against hepatitis B virus. Mass vaccination program introduced in the late 1980s and mid1990s in most East and South-East Asian countries to combat HBV infection has resulted in a decline in HBV carrier rate and in the number of patients with hepatic decompensation or hepatocellular carcinoma.(Yahia A. Raja'a, Al-Asadi et al. 2002)The prevalence of HB5Ag positivity among Pakistani health workers ranges from 5.2% among subjects studied by Zahidet al.6 in 1991 to 7.5% among 114 operating room personnel examined by Mujeeb et al in 1998(R.C 2006).

The study is basically conducted to evaluate the status of Hepatitis B vaccination among HCWs because they are at higher risk of occupational exposures to HBV-infected blood and body fluids.

Significance of study:

- The study would help to find out status of hepatitis B vaccination among HCWs.
- This study would also help to evaluate the risk factor of hepatitis B among health care professionals.
- This study would also help to make HCWs aware about HBV and find out the reasons behind non - immunization as well.
- The study will be beneficial in the aspect that all the health care workers should be motivated for

behavior change and ensured for immunization to enhance their occupational safet

LITERATURE REVIEW

In Nov,2013 a study was conducted in America. The main aim of this study was to verify the status of hepatitis B vaccination in health care personnel.Self-reported questionnaire was used.2010 NationalHealth Interview Survey (NHIS) was used to determine the weighted proportion of self reported 1- and 3-dose Hepatitis B vaccine reporting among HCP aged less than or equal to 18 years. Logistic regression was used to determine independent predictors of vaccination and performed a trend analysis to determine changes in reporting from 2004 to 2010 using data from the 2004–2010 NHIS.The 2010 Hepatitis B vaccine coverage estimate among HCP remained well below the Healthy People 2010 goal of 90%. Efforts to target unvaccinated HCP for pre-exposure Hepatitis B safety should be encouraged.[1]

In June,2010 a study was conducted in South Africa.The aim of this study was to study the validity of observations and to make recommendations, based on the result to the hospital management to enhance HCWs protection. This was an observational descriptive study. Records of the HBV immune status of all doctors who reported an work-related injury (OI) to the occupational health clinic between June 2010 and May 2011 were reviewed. A structured questionnaire was then distributed to all laboratory personnel and senior doctors working at the hospital.Poor observance of HCWs to HBV vaccination and post-exposure prophylaxis is a concern. In-service training is needed to notify staff of the efficacy of HBV vaccination and immunoglobulin therapy.[2]

In Dec,2010 a study was conducted in Brazil.The aim of this study was to verify the occurrence and factors linked with vaccination against hepatitis B among Primary Health Care workers.A cross-sectional, analytic study was undertaken. Data were collected through a form, which contained socio-demographic, work-related, general health and behavioral variables.The occurrence rate of vaccination against hepatitis B is low among PHC workers in Montes Claros. The results reveal the significance of professional education, knowledge and infection risk in the determination of hepatitis B vaccination. They also advise that instability at work can lead to carelessness through non-vaccination and that negligent health-related behaviors are repeated.[3]

In Oct,2010 a study was conducted in rural areas of Tehsil Swabi, Khyber Pakhtonkhwa (KPK), Pakistan. The study was carried out in both private and public primary health settings such as Physicians' clinics and public dispensaries. The aim of this study was to evaluate hepatitis B vaccination and its determinants among health care workers (HCW) in rural Northwest Pakistan.This cross sectional study was undertaken among 485 HCWs from both public and private clinics. Data about hepatitis B vaccination, socio-demographic, knowledge regarding modes of spread of hepatitis B virus, perceived disease severity and benefits of vaccination was collected through questionnaire. Multivariable logistic regression analysis was performed.Improved awareness of disease threat and benefits of vaccination and qualification of HCWs are associated with hepatitis B vaccination among Primary HCWs.[4]

In 2011 a study was conducted in Nigeria.The aim of this study was to shed further light on the prevalence, patterns, and determinants of work-related exposures among the three major professional groups of health workers in two major tertiary hospitals in North-Central and South Nigeria. A cross section study undertaken in two tertiary hospitals in North-central and South-south Nigeria in 2011, a designed self-administered questionnaire was used to obtain demographic data and occupational exposures to blood/body fluids in the previous year from doctors, nurses and laboratory scientists. Independent predictors of work-related exposures were determined in an unconditional logistic regression model.Our results suggest high rates of occupational exposures to blood/body fluid among health workers in Nigeria, especially among newly skilled medical doctors and nurses. Health facilities in Nigeria ought to support infection prevention and control practices while targeting high risk health workers such as house officers and nurses.[5]

In Dec,2013 a study was conducted in Rwanda.The aim of this study was to evaluate the sero-prevalence of viral hepatitis B and C infections and secondarily to distinguish blood-borne infection knowledge, assess reported HBV vaccination rates and evaluate risk behaviours amongst HCWs at a large tertiary center in Southern Province, Rwanda. A cross sectional study involving tertiary hospital employees was conducted from October to December 2013. A pre coded questionnaire was used to collect data on HCWs' socio-demographics, risk factors and information of blood-borne infection prevention. Blood samples were drained and screened for hepatitis B surface antigen (HBsAg) and anti-HCV antibodies.Regardless of their

high workplace exposure risk, HBVand HCV sero-prevalence rates among HCWs were low. The low HBVvaccination coverage and poor information of preventative measures among HCWs suggest low levels of viral hepatitis knowledge despite this high exposure.[6]

In Oct,2007-Feb 2008 a study was conducted in Karachi,Pakistan.The aim of this study was to evaluate the vaccination status for hepatitis B and knowledge, attitude and practice (KAP) regarding hepatitis B and C among medical students of Karachi and to evaluate the effects of gender and age on the responses, regarding vaccination and KAP for Hepatitis B and C.This cross sectional study was conducted in 7 medical colleges/ universities of Karachi. Convenient sampling was used to gather the information. Questionnaire regarding knowledge about prevention, transmission, diagnosis, treatment and vaccination availability for hepatitis B and C was completed from each individual. In addition, vaccination status of hepatitis B and the knowledge of students regarding post exposure prophylaxis was also documented. One thousand five hundred and nine students included in this study.The overall KAP of studied group showed satisfactory results. However, some areas of knowledge and attitude need to be changed or changed altogether.[7]

In 2011 a study was conducted at Mirpurkhas,Pakistan.The aim of this study was to evaluate the coverage of Hepatitis B vaccine in medical students studying in a private Medical College.This cross sectional study was done at Muhammad Medical College Mirpurkhas. It has a total of 375 medical students from first year to final year. All students were interviewed using a pre-structured urdu translated questionnaire to find out the vaccination condition of these students and the reasons for not getting vaccinated. Despite the availability and convenience of a cost effective Hepatitis B vaccine since mid 80 s, the vaccination coverage among medical students is low. Health education needs to be improved in all medical students in particular in the private sector.[8]

In 1999-2000 a study was conducted in Yemen.The aim of this study was to evaluate vaccination coverage against hepatitis B virus and the perceptions of 1198 medical sciences students in Sana'a City, Yemen. Only those who practice clinical education or are in contact with body fluids were included. The students were studying in the Faculty of Medicine and Health Sciences, Sana'a University, Republic of Yemen. Data was collected from 1999-2000. Arabic pre-tested questionnaire forms were completed by 840 students at a response rate of 70.6%.Vaccination status of medical sciences students in Sana'a City, Yemen is low information of medical assistants is the best, attitude of medical laboratory sciences students and practices of dental students is the highest. Positions and practices of female students are better than that of males.[9]

In June-Aug,2003 a study was conducted in Enugu Nigeria.The aim of this study was to evaluate the Hepatitis B vaccination level among all the categories of Health care workers in Enugu and their factors that control its uptake. The study was cross-sectional in design. Subjects were HCWs likely to be rendered to patients and their body fluids.The tool was a self-administered pre-tested questionnaire and analysis was done using SPSS version 11.5software.There is a low intensity of Hepatitis B vaccination and post exposure prophylaxis among HCWs in Enugu.This is due to poor awareness of the risk of contracting this infection and non-availability of vaccine.[10]

In July-Aug 2008 a study was conducted at a University of Nigeria.The aim of this study was to evaluate the vaccination status and occurrence of needle stick injury among medical students in a tertiary institution in a developing country (Nigeria). Information regarding hepatitis B status, history of needle stick damage and knowledge of risk factors for HBV were obtained from clinical medical students using a self-administered questionnaire. Three hundred and forty six students responded. HBV vaccination status is very low among medical students in Nigeria and the frequency of needle stick injuries is high. Universities must not only provide HBV vaccination free of charge but also implement its use by these students.[11]

In Feb,2014 a study was conducted in a Private University of Syria. The aims of this study were to evaluate the knowledge and responsiveness of HBV infection and estimate the number of first- and fifth-year medical students covered by hepatitis B vaccination.A cross-sectional study was carried out by Internal Medicine and Gastroenterology Departments at the Syrian Private University, Damascus, Syria, in February 2014. The study aimed the first- and the fifth-year medical students at the Syrian Private University, Faculty of Medicine.The study told the weakness of general knowledge about hepatitis B among the junior medical students compared to those in the fifth year.[12]

In May-June 2007 a study was conducted at Federal University of Bahia,Brazil.The aim of this study was to assess the HBV sero-prevalance and the response of vaccine by measuring the anti-HBS level in a sample of students and HCWs in a university at Brazil.A cross sectional study was conducted with a sample comprising of students and health care professionals.In this study the sero-positivity was linked with the activity of the Health Care Professionals and students.[13]

In Jan-Feb,2007 a study was conducted at Bolan Medical Complex Hospital,Quetta,Pakistan.The study intended at assessing the prevalence of, and factors relating to, the recognition of hepatitis B virus (HBV) vaccination by nursing students in a tertiary hospital in Pakistan. This cross sectional study was conducted during January-February 2007 at Bolan Medical Complex Hospital, Quetta, Balochistan province, Pakistan, a tertiary hospital with a nursing school. the recognition rate of HBV vaccination among nursing students was still low. All nursing students should be required to be vaccinated with hepatitis B vaccine earlier to entry into clinical/ practicum nursing, with support from health institutions. Follow-up systems, counseling about HBV, and effective intervention programs designed to increaseknowledge relating to HBV infection, the procedures of knowledge and adhering to universally-accepted precautions are also needed.[14]

In May- Aug,2007 a study was conducted at two University Hospitals of Hyderabad,Pakistan.The aim of this study was tofind out the immunization status for HBV infection in healthcare workers (HCWs) of two university hospitals in Sindh, Pakistan. The healthcare workers of two university hospitals (Liaquat University Hospital,Jamshoro and Isra University Hospital, Hyderabad) were selected and divided into ten differentgroups.There were total 923 participants. A good number of HCWs is vaccinated against HBV infection in these two university hospitals of Sindh compared to general population of Pakistan. This study shows theneed for a more aggressive approach to get HCWs vaccinated, because a significant percentageof them is not protected.[15]

In 2004,a study was conducted at United States.The aim of this study was to determine hepatitis B vaccination status among adults. During 2004, a total of 31,326 adults were interviewed, including 18,269 aged 18-49 years. The findings in this report recommend that hepatitis B vaccination coverage among adults at high risk, as measured by NHIS, has increased substantially from 30% in 2000 to 45% in 2004.3 Some of this increase in coverage represents the aging of persons vaccinated as adolescents, replicating the effect of ACIP recommendations for routine vaccination of adolescents that were first made in 1995.[16]

In Jan,2005 a study was conducted in India. The aim of this study was toevaluate HBV vaccination status among HCW and to study factors responsible for vaccine non-compliance. A cross-sectional study was done at a tertiary care hospital. HCW were requested to fill up the pre-set questionnaire to evaluate the HBV vaccination exposure. Due to low and delayed HBV vaccine-compliance, HCW continue to be at the risk of work-related HBV. Health education focusing occupational risk of HBV, accessibility of vaccine and compulsory vaccination of HCW is recommended to increase HBV vaccine compliance among HCWs.[17]

In Jan 2008-Dec 2009 a study was conducted in New Delhi,India.The aim of this study was to evaluate the vaccination status. This study was conducted to estimate the frequency of Hepatitis B virus infection in healthcare workers (HCWs) employed at the All India Institute of Medical Sciences, New Delhi and to quantify protective levelsof anti-HBs antibody titer in them. A total of 446 Health care workers are grouped in 7 groups according to nature of their work. Afterethical clearance and written consent, all health care workers were explained about the objective of the study and were asked to fill a standard questionnaire regarding their personal health data. Their blood samples were tested by Enzyme Linked Immuno-sorbent assay (ELISA) for Hepatitis B surface antigen and anti-HBs antibody titers. A significant number of HCW are unvaccinated even at this apex health care centerrecommending a need for proactive implementation of HBV vaccination program.[18]

In July,2005 a study was conducted at Ziauddin Medical University Karachi,Pakistan.The aim of this study was to determine and evaluate the level of responsiveness among students of a private medical college regarding HIV/AIDS, Hepatitis B and C. A survey was conducted to assess the awareness of medical students on HIV/AIDS, hepatitis B and C. They were asked to fulfill a pre-tested structured questionnaire. The variables accessed were their knowledge of disease regarding cause, mode of spread, and prevention. There is a lack of awareness among the medical students entering into the profession. It is the need of the hour to highlight on practicing universal precautions. In addition, some preventive measures should be taken by the

management of the universities and medical students to avoid the incidence of these problems.[19]

In 2002,a study was conducted at Civil Hospital Karachi,Pakistan.The aim of this study was Toevaluate the prevalence of HIV, Hepatitis B (HBV) and Hepatitis C (HCV) amongst the health workers of Civil Hospital Karachi Prospective study. A precededPerforma was filled out which included questions regarding the knowledge, attitude and practices (KAP) of HIV, HBV and HCV. Results show the occurrence of antibodies to HCV in health workers are 20 folds higher than health workers in the developed countries, Similarly, the occurrence of HBV although not as high as HCV is significant. Sero-prevalence of HIV does not exist in this group. We need to ensure better training; regulations regarding preventive and safety processes also need to be enforced.[20]

In June,2009 a study was conducted at Pakistan Institute of Medical Sciences (PIMS) Islamabad,Pakistan. The aim of this study was to assess the prevalence of Hepatitis B and C and to assess the current Hepatitis B vaccination status and knowledge of standard prophylaxis against blood borne infections in selected group of health care workers at Pakistan Institute of Medical Sciences (PIMS) Islamabad. Descriptive cross sectional prospective study. Three hundred eighty three health workers comprising of nurses and Lab workers were talked after taking verbal consent using a self-administered questionnaire. Data was analyzed using SPSS version 13. Percentage of HCWs vaccinated was low and the main factor responsible was awareness and approach problem. At the same time non-availability of vaccine by the establishment had been identified as the second most important reason for non-vaccination. Half of the studied group was not aware of the precise post exposure prophylaxis .The frequency of Hepatitis B and C was low in this high risk group as compared to general population of the area.[21]

In Aug,2006 a study was conducted in Kenya.The aim of this study was to assess the susceptibility of HCWs in a Kenyan district to HBV infection, and the viability of expanding the Extended Program of Immunization (EPI) for infants to incorporate hepatitis B vaccination of HCWs. HCWs in Thika district, Kenya were invited to complete an interviewer-administered questionnaire about their vaccination status and exposure to blood or body fluids. Participants were asked to provide a blood sample to evaluate natural or vaccine-induced protection against HBV. All non-immune HCWs were offered hepatitis B inoculation. This study demonstrates the importance of hepatitis B vaccination of HCWs in parts of Africa where high exposure rates are combined with low levels of vaccine exposure. High rates of vaccination can be achieved using childhood systems for the distribution of vaccine to HCWs.[22]

In 2011-2012 a study was conducted in Nigeria.The aim of this study was to evaluate the prevalence and determinants of HBV vaccine status among HCWs in two teaching hospitals in Nigeria. This cross-sectional study was done in 2011 and 2012 in two teaching hospitals in Jos, North-Central Nigeria, and Yenagoa, South-South Nigeria. A self-administered structured questionnaire was administered to HCWs to obtain socio-demographic data and history of HBV immunization. We observed a generally low rate of HBV vaccine exposure among HCWs in Nigeria. Establishment of policies on necessary HBV vaccination of all HCWs in Nigeria is recommended.[23]

In Sep,1998 a study was conducted at AllamaIqbal Medical College Lahore,Pakistan.The aim of this study was to assess the vaccination status against Hepatitis B among health care workers and students of a medical school. It is a descriptive type study done at AllamaIqbal Medical College, Lahore. The participants comprised of 206 health care workers of various groups and 327 medical students. The main outcome quantify was vaccination status and reasons for non- vaccination. In a low-income country like Pakistan the health institutions should accept the cost for vaccinating their staff. Efforts should also be made to impart proper health education regarding hepatitis B infection.[24]

In June,2007 a study was conducted at a tertiary hospital of Lahore,Pakistan.The aim of this study was to evaluate the immunization status among health care workers of a tertiary hospital and reasons for non-immunization. This is a descriptive and cross-sectional study done at Jinnah Hospital, AllamaIqbal Medical College, Lahore from May 2005 – July 2005. A total of 358 health care professionals were selected using systematic random sampling technique. A pre-tested structured questionnaire tool was used after taking verbal consent from the respondents. All that 358 health care professionals of different cadres were interviewed. Main reasons for non-vaccination are lack of motivation and high price of the vaccine . This is suggested that there should be 100% vaccination coverage of health care workers against hepatitis B by providing it free of cost and also making vaccination

compulsory for them. Health care workers should be motivated by regular health education campaigns to improve their vaccination status.[25]

In Jan-June 2010,a study was conducted in Jos,North Central Nigeria.The aim of this study was to assess the knowledge, risk awareness and vaccination status of primary healthcare workers in Jos regarding Hepatitis B infection. From each of the existing 6 PHC zones in Jos North LGA, 2 PHC clinics were selected by simple random sampling technique using surveying. In each selected PHC clinic all trained healthcare professionals who had worked there for at least 1 year and who consented to take part were recruited into the study. A cross sectional type study design was then used to collect information from the respondents using a semi structured self-administered questionnaire. Primary healthcare professionals in Jos have good knowledge of HB infection but poor knowledge of the HB vaccination. HB vaccination among them is very poor as is their awareness of their occupational threat for the disease. Continuing education, training and vaccine delivery are recommended to address this important healthcare need.[26]

In Aug,2013 a study was conducted in a tertiary care hospital of Tripoli,Libya.The aim of this study was to determine the vulnerability of HCWs to HBV infection in the representative Tripoli Central Hospital in Libya and make a practical guideline to protect HCWs from work-related exposure. In this cross-sectional type study, a questionnaire survey was administered to 2705 healthcare workers of a university hospital in Tripoli. The questionnaire included immunization status. Compliance with preventive practices against HBV infection was alsodetermined. HCWs at hospitals are often exposed to blood-borne infections. Vaccines should be more readily available for Libyan HCWs, and current immunization programs should be enforced.[27]

In 2011-2012,a study was conducted in Babol Northern Iran.The aim of this study was to assess the prevalence of HBV infection and the immune response to HBV vaccine among the HCWs inBabol,northern Iran.This study was done on 527 HCWs and administrative staff working at Rohani Hospital, Babol, northern Iran from 2011 to 2012. Considering high HBV infection coverage in HCWs, it is mandatory to ensure immunization program and post immunization evaluation along with education and safe work environment preparation.[28]

In Aug,2009-July 2010 a study was conducted at Combined Military Hospital at Kharian, Pakistan. The aim of this study was to evaluate awareness of high risk health care personnel about being at risk for contracting hepatitis B and importance of vaccination for them and to determine occurrence of effectively vaccinated (against hepatitis B) amongst them. A cross-sectional study was done at Combined Military Hospital, Kharian cantonment from August 2009 to July 2010.Two hundred high-risk health care personnel were selected by convenience sampling over one year. These included doctors (residents and house officers), nurses, nursing staff and sanitary workers working in high pathogen contact areas. Anti-HBs titers were checked to see the effectiveness of immunization. A questionnaire was designed to record frequency of vaccination, immunity status and their awareness of high risk and protective role of hepatitis B immunization. A significant proportion of high-risk health care workers lack awareness, vaccination, or vaccination against hepatitis B.[29]

In Dec,2014 a study was conducted in Haldwani state of India.The aim was to determine the hepatitis B vaccination status among Health Care Professionals s in a tertiary care hospital in Haldwani city of Nainital, Uttarakhand, India.In this cross-sectional type study, 367 HCWs were randomly selected. Information pertaining to demographic and immunization status was collected by interviewing them with the help of predesigned and pretested interview schedule.These results conclude that because of low vaccination coverage, Health Care Professionals are at greater risk of getting Hepatitis B infection at the hospital.[30]

In 2015,a study was conducted in Bangladesh.This study was aimed at assessing prevalence of HBV infection and vaccination compliance among HCWs in a tertiary hospital in Chittagong, Bangladesh.Data were collected from a stratified survey conducted in a tertiary care hospital Chittagong, Bangladesh among Health Care Professionals in the year 2012. A proportionate to size random sample was drawn per HCWs group. A structured questionnaire was used to collect data on socio-demographic characteristics and threat factors. With 10 ml collected venous blood enzyme-linked immune sorbent assay (ELISA) methods were used to test sera for hepatitis B surface antigen (HBsAg), hepatitis B surface antibody (anti-HBs), and total hepatitis B core antibody (anti-HBc). Descriptive models were used for data analysis with the software SPSS-20. A significant numbers of Health Care Professionals are unvaccinated even at health care center of tertiary care level suggesting a need for early implementation of HBV immunization program.[31]

In 2015 a study was conducted at DrSampurnanand Medical College, Jodhpur, India.The aim of this study was to acessHBV vaccination status and anti-HBs titer among HCWs. AntiHBs titer was prospectively observed in all vaccinated of the 464 HCWs enrolled.A comparison was done between two groups who had received immunization within or beyond5 years (Group A >5 years, Group B <5 years) and also between those who received a booster dose,Group I (<1 year) and Group II (>1 year). A major proportion of HCWs is unvaccinated. A rational proportion of fully vaccinated HCWs can have low titers to protect them against HBV infection. Measuring anti-HBs titer, administering a booster dose, and offering general screening for HBs antigen should be made necessary for HCWs.[32]

In Sep,2012 a study was conducted at a university hospital at Niger.The aim of this study was to assess the universal HBV Vaccination of Healthcare Professionals a Relevant Strategy in Developing Endemic Countries,The Case of a University Hospital in Niger.A cross sectional type study is conducted in 207 personnel of 4 professional groups (medical, paramedical, cleaning staff, and administrative) in Niamey's National Hospital, Niger, in order to assess the prevalence of HBV markers, to evaluate vulnerability to HBV infection, and to identify personnel who might benefit from immunization. The very small proportion of Health Care Professionals vulnerable to HBV infection in our study and other studies suggests that in a global approach to prevent occupational infection by blood borne pathogens, a universal hepatitis B immunization of HCWs is not priority in these settings. The greatest impact on the risk will most likely be achieved by focusing efforts on primary prevention policies to reduce occupational blood exposure. HBV screening in HCWs and treatment of those with chronic HBV infection should be however measured.[33]

In 2011 a study was conducted at a tertiary care hospital in India.The aim of this study was to assess the prevalence of Hepatitis B virus infection in healthcare workers (HCWs) employed at the All India Institute of Medical Sciences, New Delhi and to measure protective levels of anti-HBs antibody titer in them. A total of 446 Health care workers are grouped in 7 groups according to nature of their work. After ethical clearance and written consent, all health care workers were explained about the objective of the study and were asked to fill a standard questionnaire regarding their personal health information. Healthcare Workers have a high risk of professional exposure to many blood-borne diseases including HIV, Hepatitis B, and Hepatitis C viral infections. Of these Hepatitis B is not only the most transmissible infection, but also the only one that is preventable by immunization.[34]

In 2015 a study was conducted at a tertiary hospital of Nigeria.The aim of this study was to asevaluate knowledge of hepatitis B virus infection, risk awareness, immunization history, and challenges to control hepatitis among health workers.A descriptive and cross-sectional study. Consenting health care workers completed a self-administered questionnaire that assessed respondents' general awareness of HBV, immunization history and HBsAg status, risk perception, and challenges to control hepatitis. Data was analyzed using descriptive and inferential statistics. Hospital strategy issues and low risk perception of HBV transmission have grave implications for the control of HBV infection.[35]

In Jan-March 2013 a study was conducted at Departments of Medicine, Combined Military Hospitals, Kharian, PanoAqil and Bahawalpur Cants and Wah Medical College, WahCantt, Pakistan.The aim of this study was to determine awareness of high risk.A cross-sectional type study was Anti-HBs titers while 19 (9.5%) had undetectable carried out at Combined Military Hospital, Kharian titers. Nineteen (9.5%) remained non-vaccinated cantonment from August 2009 to July 2010.A significant proportion of high-risk selected by accessibility sampling. Anti-HBs health care workers lack awareness, immunization, titers were checked to see the effectiveness of or immunization against hepatitis B.[36]

In Sep,2014 a study was conducted in Mysore City, India.The aim of this study wasto evaluate the vaccination status and post vaccination antibody status of oral health care personnel against Hepatitis B virus (HBV) infection.Descriptive and Cross-sectional questionnaire study was conducted among the oral health care workers of Mysore city. A great number of the OHCP of Mysore city have been vaccinated. Among them, dentists formed the majority group of immunized. But there was unfamiliarity and less awareness regarding Hepatitis B vaccination among dental lab technicians and other workers like dental assistants and cleaning staff. Awareness amongst OHCPS against Hepatitis B immunization has increased significantly over the years, but there are few who do not intend to get vaccinated.[37]

In 2000 a study was conducted at Department of Environmental & Occupational Medicine, University Medical School, Forester hill, Aberdeen.The aim of

this study was to study the recentliterature and research regarding:trends in disease prevalence and transmission of mutant strains, evidence of uptake and efficacy of immunization program in healthcare workers, management of non-responders to immunization, future issues and developments. Examination of serological samples from 3781 adults aged 15-41 years revealed an overall prevalence of carriage of HBsAg. There is clear indication for the efficacy and safety of the currently available hepatitis B vaccinations in the UK. However, there is limited epidemiological evidence to support universal immunization in this area of low endemnicity. As doctors and professional health physicians our duty is to reduce risk of disease to patients and staff. In order to do this efficiently and effectively it is necessary to identify high-risk groups, accurately evaluate the risk, and optimize care and management. The new UK guidance, the use of molecular techniques to amount viral load and the availability of new vaccines will undoubtedly influence our practice.[38]

In 2015 a study was conducted in Jodhpur, India. The aim of this study was to assess HBV vaccination status and anti-HBs titer among HCWs.AntiHBs titer was prospectively examined in all immunized of the 464 HCWs enrolled.Aassessment was done between two groups who had received vaccination within or beyond 5 years (Group A >5 years, Group B <5 years) and also between those who received a booster dose, Group I (<1 year) and Group II (>1 year).A significant proportion of Health Care Professionals is unvaccinated. A fair proportion of fullyvaccinated Health Care Professionals can have low titers to protect them against HBV infection. Measuring anti-HBs titer, directing a booster dose, and offering general screening for HBs antigen should be made compulsory for HCWs.[39]
In 2009 a study was conducted at a tertiary care hospital in India.The aim of this study was to assess the HBV vaccine-compliance among HCW.A cross-sectional type study was conducted at a tertiary care hospital. HCW were requested to fill up the pre-set questionnaire to evaluate the HBV vaccination coverage.Due to low and delayed HBV vaccine-compliance, HCW continue to be at the risk of occupational HBV. Health education highlighting work-related risk of HBV, accessibility of vaccine and mandatory immunization of HCW is recommended to increase HBV vaccine compliance among HCW.[40]

In 2003 a study was conducted in a Tertiary Care Hospital in Moradabad, UP, India.The aim of this study was Toassess the seropositivity of serum hepatitis in health care workers of TMMC & RC and prophylactic measures in health care workers.Serum sample of 125 health care professionals of TeerthankerMahaveer Medical College and Research Center was taken during two years duration and tested for HBsAg by rapid card test and ELISA test. Immunization history was taken from health care workers.The risk of hepatitis B infection is well recognized among health care workers, although with use of hepatitis B vaccine the incidence of HBV infection in health care workers has decreased. Therefore there is need for well-planned and clear strategies for HBV screening and vaccination in health care workers.[41]

In Jan,2014 a study was conducted in Lagos state, South-western Nigeria.The aim of this study was to assess the prevalence of HBsAg, knowledge, and immunization practices against viral hepatitis B infection among doctors and nurses in a health care facility.Study design was a descriptive cross-sectional study among all the doctors and nurses in the health care facility. Data was obtained using pre-tested, structured, self-administered questionnaire and blood samples were taken from respondents and tested using commercial enzyme-linked immunosorbent assay (ELIZA) test kit to determine prevalence of hepatitis B surface antigen after informed consent. Ethical approval was obtained from Health Research and Ethics Committee of the Lagos University Teaching Hospital. Responses of the respondents to the knowledge and immunization practices against viral hepatitis B infection were scored and graded as poor (<50%), fair (50-74%) and good (≥75%). The study was done in January, 2014. Prevalence of HBsAg was low. Information of viral hepatitis B was fair, and practice of post hepatitis B vaccination testing was poor. It is therefore suggested that the state ministry of health should organize further health education program, institute compulsory professional hepatitis B vaccination program and post vaccination anti-HBS testing to ensure adequate antibody level in this adult population.[42]

In 2014 a study was conducted in Iran.The aim of this study was to assess the attitude and preventive measures against HBV such as related vaccination and use of barrier techniques among Iranian dentists.A confidential, self-administered questionnaire was distributed among two local congresses including three hundred fifty dentists. The collected data was entered to the personal computer using the Epi Info computer program after which it was transferred to the SPSS, version 15, and the program for analysis right after. Univar ate analyses were performed using Chi-Square test. T-test was also used wherever suitable. It

is essential to improve rate of hepatitis B immunization among Iranian dentists and to encourage regular use of barrier techniques.[43]

In 2000 a study was conducted at a Canadian Dental Schools.The aim of this study was to evaluate the immunization status.Health care workers who are e-antigen-positive carriers of hepatitis B virus have become a significant focus of concern in the development of public health policy. In cases of needle-stick injury, the risk of spread of HBV has been estimated at 60-fold greater if the carrier is positive for e antigen than if the carrier does not have the e antigen. Debate continues regarding projected public health policies to restrict e-antigen-positive health care workers from performing "exposure-prone procedures." Given the potentially greater risk of disease spread to patients and the potential career implications for infected students, dental schools must responsibly address the issue of dental students and dental school applicants who have the hepatitis B e antigen. This paper reviews the debates surrounding this issue and reports a survey of Canadian dental schools.In summary, public health policy discussions to date have focused on highly infectious HBV carriers.Although not definitive, the presence of HBeAg is a useful marker to identify this group.Recent experience indicates that classifyingspread from an outpatient clinical source is difficult and may not occur unless there are special circumstances, including the infection of numerous patients. Furthermore, universal precautions, although useful, may not constitute an adequate safeguard in such circumstances. Thus, dental schools must recognize that HBeAg-positive students training to perform exposure-prone measures present an unknown theoretical but possibly important risk of disease transmission to patients. This risk must be acknowledged and formally talked in policy-making. At this time, Canadian dental schools have not adopted a uniform approach, although there is general recognition that this is an issue balancing the safety concerns of patients with the human rights concerns of potential dental students. [44]

In 2012 a study was conducted in The University of Toledo.The aim of this study was to assess the strategies and procedures of local hospitals to determine if there is a consensus on the definition, management and implications of HCWs who do not appear to possess resistance against the HBV. In order to assess hospital policies on the management of non-responders to the hepatitis B vaccine, a survey was established and distributed to infection control personnel at several local facilities. The survey collected basic demographic data about the facilities (name, location, number of staff, year opened) and thirteen questions immediately pertinent to the assessment of non-responder management (Appendix A). A cover letter accompanied the survey explaining the purpose and procedures to follow (Appendix A). The aimed population was Michigan and Ohio hospitals. The initial method of allotting the survey was through the use of a national infection control resource website, APIC (Association for Professionals in Infection Control and Epidemiology, Inc.). Immunizations were created in an effort to improve morbidity and mortality and have saved countless lives. The hepatitis B vaccine is the first given at birth and one of the few required of new workers entering many healthcare settings. It is generally operational and cost efficient. Some individuals appear to be less susceptible to the effects of the vaccine and research needs to be done in understanding what hepatitis B exposure means to these people.[45]

In 2001 a study was conducted in Miami-Dade County. The aim of this study was To assess the effects of perceived threat and knowledge level about hepatitis B Virus on the inspiration to accept hepatitis B vaccine. Cross sectional study in design, based on the elements of the health belief model framework. The independent variables (perceived barriers, perceived susceptibility and perceived severity) were analyzed to assess their direct and indirect effects on the outcome (receiving hepatitis B vaccine). 260 healthcare workers in Miami-Dade Country.The percentage of healthcare workers in this study who have had the HB vaccine is considerably higher than that reported in the literature for all healthcare professionals . The variable of supposed severity was not a predictor of hepatitis B vaccine acceptance; the variables of perceived susceptibility and knowledge level were predictors of HB vaccine taking.[46]

In May,2011 a study was conducted in Benin City, Nigeria.The aim of this study was to determine the hepatitis-B vaccination status among dental surgeons in Benin City, Edo State, Nigeria. This descriptive and cross-sectional study of dental surgeons in Benin City was conducted in May 2011, using pretested, 8-itemed, self-administered questionnaire as the tool of data collection. Although evidence about hepatitis-B vaccination status of dentists in Nigeria is available from studies conducted among dental professionals as a group and dental surgeons in different parts of Nigeria exclusively,the gaps in information that motivated this present study exist in four specific areas. Firstly, the data on hepatitis-B immunization status of dental surgeons in Benin City could not be

abstracted from these studies, thereby limiting their utilization in developing success-oriented vaccine uptake approach. Secondly, these reports also lacked details about incomplete and complete hepatitis-B immunization dose uptake. Thirdly, most of these studies were directed among dental professionals working in the tertiary dental healthcare facilities while other members of staff of secondary and primary dental healthcare facilities were not studied. Finally, the development of uptake of hepatitis-B vaccination study has also been neglected in these studies. The potential risk of gaining of hepatitis-B infection through occupational exposures to blood and its products among dental surgeons and the significant prevalence of hepatitis-B infection in Benin City are the additional reasons for hepatitis-B vaccination research among dental surgeons working in this environment. The objective of the study was to assess the hepatitis-B immunization status among dental surgeons in Benin City, Edo State, Nigeria.[47]

In 2008 a study was conducted in England.The aim of this study was assess the vaccination status of healthcare workers. In England, there is no surveillance system for vaccines offered to healthcare professionals apart from that in place annually for the seasonal influenza vaccine. To notify the practicability of a general vaccine uptake surveillance system and to understand which policies are currently in place, we conducted a survey in the 162 National Health Service Foundation and Acute Hospital trusts in England.Study suggests that setting up a surveillance system to monitor vaccine uptake in healthcare personnel is possible but would be challenging, given the deviation in current systems.[48]

In Feb,2014 a study was conducted at the University of Port Harcourt Teaching Hospital.The aim of this study was to assess the hepatitis B vaccination rate among Medical students at the University of Port Harcourt Teaching Hospital (UPTH) and to determine their awareness of HBV infection. Result: Three hundred and sixteen medical students at UPTH completed self-administered questionnaires which included queries about demographic features, HBV vaccination status, awareness of hepatitis B vaccine and reasons for not receiving the vaccine.There was a statistical significant relationship among marital status,clinical level and hepatitis B inoculationuptake.The hepatitis B immunization rate among medical students at the University of Port Harcourt Teaching Hospital is low. National and institutional legislation for adult vaccination against Hepatitis B should be propagated for those at higher risk.[49]

In June,2011 a study was conducted at Khartoum and Omdurman Teaching Hospitals of Khartoum State in Sudan.The aim of this study was to assess the knowledge and immunization status among health care workers in some central hospitals in Sudan.Data from different groups of health workers were collected using structure questionnaire after taking informed consent. Data were analyzed using Chi-Square and T-Test.Although knowledge about HBV risk in our health care personnel was reasonable –apart from cleaning staff, the vaccination among them was not acceptable. Efforts have to be augmented and special care for cleaning staff is compulsory.[50]

In Jan-March 2013 a study was conducted at Wah Medical College, WahCantt, Pakistan.The aim of this study was to determine awareness of high risk.A cross-sectional type study was Anti-HBs titers while 19 (9.5%) had unnoticeable carried out at Combined Military Hospital, Kharian titers. Nineteen (9.5%) remained unvaccinated cantonment from August 2009 to July 2010.A major proportion of high-risk selected by convenience sampling. Anti-HBs health care workers lack awareness, immunization, titers were checked to see the efficacy of or vaccination against hepatitis B.[51

CHAPTER THREE: RESEARCH METHODOLOG RESEARCH METHODOLOGY

A cross sectional study was conducted to find out status of hepatitis B vaccination and to evaluate the risk factors of hepatitis B among health care workers and professionals. A self-structured questionnaire was designed to obtain data. Data was collected by using the specially designed questionnaire. The study was conducted in two different hospitals of Lahore Pakistan.

3.1Study Design:

A descriptive non experimental cross sectional study was conducted in two hospitals of Lahore. Cross sectional study is easy, quick and less expensive.

3.2 Study Settings:

This study was conducted in Lahore Punjab, Pakistan. Data was collected from two different hospitals including Lahore General Hospital and Gulab Devi hospital situated in Lahore City.

Lahore General located in Lahore, Pakistan
is now a 1,686-bedded, fully equipped, tertiary-care hospital with all medical and surgical specialties, serving large number of patients in the Punjab. It is facilitating undergraduate medical students of Ameer.

ul din Medical college, and a large number of post-graduate trainees. Gulab Devi hospital is also a tertiary-care hospital.

3.3 Objectives

3.3.1General Objectives

The aim of study was to evaluate the risk factors of Hepatitis B among Health Care Workers (HCWs).

3.3.2 Specific Objectives

The specific objectives of study are

- Status of Hepatitis B vaccination among health care workers and professionals.
- Evaluate the risk factors of Hepatitis B due to professional exposures.
- To determine the reasons of non- vaccination.
- Determination of vaccination coverage.

3.4 Study Population

Population under study was the health care professionals (Doctors, Pharmacists, Nurses, and Laboratory Technicians) of both hospitals (Lahore General hospital & Gulab Devi hospital).

Doctors working in Medicine and allied specialties and Surgical and allied specialties were the subjects. The doctors comprising of consultants, registrars, medical officers and house officers. Pharmacists, Nurses, student nurses and laboratory technicians were also included in the study.

3.5 Sampling Procedure

Random sampling technique was used for selection of the respondents. First health care worker was selected randomly from a pre-maintained list and then every 3rd health care worker was selected till the required sample size is completed. This method was used for each cadre of health workers included in the study separately.

3.5.1 Inclusion Criteria

Health care professionals (Doctors, Pharmacists, Nurses, LaboratoryTechnicians)of both hospitals (Lahore General hospital & Gulab Devi hospital) within the age limit of 20-50years were included in our study.

3.5.2 Exclusion Criteria

RESULTS:

A total of 400 respondents completed the questionnaire. The respondents (health-care workers) belonged from different professions e.g. Doctors=118(29.5%) Nurses=214(53.5%) Pharmacists=8(2.0%) Lab technicians=60(15.0%)

Other health care professionals & workers which are working privately, below the age of 20years or above 50years were excluded from the study.

3.6 Sample Size

A sample of 400 health care workers from both hospitals was taken**.**

3.7 Data Collection

The data collection was done by using data collection tool.

3.7.1 Data Collection Tool

A self- structured questionnaire was used for collecting the data,which comprised of two sections [A & B]. Section A consist of socio-demographic data that contains complete information including (Age, Gender, profession, marital status) of respondent. And the section B contained a set of 13 questions. The questions were closed ended and open ended.

3.7.2 Data management, processing & analysis

A pre-formed, pre-tested questionnaire was distributed and which was collected after it had been completed. Before the distribution of the questionnaire, the objectives of the study were explained to participants, and they were informed that their participation was voluntary.

The information gathered was age, gender, monthly income, residence, screening before vaccination, history of vaccination, completion of all 3 doses and reasons for not getting vaccinated. Complete vaccination was defined as all three doses of vaccine and incompletely vaccination was less than 3 doses of vaccine.

Data was entered, and analyzed using the Statistical Package for Social Science (SPSS) version 20. Frequencies and percentage responses (Yes, No) of respondents were compared.

3.8 Research Ethics

Ethical approval was taken from the hospital administration and an informed consent obtained from each respondent. Anonymity of the respondents was ensured.

were participated in this study. Age of the participants ranged from 20-50 years. There were 128(32.0%) males and 272(68.0%) females. Their work experience monthly income and residential areas were also mentioned in the table -4.1.

Table: 4.1 Descriptive analysis of demographic information of the respondents

Variables		N	%
Age(years)	20-30 years	253	63.3
	31-40 years	96	24.0
	41-50 years	38	9.5
	Above 50 years	13	3.3
Gender	Male	128	32.0
	Female	272	68.0
Profession	Doctor	118	29.5
	Nurse	214	53.5
	Pharmacist	8	2.0
	Lab technician	60	15.0
Work experience	0-10 years	338	84.5
	11-20 years	40	10.0
	21-30 years	19	4.8
	31-40 years	3	8
Monthly income	Less than 17,600 rupees	37	9.3
	More than 17,600 rupees	363	90.8
Residence	Rural	96	24.0
	Urban	304	76.0
Involved in treating	Yes	284	70.9
	No	116	29.1
Total		400	100.0

In table 4.1 Out of 400 (sample size) 65.8% were vaccinated while 34.2% were not vaccinated, 8.5% received one dose, 22.0% received two doses, 53.2% received three doses and 16.3% were not sure about the number of doses they received, 18.1% gave reason for non-vaccination that no one informed them, 17.4% said that they were not-vaccinated due to non-availability of vaccination, 1.4% due to high cost, 1.4% due to religious beliefs, 7% due to side effects, 42.8% were forgotten and 18.1% said that they have some other reasons for non-vaccination, 2.3% were suffered from Hepatitis and 97.8% were never suffered from Hepatitis, 31.5% have known case of hepatitis in their family and 68.5% have no case of Hepatitis in their family, 39.5% have training in infection control and 60.5% have no training, 72.3% have exposure with biological material and 27.8% have not, 24.8% have participated in Hepatitis B vaccination workshop and 75.3% have not participated, 19.5% have received blood transfusion before and 80.5 have not received any blood products, 39.3% have been exposed to dental procedure and 60.8% have never been exposed, 7.0% shared shaving instruments and 93.0% do not use, 61.0% got needle stick injury and 39.0% have not got needle stick injury,

57.3% screened out the needle stick injury and 42.7% have not screened out..

Table 4.2 Immunization status of health-care workers according to their gender.

Question		Gender		Total (%)
		Male	Female	
Have you ever vaccinated against hepatitis B?	Yes	91	172	263 (65.8%)
	No	37	100	137(34.2%)
If yes, How many doses have you received?	One	7	18	25(8.5%)
	Two	20	46	66(22.0%)
	Three	61	95	156(53.2%)
	None	12	36	48(16.3%)
If No, reason for non-vaccination?	No one inform me	6	19	25(18.1%)
	Due to non-availability of vaccine	8	16	24(17.4%)
	Due to high cost	0	2	2(1.4%)
	Due to religious beliefs	0	2	2(1.4%)
	Due to side effects	1	0	1(7%)
	I have forgotten	17	42	59(42.8%)
	Others	3	22	25(18.1%)
Did you ever suffer from Hepatitis B?	Yes	6	3	9(2.3%)
	No	122	269	391(97.8%)
Any case of Hepatitis B reported in your family?	Yes	35	91	126(31.5%)
	No	93	181	274(68.5%)
Do you have training in infection control?	Yes	37	121	158(39.5%)
	No	91	151	242(60.5%)
Do you come in contact with biological material in current practice?	Yes	98	191	289(72.3%)
	No	30	81	111(27.8%)
	No	96	205	301(75.3%)

Table-4.3Immunization status of health-care workers according to their residential areas.

Question		Residence		Total (%)
		Rural	Urban	
Have you ever vaccinated against hepatitis B?	Yes	61	202	263(65.8%)
	No	35	102	137(34.2%)
If yes, How many doses have you received?	One	7	18	25(8.5%)
	Two	24	42	66(22.0%)
	Three	31	125	156(53.2%)
	None	5	43	48(16.3%)
If No, reason for non-vaccination?	No one informed me	7	18	25(18.1%)
	Due to non-availability of vaccine	9	15	24(17.4%)
	Due to high cost	1	1	2(1.4%)
	Due to religious beliefs	1	1	2(1.4%)
	Due to side effects	0	1	1(7%)
	I have forgotten	12	47	59(42.8%)
	Others	4	21	25(18.1%)
Did you ever suffer from Hepatitis B?	Yes	2	7	9(2.3%)
	No	94	297	391(97.8%)
Any case of Hepatitis B reported in your family?	Yes	39	87	126(31.5%)
	No	57	217	274(68.5%)
Do you have training in infection control?	Yes	26	132	158(39.5%)
	No	70	172	242(60.5%)

Do you come in contact with biological material in current practice?	Yes	84	205	289(72.3%)
	No	12	99	111(27.8%)
Have you participated in Hepatitis B vaccination workshops?	Yes	22	77	99(24.8%)
	No	74	227	301(75.3%)

Have you received blood transfusion or any blood product before?	Yes	29	49	78(19.5%)
	No	67	255	322(80.5%)
Have you been exposed to dental procedures or any other surgical procedures before?	Yes	40	117	157(39.3%)
	No	56	187	243(60.8%)
Do you use shared shaving instruments?	Yes	6	22	28(7.0%)
	No	90	282	372(93.0%)
Have you ever got needle stick injury?	Yes	66	178	244(61.0%)
	No	30	126	156(39.0%)
If yes, Have you screened out?	Yes	28	122	150(57.3%)
	No	40	72	112(42.7%)

DISCUSSION:

Hepatitis B though a preventable disease is one of the major causes of morbidity and mortality throughout the world including Pakistan. There are about 31% cases of acute viral hepatitis, 60% cases of chronic liver disease and 59% cases of hepatocellular carcinoma due to hepatitis B infection in Pakistan. Hepatitis B is a well – documented occupational hazard for health care workers, including both laboratory and nursing personnel. Estimated 100 – 200 health care personnel have died annually during the past decade because of the chronic consequences of HBV infection. Thus health care workers are at increased risk of hepatitis B virus infection and pre-exposure immunization of health care workers against HBV is strongly recommended.

This study shows that 65.8% of the healthcare workers were completely immunized whereas 34.2% were not immunized. In a study conducted in Agha Khan University Hospital, Karachi, showedthat 86% of the health care workers were completely immunized. The reason for this difference is that in Agha Khan University Hospital, all health care workers who are in direct patient contact, are provided free of cost immunization against hepatitis B. In another study conducted among health care workers in AllamaIqbal Medical College, Lahore only 49% were immunized.(Nasir, Khan et al. 2000)

There was significant difference in rate of vaccination in various working groups. The highest vaccination rate was seen in doctors and pharmacists and least in nursing assistants.Mostly health workers lived in urban and they were vaccinated.Out of 400 health workers mostly were females. Mostly lab technicians were suffered from hepatitis B before. Mostly health workers come in contact with biologic material in

current practice. Maximum health workers have no training in infection control. Mostly health workers have not participated in hepatitis B vaccination workshops. Mostly health workers have not been exposed to dental procedures or other surgical procedures before. Mostly health workers have not received blood transfusion or any blood product before. Mostly health workers do not use shared shaving instruments. Mostly health workers have got needle stick injury before and they have screened out immediately. The main reasons for non-immunization differ widely among the different cadres of health workers.The present study reports that the main causes of non-immunization were no one informed them (18.1%) , 17.4% said that they were not-vaccinated due to non-availability of vaccination, 1.4% due to high cost, 1.4% due to religious beliefs, 7% due to side effects, 42.8% were forgotten and 18.1% said that they have some other reasons for non-vaccination. Studies conducted in Lahore General hospital and Gulab Devi hospital, Lahore the main reason of non-immunization was they have forgotten (42.8%).Out of 400 health workers 8.5% received one dose, 22.0% received two doses, 53.2% received three doses and 16.3% were not sure about the number of doses they received.In another study, lower perception of risk among doctors is the main reason for poorvaccine uptake. A Taiwan study indicated that the concern about the efficacy of Hepatitis B vaccine, fear of pain from repeated injections, time and money were the main determinants among the nursing students for not having the immunization for hepatitis B. Similarly in a study done atAgha Khan University, the main reasons for discontinuing the immunization were ignorance, high cost of immunization and difficulty in getting vaccines whereas the study in Fatima JinnahMedical College, Lahore cited high cost followed by the unavailability of the vaccine as the main reasons for non-immunization.It is concluded that a significance of proportion of health workers handling patients in a Lahore General Hospital and Gulab Devi hospital are not fully immunized with hepatitis B vaccine. In various categories of health workers immunization coverage is very low among lab technicians and nurses although they are equally susceptible to exposure. Forgot to vaccine is the most common reason for being not immunized among all categories of health workers. So there should be any way sorted for these people so that they can memorize that they have to take vaccine.

CONCLUSION:

Study conducted in two hospitals of Lahore, Lahore General Hospital and Gulab Devi Hospital Lahore concluded that a significant proportion of health-workers handling patients in these hospitals is not fully immunized with hepatitis B vaccine.In various categories of health workers immunization coverage is very low among paramedics and nurses although they are equally susceptible to exposure.The results reveal the importance of professional education, knowledge and infection risk in the determination of hepatitis B vaccination. They also suggest that instability at work can lead to negligence through non-vaccination and that negligent health-related behaviors are repeated.

Recommendations:

Recommendations for practice:

On the basis of study concluded it is recommended that,

- Awareness of HCWs can improve hepatitis B vaccination status among primary HCWs.
- All the Healthcare workers should be motivated for behavior change and ensured for immunization to enhance their occupational safety.
- It is imperative to teach the importance of vaccination early in medical school.
- Strengthening of Surveillance System and Counseling Activities.

Recommendations for policy:

- Seminars, workshops and conference should be held in institutions all over the Pakistan to increase the awareness level of Hepatitis B vaccination.
- Develop, produce and disseminate health education material.
- Provision of immunoglobulin to newborns of Hepatitis Carrier Mothers.

Recommendations for future Research:

- Research programmed must comprehend quantitative research about theStatus of Hepatitis B vaccination among Healthcare professionals.
- At present no research is conducted in developed countries to evaluate the Status of Hepatitis B vaccination among Healthcare professionals, some heed must be paid to it.

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