

## PREVALENCE AND SOCIO-DEMOGRAPHIC STATUS ON HEPATITIS-B VIRUS INFECTION IN STATE OF PUDUCHERRY

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### ABSTRACT

Viral hepatitis is a major human health problem worldwide. Hepatitis B is a viral disease with a high incidence and prevalence worldwide and it can cause acute and chronic liver disease. Approximately (8%) of the world's population has been infected with HBV, and more than 300 million people throughout the world are affected by hepatitis B virus (HBV). Around 4% of people have been affected of HBV in India. Serological test is an important tool for the identification of the HBV. Infection with HBV is associated with characteristic changes in the serum levels of hepatitis B antigens and antibodies. This is a case-control study with viral disease in State of Puducherry, the study population consists of 125 cases and 102 HBV patients and 23 controls residing in the same region. Data were collected through standard questionnaire and the results were compiled and interpreted. The results of this study indicate that sera from patients with alcoholic a chronic disease interfering with the normal functioning of the liver; the major cause is chronic alcoholism. The present investigation aims to assess the status of Hepatitis B virus patients and control in and around Puducherry and the results have been discussed.

**Keywords:** Epidemiology; viral hepatitis; Chronic Hepatitis-B Virus.

### INTRODUCTION

Viral hepatitis is a major human health problem worldwide<sup>1</sup>. More than 300 million people throughout the world are affected by hepatitis B virus (HBV). Around 4% of people have been affected of HBV in India<sup>2</sup>. Serological test is an important tool for the identification of the HBV<sup>3</sup>. Hepatitis B is a viral disease with a high incidence and prevalence worldwide and it can cause acute and chronic liver disease<sup>4</sup>. Approximately (8%) of the world's population has been infected with HBV, and about 350 million, 5–6% are persistent carriers of HBV<sup>5</sup>. The clinical presentation ranges from subclinical to symptomatic and, in rare instances, fulminant hepatitis. Perinatal or childhood infection is associated with few or no symptoms, but it has a high risk of becoming chronic. There are limited numbers of medications that can be used to effectively treat chronic hepatitis B; a safe and effective vaccine is available to prevent hepatitis B infection<sup>6</sup>. Infection with HBV is associated with characteristic changes in the serum levels of hepatitis B antigens and antibodies. These markers are used to define different clinical states.

The diagnosis of hepatitis B virus (HBV) infection was revolutionized by the discovery of Australia antigen, now called hepatitis B surface antigen (HBsAg). During the ensuing two decades, serologic assays were established for HBsAg and other HBV antigens and antibodies. Advances in molecular biology techniques led to the development of hybridization and polymerase chain reaction (PCR) assays for direct determination of hepatitis B virus DNA. The diagnosis of HBV infection can also be made by the detection of HBsAg or hepatitis B core antigen (HBcAg) in liver tissues by immunohistochemical staining and of HBV DNA by Southern hybridization, in-situ hybridization, or PCR. There are more than 2 billion individuals with serological evidence of hepatitis B infection worldwide. Of these, 400 million are chronic carriers and 500,000 to 1.2 million will die annually from cirrhosis and hepatocellular carcinoma<sup>7,8</sup>.

Chronic HBV is associated with many anatomical, epidemiological, physiological, biochemical and immunological changes in alcoholic patients in State of Puducherry, India. Such information is of no doubt necessary as a background for any programs devised in the future for

studying chronic HBV, and treating this disease. Also this study will aid in gaining a better understanding of the pathogenesis of the chronic HBV, and this ultimately leads to advances in the design of drugs of choice to prevent and treat this disorder<sup>9</sup>. To fulfill these objectives, the present study has dealt with samples of subjects in Arupadiveedu Medical College and Hospital, Puducherry, State of Puducherry, India.

#### MATERIALS AND METHODS

The present study intends to measure the serological markers for Hepatitis B in chorionic alcoholic patients. The randomly selected study group comprised 102 patients with HBV was identified all males (aged  $45 \pm 18.7$  years), ranging between 20 to 70 years. Samples were collected from Arupadiveedu Medical College and Hospital, Puducherry, State of Puducherry, India by specialist doctors as chronic hepatitis B infection. All sera were collected in the morning after fasting 8 hours. The epidemiological distribution of those patients was as the following: The residency (70 urban and 32 rural area), marital status (75 married and 27 single), economic status (40 good, 24 medium and 38 low level), educational level (50 high education levels and 72 low educational levels), history of smoking (80 with positive history and 22 with negative history), alcohol intake (102 alcoholic) and all patients included in this study.

The healthy volunteers were selected on the basis of no alcoholic, no smoking habits, no history of viral hepatitis and absence of any acute or chronic pathology, clinically evident at the moment of examination, routine clinical checkup during the entire period of research, residing in the same geographical region. Twenty three apparently healthy subjects (clinically assessed by specialist doctors) were included as controls in this study, which consist 23 males. Those subjects were selected randomly from the population. The epidemiological distribution of those subjects was as the following: The residency (15 urban and 8 rural areas), marital status (12 married and 11 single), economic status (4 good, 9 medium and 10 low levels), educational level (4 high educations, 19 low educations) and all subjects enrolled in this study have no history of drugs addiction.

#### RESULTS AND DISCUSSION

The study included 102 patients with HBV was identified all males (aged  $45 \pm 18.7$  years), ranging between 20 to 70 years. Majority (35%) were more than 60 years of age. In relation to residence area, 32 (31%) were urban patients and 70 (69%) were rural patients. The prevalence of HBV in relation with various factors was shown in Table 1 and Figures 1-7.

**Table 1: Risk factors associated with the prevalence of HBV patients and control**

Parameters	HBV patients (n=102)		Control (n=23)		Mean SD	± 'p' value
	Number	Percentage	Number	Percentage		
<b><u>Age in years</u></b>						
20-30	12	11	8	35	10±2.82	0.001 <sup>s</sup>
31-40	16	15	6	26	11±7.07	
41-50	28	27	5	22	16.5±16.2	
51-60	15	14	3	13	9±8.48	
61-70	35	33	1	4	18±24.04	
<b><u>Residence</u></b>						
Rural	70	69	15	65	42.5±38.89	0.025 <sup>s</sup>
Urban	32	31	8	35	20±16.97	
<b><u>Education</u></b>						
High education levels	70	69	4	17	37±46.66	0.000 <sup>s</sup>
Low education levels	32	31	19	83	25.5±9.19	
<b><u>Marital status</u></b>						
Married	75	74	12	52	43.5±44.54	0.027 <sup>s</sup>
Unmarried	27	23	11	48	19±11.31	
<b><u>Economic status</u></b>						0.009 <sup>s</sup>

Good	40	39	4	17	22±25.45	
Medium	24	24	9	39	16.5±10.60	
Low	38	37	10	44	24±19.79	
<b><u>Smoking habit</u></b>						
Smoker	80	78	Nil	Nil	--	--
Non smoker	22	22	Nil	Nil		
<b><u>Alcohol intake</u></b>						
Daily drinkers	35	34	Nil	Nil		
Weekly drinkers	52	51	Nil	Nil	--	--
Monthly drinkers	15	15	Nil	Nil		

S- Significant;  $p < 0.05$  level of significant.

Table 1 reveals the distribution of HBV patients based on Residence. Out of 102 HBV patients 70 are residing in rural area and 32 are residing in urban area. Out of 23 healthy peoples 15 are rural areas, 8 are urban areas. The distribution of the HBV patients based on Education and there are 40 patients with High education levels and 62 patients with Low education levels. Out of 23 healthy peoples 4 are high education levels, 19 are Low education levels. It reveals the distribution of the HBV patients based on marital status. There are 75 patients are married and 27 patients are unmarried. Out of 23 healthy people 12 are married, 11 are unmarried<sup>10</sup>.

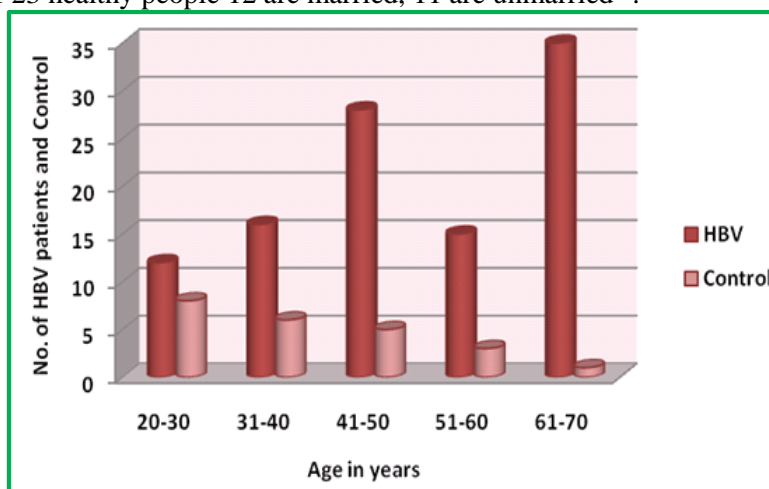


Fig.1: Age and gender distribution of HBV patients and Control

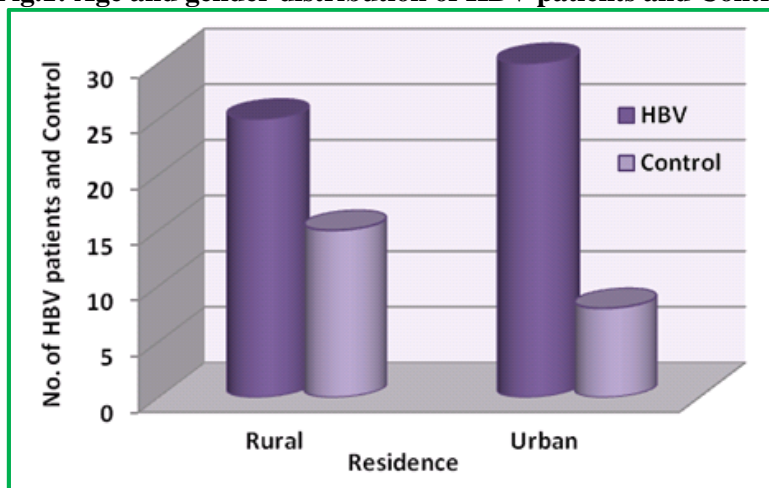


Fig.2: The distribution of HBV patients and Control based on Residence

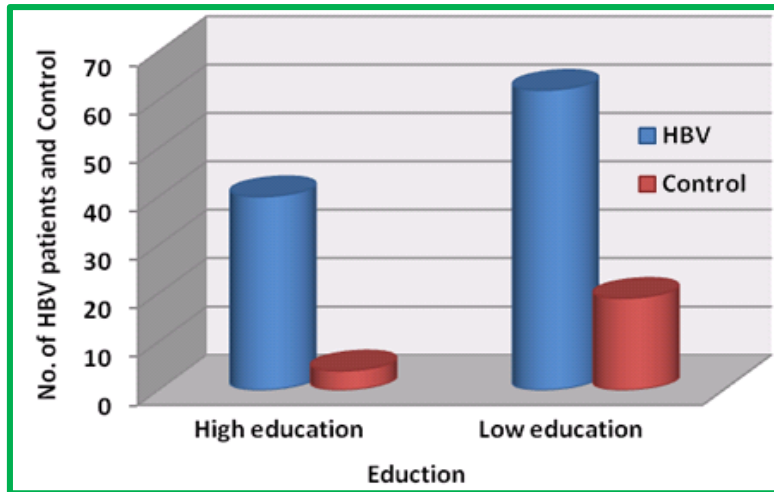


Fig.3: The distribution of HBV patients and Control based on Education

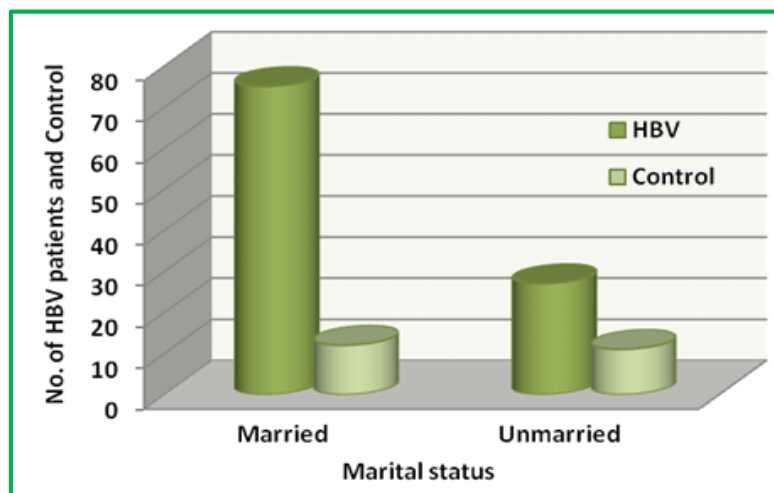


Fig.4: The distribution of HBV patients and Control based on marital status

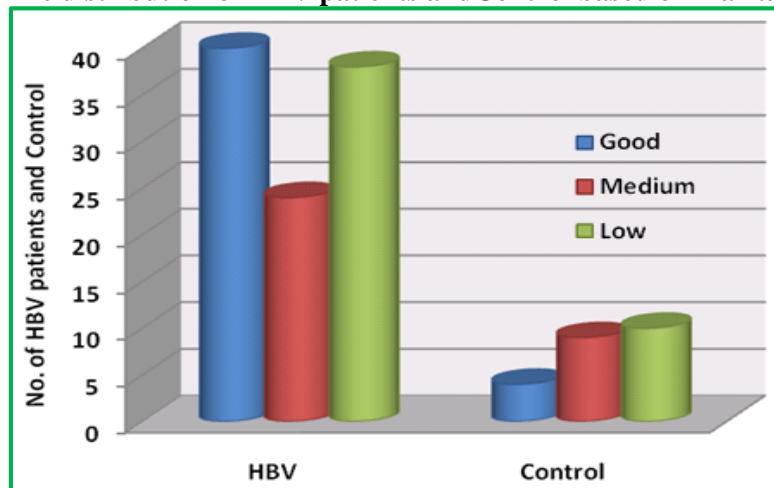
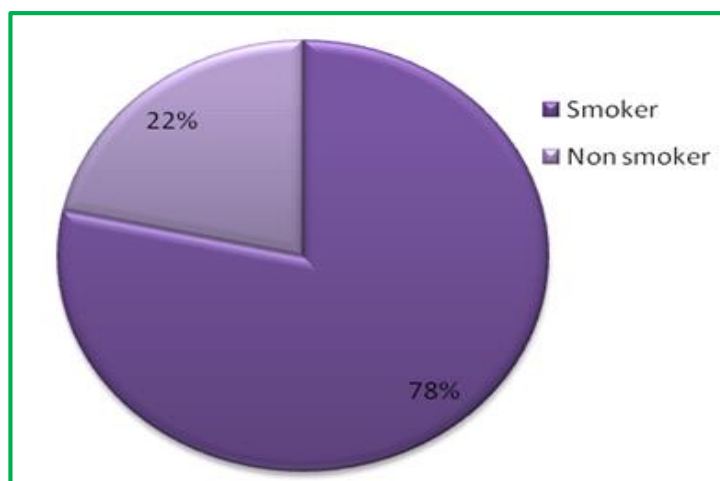
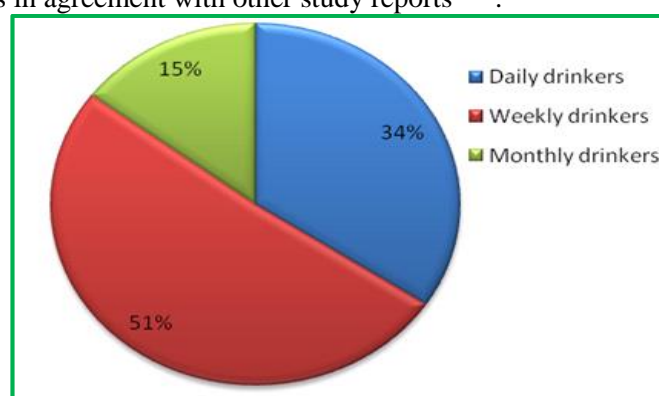


Fig.5: The distribution of HBV patients and control based on Economic status



**Fig.6: The distribution of HBV patients based on Smoking habit**

It reveals the distribution of HBV patients based on economic status. Out of 102 HBV patients 30 are Good, 24 patients medium and 38 are low. Out of 23 healthy people 4 are Good, 9 peoples medium and 10 are low. There are 80 patients with smoker and 22 patients with non-smoker. They reveal the distribution of HBV patients based on economic status. Out of 102 HBV patients 35 with daily drinkers, 52 patients are weekly drinkers and 15 patients with Monthly drinkers. The similar result, which is in agreement with other study reports<sup>11,12</sup>.



**Fig.7: The distribution of HBV patients based on Alcohol intake**

It observed that the HBV infection were higher in the age group of >60 (33%) and lower <20 (11%) which was statistically significant ( $18 \pm 24.04$ ;  $p=0.001$ ). The rural HBV patients were ( $42.5 \pm 38.89$ ;  $p=0.025$ ) in higher than urban area ( $20 \pm 16.97$ ;  $p=0.025$ ) as compared with the healthy people, which is further compared with the control values. The education status showed a higher proportion of HBV patients with control (69% vs. 17%;  $37 \pm 46.66$ ;  $p = 0.000$ ) and a lower proportion (31% vs. 81%;  $25.5 \pm 9.19$ ) were observed. The married patients ( $43.5 \pm 44.54$ ;  $p=0.027$ ) were infected with HBV than unmarried ( $19 \pm 11.31$ ;  $p=0.486$ ) as compared with the non-HBV infection patients. The good economic status of HBV patients with control (39% vs. 17%;  $22 \pm 25.45$ ;  $p = 0.009$ ) and a lower status of (37% vs. 44%;  $24 \pm 19.79$ ) were presented. The value of 78% (80/102) smokers and 22% (20/102) non-smokers had HBV infection. Alcoholic's patients were at daily drinkers (35%) two times more than monthly drinkers (15%) getting risk of HBV infection. A probability level (p-value) of greater than 0.05 is considered statistically not significant between HBV patients and control. The studies of risk factor of HBV infection have been predominating when compared to the healthy people.

Statistical analysis was performed using SPSS software program, version 11.5. The results were expressed as mean and standard deviations (Narayanasamy et al., 2015). The data were analyzed by analysis of variance (ANOVA). A probability level (p-value) of less than 0.05 was considered statistically significant. All values were expressed as means  $\pm$  SD. ANOVA test were applied to determine the differences between one group (HBV patient) and another (Healthy people).

## CONCLUSION

The prevalence of chronic HBV infection increases among alcoholic patients. Information on age, sex, education, occupation, area of residence, type of housing were extracted from the results of the study along with positive HBsAg or anti-HBs antibody level to any other member of the family. The results of this study indicate that sera from patients with alcoholic a chronic disease interfering with the normal functioning of the liver; the major cause is chronic alcoholism. Infection with hepatitis B virus does not enhance the development of chronic liver disease in heavy drinkers, except in the small number who remain positive for HBsAg.

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