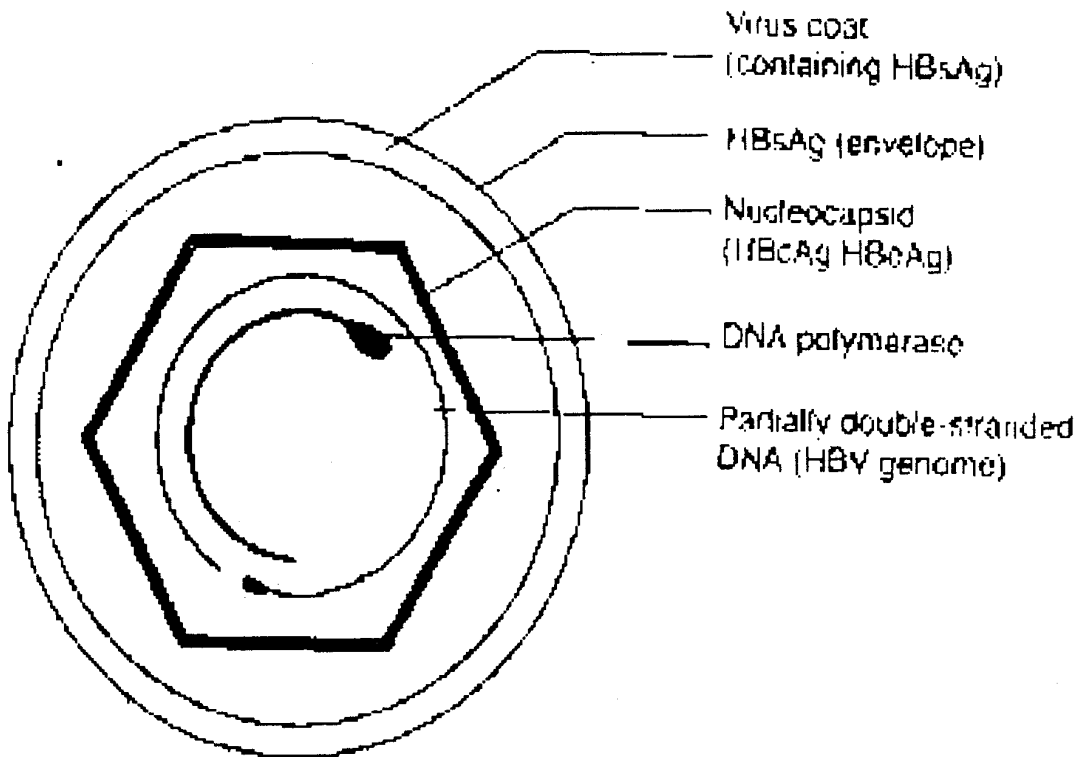




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# Prevalence of Hepatitis-B Among Clinically Suspected Patients Visiting Ayurveda, Hospital, Nardevi.



This research work is submitted to the Nepal health research council (NHRC)

2083

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By  
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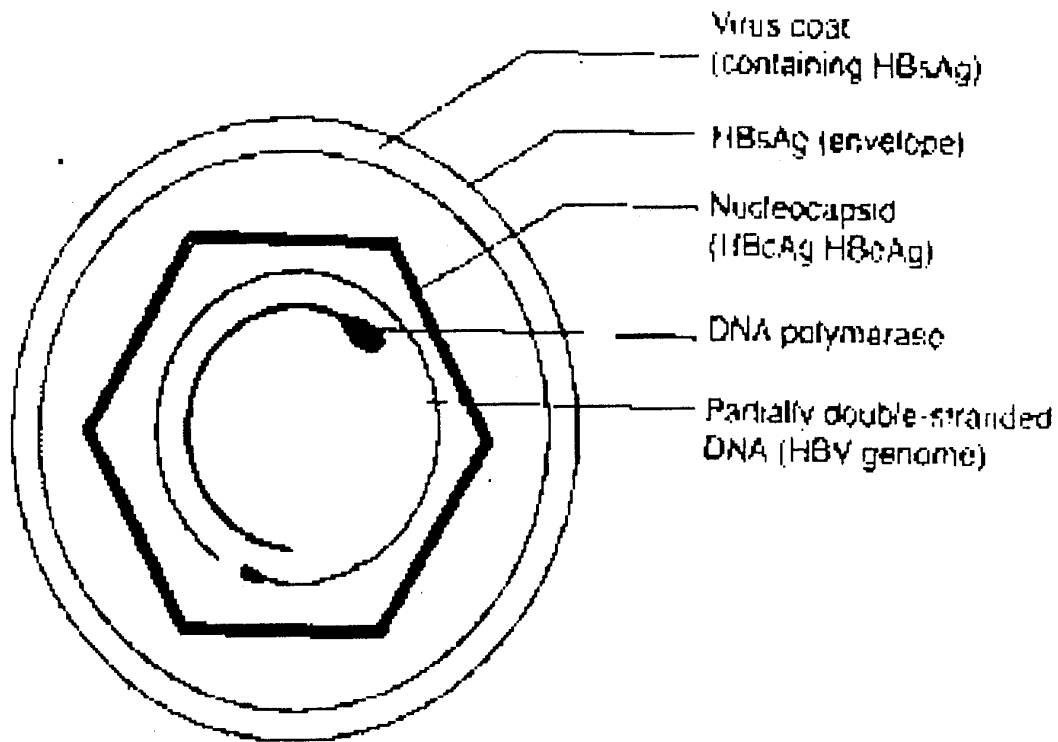
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Call No. 147

*This work is especially  
dedicated to my —*

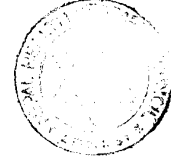
*Father : Ghan Shyam Gyawali*

*Mother: Bishnu Gyawali*

*Brother: Hem Raj Gyawali*

*Sister : Bimala Gyawali*

*And.....*



## **ABSTRACT**

The research was carried out in kaya chikitsa (General medicine) OPD of Ayurveda hospital, Nardevi. The Study was done from 1<sup>st</sup> July to 15<sup>th</sup> Dec. 2003.

The samples were collected by random sampling method on clinically suspected patients

Among 200 sample,  $8\% \left( \frac{16}{200} \right)$  were positive for Hepatitis-B.

The result showed that 6.5% male and 1.5% female were positive for Hepatitis-B. Among male % positive case is 8.6% and among female % positive case is 6.25%. The age group 15-35 yrs were found to be positive for HBsAg. The age group 20 to 30 years is mostly found to be infected with Hepatitis-B. Children were not found to be infected with this disease.



## **List of Abbreviations**

<b>ALT</b>	- Alanine aminotransferase
<b>Anti-HBc</b>	- Antibody to HBc Ag
<b>Anti-Hbe</b>	- Antibody to HBe Ag
<b>Anti-HBs</b>	- Antibody to HBs Ag
<b>AST</b>	- Asparate aminotransferase
<b>HBs Ag</b>	- Hepatitis B surface antigen
<b>HBV</b>	- Hepatitis B Virus
<b>Ig G</b>	- Immunoglobulion G
<b>Ig M</b>	- Immunoglobulin M
<b>RNA</b>	- Ribo nuclic acid
<b>SGOT</b>	- Serum Glutamic-oxaloacetic transferase
<b>SGPT</b>	- Serum Glutamic-Pyruvic transferase
<b>WHO</b>	- World Health Organization
<b>OPD</b>	- Outdoor Patient Department

## **1. Introduction**

Hepatitis-B is the major public health problem in developing countries like Nepal. It is mostly prevalent in the countries having poor health status. The problem of Hepatitis-B is growing concern at national and international levels.

Nepalese People have lack of awareness in Public health, inadequate health service facilities, lack of proper techniques in using medical procedures, low economic status and poor health education in environmental sanitation.

It has been estimated that the number of people die of AIDS per year, die with hepatitis in a day (Zuckernman, 1994).

Hepatitis B virus (HBV) hepatitis was formerly known as 'serum hepatitis' or 'long-incubation hepatitis', because it typically occurs 30 days to 6 months (average 1.5 to 2 months after exposure to infected blood or serum. (Kumar et al, Basic Pathology)

This virus has a number of serological types. Infection occurs at any age, but mostly in adults. The virus enters the blood and is spread by blood and blood products. People at greatest risk of infection are those who come in contact with blood and blood products in their daily work, e-g. People in the health, ambulance and fire services. Others at risk include intravenous drug addicts and male homosexuals. Antibodies are formed and immunity persists after recovery. Infection usually leads to severe illness lasting 2 to 6 weeks, often followed by a protracted convalescence.

Carriers may or may not, have had clinical diseases. Type B virus may cause massive liver necrosis and death. In less Severe cases recovery may be complete. In chronic hepatitis which may develop, live viruses continue to circulate in the blood.

(Kathleen J.w.wilson, Ross & wilson Anatomy Physiology in health & illness)

In Nepal hepatitis B is a major health problem with carrier rate of 2 lakhs and accounts for 6% of acute hepatitis 1% of the population are asymptomatic chronic hepatitis B surface antigen carriers, 39% of patients suffer from chronic liver disease and 37% with hepatocellular carcinoma are HBsAg seropositive (Shrestha et al, 1998)



Thought Hepatitis-B, a fatal disease having more hazardous result and consequences has been ignored and neglected compared to other disease due to improper awareness policies, most important of all being inadequate research techniques and expensive equipments. Because of which little work has been done concerning hepatitis B in Nepal, Which is becoming Serious problem among the Nepalese People.

This research has been conducted with an expectation of having more detailed analysis and statistical data regarding Hepatitis-B.

The study was done in kaya chikitsa (General medicine) OPD to the patient suffering from jaundice in Ayurveda hospital Nardevi.

Although most of the patient suffering from jaundice visit to Ayurveda hospital but this type of research was not conducted in that hospital. Hence, this work will be very fruitful to find actual hepatitis-B problem in Nepal.



## **2.Objectives**

### **General**

The general objective of this study is to conduct the survey on clinically suspected patients.

### **Specific**

- To find the most susceptible age group and sex group for the infection .
- To recommend the preventive and control measure against Hepatitis-B .

### **3.Literature review**

Hepatitis-B (HBV) infection is a major public health problem in Nepal. Hepatitis B is Primarily a disease of young adults. Most patients are between 20-35 yrs old. Prevalence varies among racial and ethnic groups. Most infection are linked with heterosexual activity. Intravenous drug abusers represent 12% of cases. 7 % of the cases are attributed to other causes and about 26% does not report any risk factors.

(- Fox J.B.informed, News letter of hepatitis-B foundation, America 1998 No. 24)

The hepatitis B virus (HBV) is a DNA containing double-shelled virus, 42 nm in diameter. The virus possesses various antigens that may help in distinguishing the duration and state of HBV infection in the host.

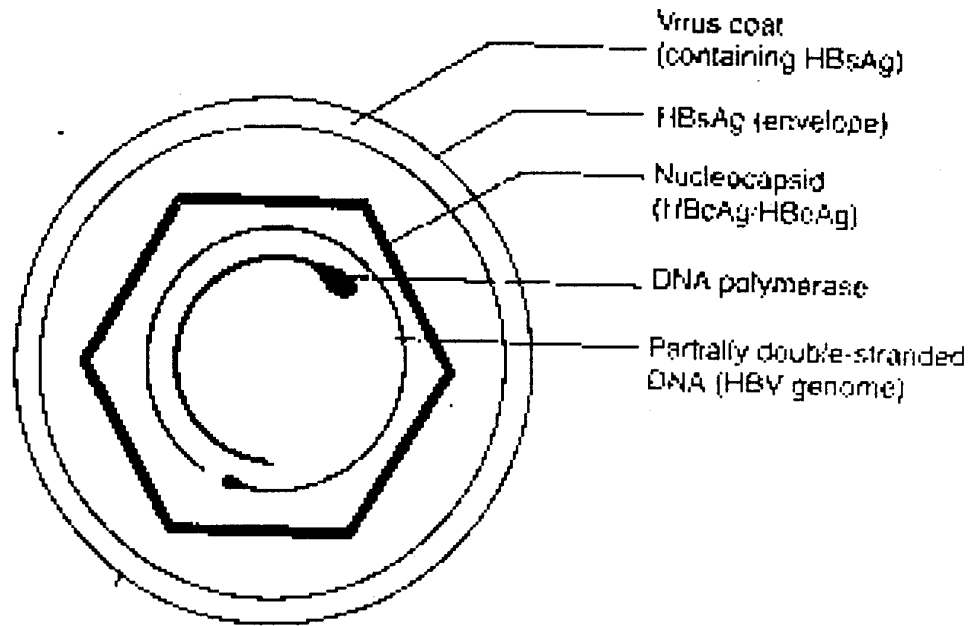
Hepatitis B surface antigen (HBsAg) also known as the Australia antigen, is found on the surface of the virus.

Its detection in the serum is diagnostic of active HBV infection. Core of the virus elicits hepatitis –B Core antigen (HBcAg) specificity. The 'e' antigen (HBeAg) is an integral part of the core of HBV and is associated with high infectivity.

(Ghai, O.P. Essential Pediatrics)

The HBV is a Hepadna virus in the form of a 42 nm sphere composed of a central 27 nm nucleocapsid core containing partially double stranded and partially single stranded, circular DNA, and an associated DNA Polymerase. The nucleocapsid core is enclosed within a lipoprotein coat in which the HBV surface antigen is embedded. Complete virions are sometimes called Dane particles, in recognition of the investigator who first described them. During active infection, Dane particles can be readily visualized by electron microscopy in infected hepatocytes and less commonly in serum.

(Kumar et.al basic pathology)



**Figure** Diagrammatic representation of structure and components of hepatitis B. (Drawn from Gerber, M. A., Thung, S. N.: Molecular and cellular pathology of hepatitis B, Lab. Invest. 52:572, 1985.)

It is one of the most wide spread infection of mankind and the most common cause of worldwide liver disease. HBV alone is estimated to have infected 400 millions people throught the globe making HBV one of the most common human pathogen.

The term Hepatitis B was first introduced by Mac Callus in 1947. In 1963 Blumberg discovered and termed the protein, in blood from an Australian aborigine as Austria (AU) antigen. By 1968, other investigators, notably prince and Okochi and Murakami, had established that the Au antigen (now known as hepatitis B surface Antigen or HBsAg) was specifically found in the serum of type B hepatitis infected patients and in 1973, Dane found the virus like particles. These particles were considered to be HBV.

(WHO report, 1973)

The hepatitis B virus contains several antigens to which infected persons can make immune responses, these antigens and their antibodies are important in identifying hepatitis B viral infection.

Interpretation of main investigations used in the serological diagnosis of Hepatitis B virus infection.

Interpretation	HBsAg	Anti-HBC		Anti-HBs
		IgM	IgG	
Incubation Period	+	+	-	-
Acute hepatitis				
Early	+	+	-	-
Established	+	+	+	-
Established (Occasional)	-	+	+	-
Convalescence (3 to 6 months)	-	+	+	+
Post infection				
> 1 year	-	-	+	+
Uncertain	-	-	+	-
Chronic infection usual	+	±	+	-
Chronic infection Occasional	-	-	+	-
Immunisation without Infection	-	-	-	+

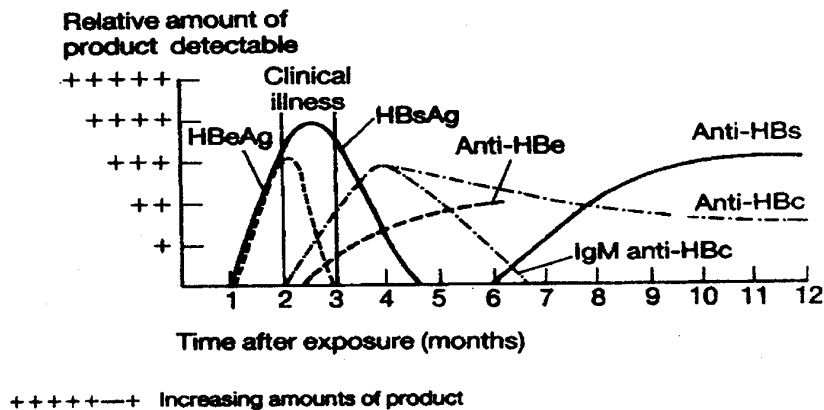
Note + = positive, - = negative ± = present at low titre HBsAg: Surface antigen;  
 Anti-HBC : antibody to core antigen Anti=HBs : antibody to surface antigen

**Acute infection**

The hepatitis B surface antigen (HBsAg) is a reliable marker of hepatitis B virus infection, and negative test for the HBsAg makes hepatitis-B virus infection very unlikely but not impossible. It appears in the blood late in the incubation period and before the prodromal phase of acute type B hepatitis; It may be present for only a few days, disappearing even before jaundice has developed but it usually appears after about 3 months and persists for many years or perhaps permanently. Anti-HBs implies either that infection has occurred at sometime (in which case anti-HBc is usually also present) or that the individual has been vaccinated.

The hepatitis B core antigen (HBcAg) is not found in the blood, but antibody to it (anti-HBc) appears early in the illness and rapidly reaches a high titre which then subsides gradually and persists. Anti-HBc is initially of IgM type and IgG antibody appears later. Anti-HBc (IgM) can sometimes reveal an acute hepatitis B viral infection when the HBsAg has disappeared and before anti-HBs has developed. The hepatitis-Be antigen (HBeAg) appears only transiently at the outset of the illness and is followed by the production of antibody (anti-HBe). The HBeAg reflects active replication of the virus in the liver.

(Christopher et.al, Davidson's Principal & practice of medicine)



**Fig. Serological responses to hepatitis B virus infection**  
 (HBsAG = hepatitis B surface antigen; anti-HBs = antibody to HBsAg;  
 HBeAg = hepatitis Be antigen; anti-HBe = antibody to HBeAg; anti-HBc = antibody to hepatitis B core antigen).

### Mode of transmission

- a. Parenteral or percutaneous. Blood, plasma factors VIII and IX, Contaminated needles, dental extraction, operation, tatoowing, acupuncture needles, ear piercing, sharing needles and syringes, razors etc.

(Golwalla, medicine for students)

Only serum, saliva and semen are truly infectious. Children usually acquire infection indirectly, through parenteral route from hepatitis-B virus-contaminated blood transfusion.

HBsAg positive mothers may infect their fetus in the third trimester or during early post-partum period. Only 5-10 percent are infected in utero, rest at the time of delivery. Association of HBeAg in maternal blood is correlated with high transmission rate.

(Ghai O.P. Essential pediatrics)

- b. Venereal or permucosal Spread-Among male homosexuals due to anal intercourse. Bisexual contact also transmits HBv.

### **Clinical Features**

#### **I. Pre-Icteric phase**

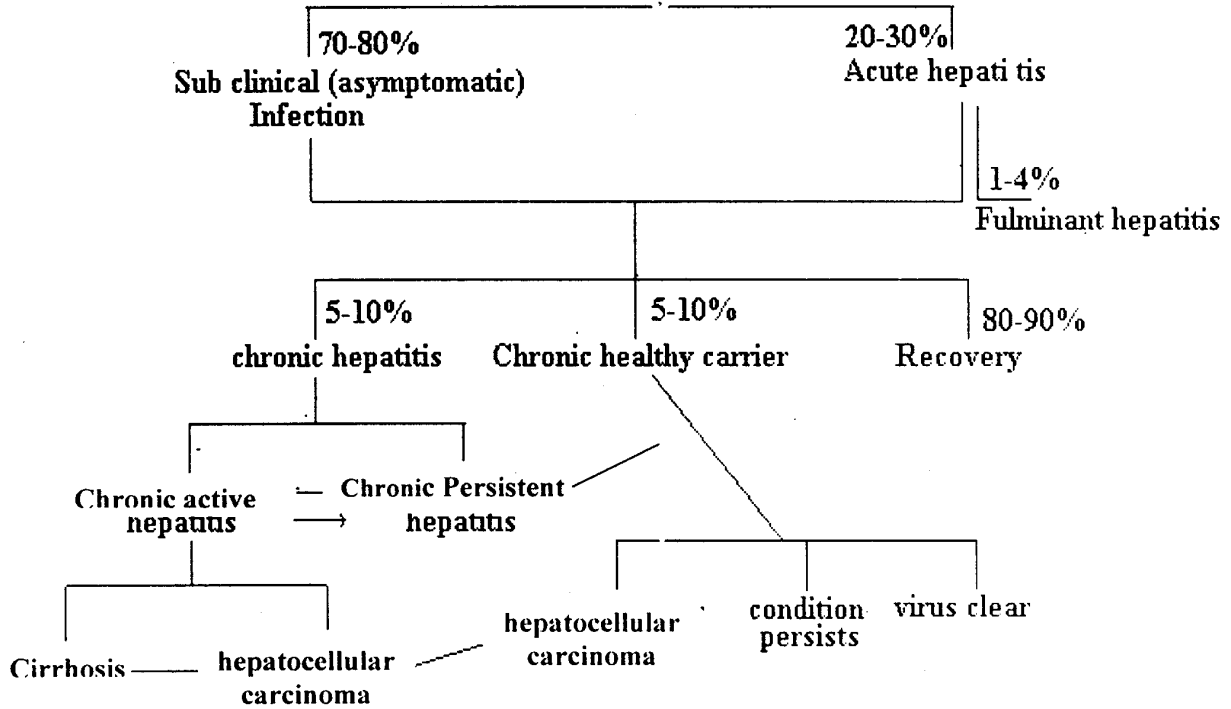
- a. Fatigue, listlessness, weakness
- b. Anorexia, nausea, vomiting
- c. Distaste for smoking
- d. Muscular aches and pains
- e. Fevers for 2 to 5 days till the appearance of jaundice.
- f. Abdominal distress.

#### **II. Icteric Stage.**

- a. Jaundice on 3rd or 4th day gradually deepens or rapidly increases, in average case lasts about 6 weeks.
- b. Yellow coloured urine
- c. Fever none or little
- d. Bradycardia
- e. Loss of weight
- f. Stool become light in colour & remains so for a no of days.
- g. Percussion over right lower ribs causes discomfort.
- h. Spleen may be palpable
- i. Pruritus in some cases, rarely spider naevi and palmar erythema

(Gollwalla, 2000)

## Potential Outcomes of HBV In adults 1B



(Fig-Kumar, Basic Pathology)

### Some Facts and figures

1. a. Hepatitis B is endemic throughout the world, especially in tropical and developing countries and also in some regions of Europe. In most industrial countries, the carriers rate is less than one percent, while in some areas of Africa and south east asia. It is higher than 30 percent. It has been estimated that there are approximately 285 million persistent carriers of HBV in the world, 90% of whom reside in developing countries.
- b. It is a major public health problem in India. During 1983, a total of 1,39,101 cases and 1,925 deaths of viral hepatitis were reported (park 1991)



2. Sera from 478 healthy Nepalese male populations inhabiting various districts of five developmental regions of Nepal shows 3.97% HBsAg surface antigen positive  
(Kishor 1997)
3. Screening of hepatitis B surface antigen (HBsAg) in 10322-blood samples collected in Nepal Redcross Society shows 1.26% HBsAg surface antigen positive. (Monica, 1999)
4. Aproximately 5-10% of infected adults and more than 90% infected neonates become chronically infeted by the virus and develop chronic liverdisease of varrying severity. (Jawet 2, melnick and A delberg, Medical Microbiology, 20 th edition pp 403-404)
5. In a study done in kathmandu valley, the prevalence of hepatitis B ammong commercial sex workers was found to be 10.9% which is higher in this because the study was done in higher risk groups. - (Bhatta p. Neupanes, Bakeerj 1993)
6. The prevalence of HBV in general population is low (HBsAg 1%, anti HBsAg 8%). But moderate to high incidence of infection are observed in certain ethnic group, eg. Tibetians (HBsAg 16%, anti HBsAg 95%), Manangis (HBsAg 7.3%, Anti HBsAg 95%), sherpas (HBsAg 3.8%) and in some area e.g. surkhet (HBsAg 6.6 anti HBsAg 30%).

**Prevalence of HBsAg in South East Asia**

Country	Hepatitis B Carrier	
Bangladesh	9%	(Source: Kar et.al 1998)
Myanmar	12%	
Nepal	1%	
Maldives	6%	
India	5%	
Thailand	10%	
Bhutan	6%	
Sri Lanka	0.9%	
Indonesia	5%	

## **4. Research Methodology**

- **Research design** – the design of the study is cross sectional and conducted between 1<sup>st</sup> July to 15<sup>th</sup> December 2003
- **Sampling technique** – Random sampling technique.
- **Sample size** -200 patients suffering from jaundice.
- **Study area** - The selected study area is the Ayurveda hospital, Nardevi, Kathmandu. It is a central, tertiary level ayurveda hospital, It is 100 bedded hospital. People from different place of Nepal visit this hospital for treatment of various diseases. The hospital is very famous for treatment of hepatitis and is so called jaundice hospital. This study was carried out in kaya chikitsa Department (General medicine OPD) of this hospital.
- **Research population** - 200 patients of varying ages and different sexes who had attended kaya chikitsa (General medicine) OPD of ayurveda hospital.
- **Collection of sample** - Samples were collected between 1<sup>st</sup> july, 2003 to 15<sup>th</sup> Dec, 2003, Before filling the questionnaire, each individual was informed about the research procedure and objective of study and taken verbal consent..

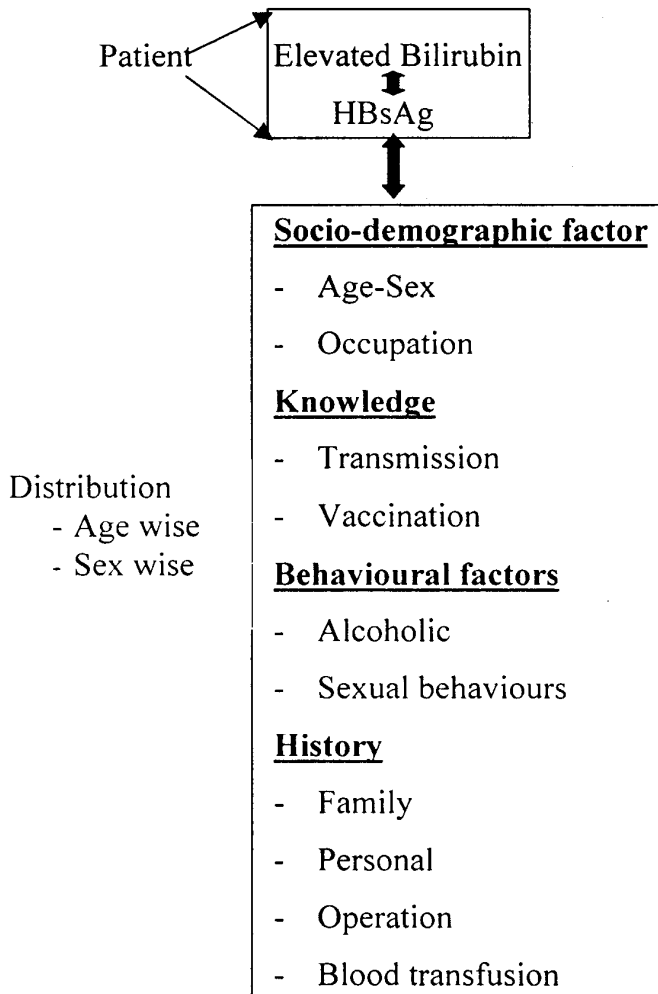
Then questionnaires were filled.

Sample were selected randomly from the patients suffering from jaundice

### **Limitation of Study**

The study is limited due to time, area, budget and adequate literature.

## 5. Conceptual Framework of the study.

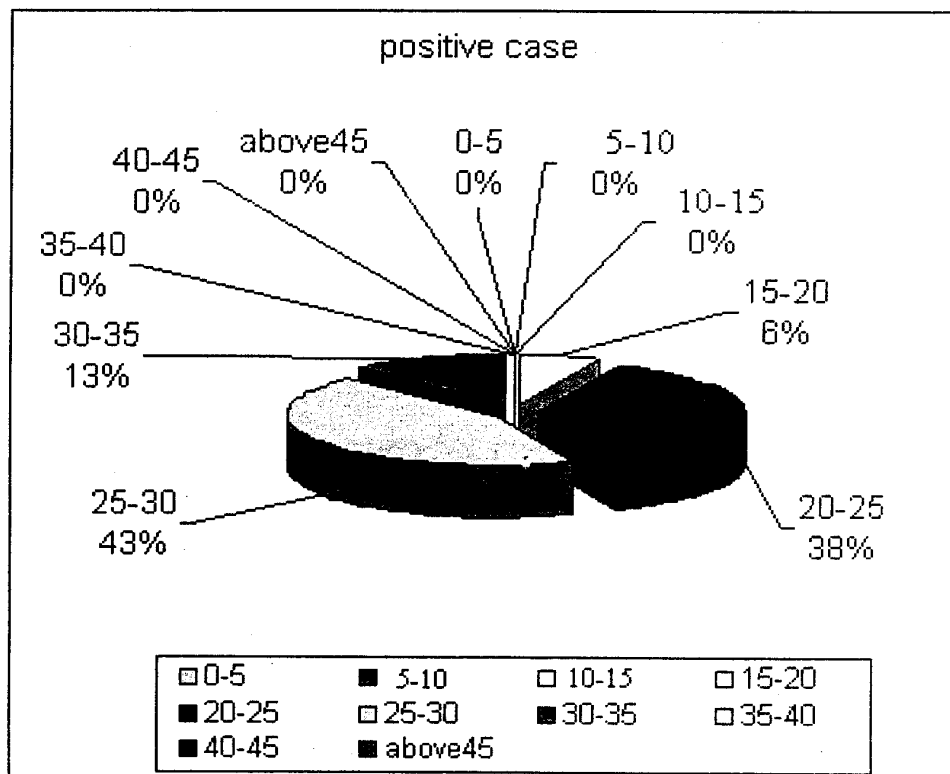
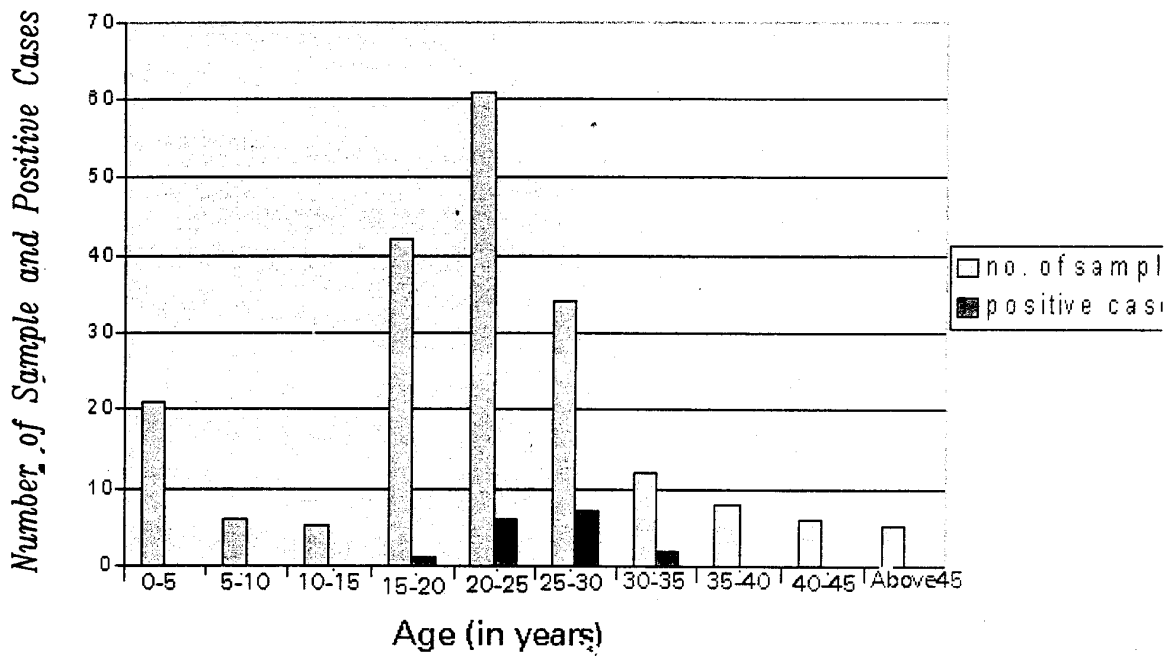


## **6. Findings**

Total collected samples	- 200
Male samples	- 152
Female samples	- 48
Total children samples	- 32
Male children	- 19
Female Children	- 13
Total positive Cases	- 16
Male positive cases	- 13
Female Positive	- 3
Children Positive cases	- X

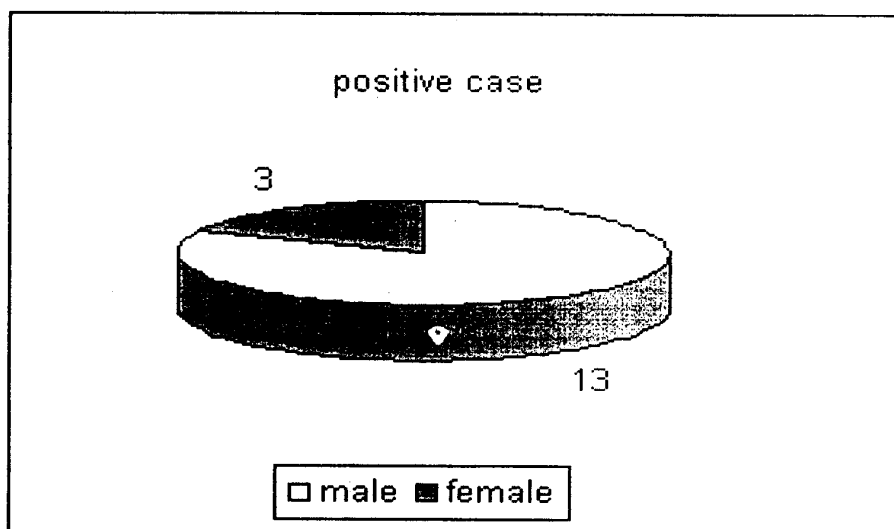
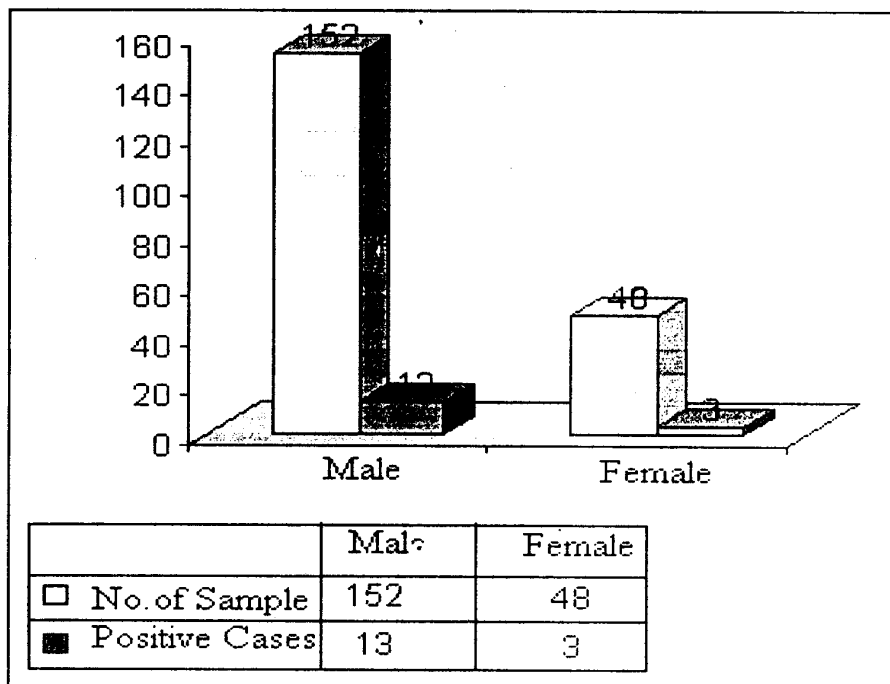
### **Distribution according to age**

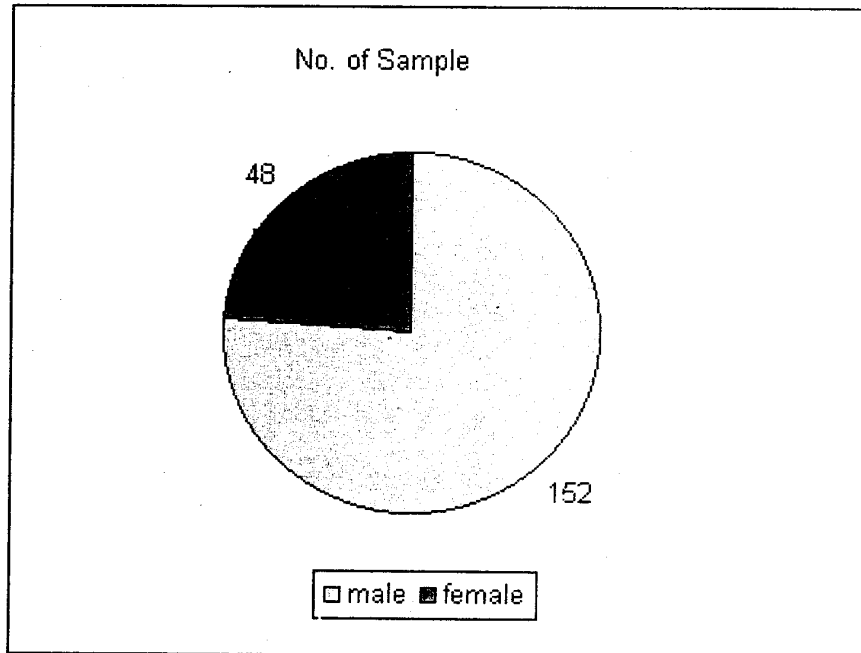
Age	No of Sample	Positive case
0-5 years	21	x
5-10 years	6	x
10-15 years	5	x
15-20 years	42	1
20-25 years	61	6
25-30 years	34	7
30-35 years	12	2
35-40 years	8	x
40-45 years	6	x
above 45	5	x



**Distribution according to sex**

<u>Sex</u>	<u>No of Sample</u>	<u>Positive case</u>
Male	152	13
Female	48	3





$$\text{Total \% of positive case} = \frac{16}{200} \times 100 = 8\%$$

$$\text{Total \% +ve male case} = \frac{13}{200} \times 100 = 6.5\%$$

$$\text{Total \% +ve female case} = \frac{16}{200} \times 100 = 8\%$$

$$\text{Among male \% of +ve case} = \frac{13}{152} \times 100 = 8.6\%$$

$$\text{Among female \% of +ve case} = \frac{3}{48} \times 100 = 6.25\%$$

## 7. Discussions and conclusion

The questionnaires were filled from the patients visiting Ayurveda hospital, Nardevi. The result showed that there was no infection of Hepatitis – B among children. It showed that children are relatively safe if their parents were not infected with HBv. Among male the +ive case is 8.6% and among female percentage positive case is 6.25% It showed that males are in relatively higher risk than females. The Age group of 15-35 yrs were found to be associated with Hepatitis- B infection. Further more, various percent prevalence of the infection were encountered from 20 to 30 yrs of age which is the most productive age group.

## 8. Recommendations

- It is recommended that each jaundiced patient must be monitored with HbsAg test.
- Proper education should be given to people about the mode of transmission, infectivity about the disease.
- Proper washing, gloving should be done by the person who come in contact with blood and blood products, saliva etc.
- Sterilization should be made compulsory at any level of surgical procedure.



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## Questionnaire

Name: \_\_\_\_\_ Age/sex \_\_\_\_\_ date \_\_\_\_\_  
Address(Temporary) \_\_\_\_\_ phone no \_\_\_\_\_  
Address(permanent) \_\_\_\_\_  
Occupation : \_\_\_\_\_  
Marital status \_\_\_\_\_ married( ) \_\_\_\_\_ Single( )  
Socio economic condition \_\_\_\_\_ poor ( ) \_\_\_\_\_ Satisfactory( ) \_\_\_\_\_ Excellent( )  
History of blood donation \_\_\_\_\_ Yes ( ) \_\_\_\_\_ No( )  
History of blood transfusion \_\_\_\_\_ Yes ( ) \_\_\_\_\_ No( )  
Intravenous Drug User \_\_\_\_\_ Yes ( ) \_\_\_\_\_ No( )  
Alcoholism \_\_\_\_\_ Non drinker( ) \_\_\_\_\_ Occasional drinker( ) \_\_\_\_\_ Regular drinker( )  
Is there more than one sexual partner? Yes( ) \_\_\_\_\_ No( )

### For Researcher's use

Serial no. \_\_\_\_\_ Hospital's registration no. \_\_\_\_\_  
HBsAg \_\_\_\_\_ Positive( ) \_\_\_\_\_ Negative( )  
Amount of ALT : .....unit /ml(normal5-35 unit/ml)  
Amount of serum bilirubin  
Conjugate.....mg/dl (0-0.2mg/dl)  
Total.....mg/dl(0.2-1.2mg/dl)  
Liver function test: \_\_\_\_\_ Normal( ) \_\_\_\_\_ Abnormal( )