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Research Article

Knowledge About HBV Infection and Its Association with HBSAG Positivity among Residents of Kaza Sub- Division Of District Lahaul & Spiti In Himachal Pradesh

Dr. Brij Sharma[1], Dr. Anmol Gupta[2], Dr. Rajesh Sharma[1] , Dr Vishal Bodh[1], Dr. Aashish Chauhan[1], Dr. Dipesh[3] , Dr. Neetu Sharma[4], Sidhant Sharma[5] & Dr. Amit Sachdeva[2]*

[1]Department of Gastroentrology, Indira Gandhi Medical College & Hospital, Shimla, Himachal Pradesh, India
[2]Department of Community Medicine, Indira Gandhi Medical College & Hospital, Shimla, Himachal Pradesh, India
[3]Department of Community Medicine, Dr. Rajendra Prasad Government Medical College, Tanda, Himachal Pradesh, India
[4] Assistant Professor, Department of Physiology,Indira Gandhi Medical College & Hospital, Shimla, Himachal Pradesh, India
[5]MBBS Student, Anna Medical College, Mauritius

*Corresponding Author
Dr. Amit Sachdeva

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Abstract: **Background**: Hepatitis B and C virus infection is an issue for public health worldwide. We conducted this study to assess the Knowledge about HBV infection and its association with HBsAg positivity among residents of Kaza sub- division of district Lahaul & Spiti in Himachal Pradesh. **Material & Methods:** From June 2015 to October 2017, the study was carried out at Kaza, a division of Lahaul & Spiti, by the department of gastroenterology, community medicine, and microbiology of Indira Gandhi Medical College Shimla. By using the cluster sampling technique, the target sample size of 4000 was attained. 40 Clusters were chosen using probability proportionate to size sampling, and 100 research participants were added to each Cluster. For data collection, a pretested interview plan was used. Five millilitres of blood were drawn from each study participant and tested for HBsAg. **Results**: Around 53% participants had not heard about the disease. Breast feeding as a mode of transmission was known among 18.8% of population. Traditional medicine was thought to be the cure of Hepatitis B in 13.9% population. Around one fourth of the population knew that there is no effective treatment for hepatitis B (25.2%) and there is a vaccine to prevent the same (25.7%). Around one third of the study population (32.6%) who have heard about Hepatitis B infection were tested to be positive for the same as compared to 34.1% among those who have had no knowledge about it. (OR: 0.93; 95%CI:0.80-1.09; p: 0.41). There was 50% less risk of HBsAg positive among vaccinated as compared to those who were not (p<0.001) Receiving information about HBV infection from more than one source (print media, health service providers and entertainment media) had 80% less risk of HBV infection as compared to those who have never heard of the infection (OR: 0.20; 95% CI: 0.07-0.61; p:0.01). Immunization against HBV was a significant independent protective factor against the infection as compared to non immunized (OR: 0.52; 95% CI: 0.40-0.68; p<0.001). **Conclusion**: Present study concluded that knowledge of source of infection, and immunization against HBV emerged as independent factors associated with HBsAg positive test after adjusting for confounders.

Keywords: Knowledge, HBV infection , Lahaul & Spiti , Himachal Pradesh.

INTRODUCTION

The hepatitis B virus causes hepatitis B, a potentially fatal liver infection. Hepatitis B virus infection is a major public health hazard worldwide. Around the world, this virus has infected close to 2 billion individuals. Nearly 350 million of them have a persistent infection. About 3-4% of the population in India is afflicted. It can result in chronic liver disease, persistent infection, and a significant chance of death from liver cancer and cirrhosis. Over 240 million people worldwide suffer from chronic (ongoing) liver illnesses. Approximately 600 000 people per year pass away from the acute or long-term effects of hepatitis B.[1-3]

Most cases of hepatitis B are brought on by parenteral exposure to infected bodily fluids. Receiving infected blood or blood products, invasive medical operations utilising contaminated equipment, and for hepatitis B transmission from mother to baby at birth, from family member to child, as well as through sexual contact, are common routes of transmission for these viruses. Acute infections can present with few or no symptoms, or they can present with signs including jaundice (a yellowing of the skin and eyes), dark urine, acute exhaustion, nausea, and vomiting, as well as stomach discomfort. The age at which a person contracts the hepatitis B virus determines the risk that the infection will become chronic.[4,5]

Kaza health block in Lahaul & Spiti District has a population of 12,547 and the health institutions in the block include one CHC, five PHCs and 10 health sub-centers. In the past three years more than 200 cases of Viral Hepatitis B have reported to the department of gastroenterology at Indira Gandhi Medical College & Hospital indicating a high prevalence of viral hepatitis B.[6] The reasons behind such a high prevalence need to be investigated taking into consideration the serious health consequences of the infection. As viral hepatitis C

transmission is similar to the transmission of viral hepatitis B, we conducted this study to assess the Knowledge about HBV infection and its association with HBsAg positivity among residents of Kaza sub-division of district Lahaul & Spiti in Himachal Pradesh

Aims & Objectives

To assess the Knowledge about HBV infection and its association with HBsAg positivity among residents of Kaza sub- division of district Lahaul & Spiti in Himachal Pradesh

MATERIAL & METHODS

The study was conducted by the department of Gastroenterology, Community Medicine and Microbiology, Indira Gandhi Medical College Shimla. Survey was undertaken at Kaza, a sub division of the district, Lahaul & Spiti.

Study design: The study design had two components/stages. Initially it was a cross sectional survey done to identify individuals with and without HBV infection. The second stage was a case- control study to identify risk factors for higher transmission among those infected as compared to the controls (uninfected)

Study duration: June 2015 through October 2017.

Study population: The study population with comprise all residents of Kaza sub-division of district Lahaul & Spiti of Himachal Pradesh.

Sample size: The sample size was calculated with the reported prevalence of 16.0% at 5% level of significance with 80.0% study power, 2.0% level of precision and design effect of 3. It came out to be 3864 (Appox. 4000).

Kaza Sub Division of Lahaul & Spiti has a population of 12,547 including 6,691 males & 5,766 females (Census 2011). There is one Community Health Centre, 5 Primary Health Centers, 9 sub-centers and 11 Villages panchyats.

Exclusion criteria

a. Those who do not consent to participate in the study.

METHODOLOGY:

The desired sample size was obtained by cluster sampling technique. All the villages in Spiti area along with their population were listed in ascending order. By Probability proportionate to size sampling 40 Clusters (One cluster with one or more villages) were selected. In each Cluster 100 study subjects were enrolled for the study by simple random sampling.

Data collection

A pretested interview schedule was used for data collection. The data elements included a complete history of illness (if any), risk behaviors leading to high transmission of HBV. This interview schedule was filled by trained health workers and field Investigators who were appointed from the local inhabitants from Spiti area.

From each study subject 5ml of blood sample was taken by trained laboratory technician. Collected blood samples were transported in cold chain equipment at suitable temperatures to Microbiology, Hematology and Biochemistry laboratories of IGMC Shimla for analysis. The blood samples were analyzed for HBsAg.

Data analysis

Data was analyzed using EpiInfo software version 7.1.2 for windows. Descriptive analysis was conducted to describe the study population characteristics at baseline, the risk behaviors, immunization status and clinical profile (only sick or found to be HBV/HCV positive) of the study participants.

Bivariate analysis was done to identify for factors likely to be significantly associated with HBsAg. Logistic regression analysis was conducted to control for confounding to identify independent risk factors. A p-value of 0.05 or below was considered as statistically significant.

Quality assurance

The proposal was peer reviewed by subject matter experts before implementation in the field. The sampling procedure adopted was a robust one with a cluster size of at least 40 and simple random clustering procedure within each cluster. The serum/blood sample was analyzed in the laboratories of the tertiary care hospital of the state (IG Medical College, Shimla) under strict quality control of the heads of the respective laboratories.

Ethical issues

The survey was started after taking ethical permission from the Institutional Ethical Committee, IGMC Shimla (HFW(MS)G-5(Ethics)/2014-5257). Informed written consent was obtained from the head of the selected family to voluntarily participate in the study. The information obtained was kept strictly confidential and used only for research purposes and dissemination to the department of Health & Family Welfare for the recommended interventions without disclosing the identity of the individuals. Those found to be infected were given appropriate care as per the existing standards by the department of gastroenterology as per the existing norms of the IGMC & Hospital, Shimla. Blood

samples collected were destroyed after testing as per the Hospital Waste Management protocols.

RESULTS & OBSERVATION

The study was undertaken at Kaza, a sub division of the district, Lahaul & Spiti by the department of Gastroenterology, Community Medicine and Microbiology, Indira Gandhi Medical College Shimla.

The study population surveyed was 4238, of which information regarding seven were missing hence were excluded from final analysis. The final analysis was conducted on 4231.

The study population comprised of 59.3% of females. Majority of the study population was in the age group 21-50 years; the age group 11-20 years comprising 22.6%, 31-40 years comprising 18.7% and 41-50 years age group comprising 17.0%. Buddhism was the most followed religion in the area (99.3%) and 98.4% of the population were scheduled tribe. Around one fourth of the population had attained school between 1st and 5th standard (24.7%). Only 6.8% were graduate and above. Agriculture was the major occupation of the area with 20.4% study population involved in it.There were 31.7% students, 16.8% homemakers and 14% service class.

More than half of the population (53.7%) was currently married, 5.4% were monks/nuns and 36.6% were never married. Currently 68.9% of the population was living with family without their sexual partner and 19% and 10.2% were living with spouse and friends respectively. (Figure-1).

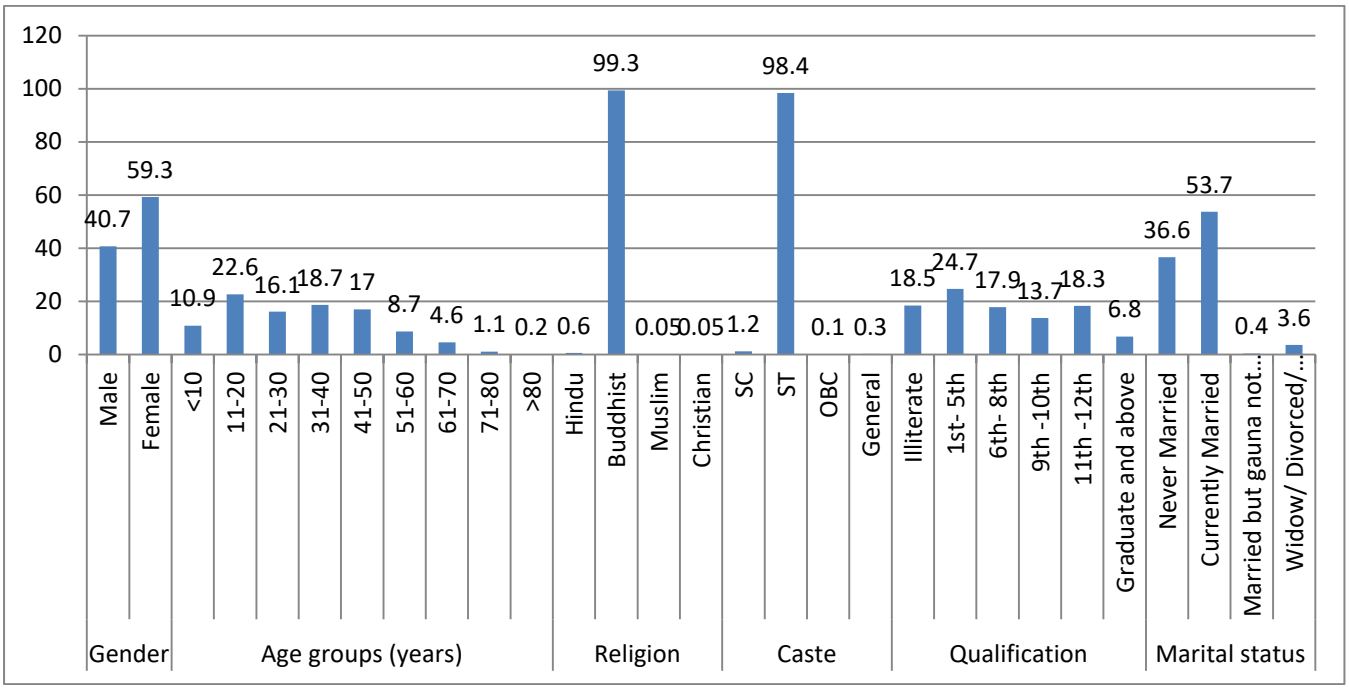


Figure-1: Socio demographic profile of study population

The knowledge of study population was assessed before testing for the same. Around 53% have not heard about the disease. Breast feeding as a mode of transmission was known among 18.8% of population. Traditional medicine was thought to be the cure of Hepatitis B in 13.9% population. Around one fourth of the population knew that there is no effective treatment for hepatitis B (25.2%) and there is a vaccine to prevent the same (25.7%). (Table -1)

	Number	Percent
Total	4231	100
Heard about Hepatitis B		
Not applicable	21	0.5
Yes	1953	46.2
No	2257	53.3

Hepatitis B is transmitted from an infected mother to the new born child through Breast feeding		
Don't know	2284	54.0
Yes	795	18.8
No	1152	27.2
Hepatitis B be cured by taking traditional medicines		
Don"t know	2208	52.2
Yes	590	13.9
No	1433	33.9
There is effective treatment for hepatitis B		
Don"t know	2206	52.1
Yes	958	22.6
No	1067	25.2
Knowledge about any vaccine to prevent Hepatitis B		
Don"t know	2228	52.7
Yes	1086	25.7
No	917	21.7

Table -1: Knowledge about Hepatitis B

Around one third of the study population (32.6%) who have heard about Hepatitis B infection were tested to be positive for the same as compared to 34.1% among those who have had no knowledge about it (OR: 0.93; 95%CI:0.80-1.09; p: 0.41). Health service provider was the most common source (17.7%) of knowledge about Hepatitis B and 35.5% among these were tested positive. Majority (28.2%) of population had no knowledge about the infection being transmitted from mother to child and one third of these (33.0%) were tested to be positive (p: 0.63). Knowledge about various ways of prevention of infection and consequences of disease was not associated with lower proportion of infection. 25.5% of the population have heard about the vaccine and out of these 70.6% were negative for HbsAg (p: 0.03). However, only 13.6% (393/2886) reported of receiving the vaccine and of these 21.6% (85/393) were tested to be positive as compared to 35.3% (861/2440) and 30.2% (16/53) of those who reported of not receiving or were not sure about receiving the vaccine (OR: 0.50, 95% CI: 0.39 - 0.65; p <0.001). (Table -2).

	HBSAG		**Total**	**P value**
Heard about Hep B	**Positive**	**Negative**		
Yes	459	951	1410	0.41
	32.6%	67.4%	100.0%	
No	503	973	1476	
	34.1%	65.9%	100.0%	
Total	**962**	**1924**	**2886**	
	33.3%	**66.7%**	**100.0%**	
Sources				
Radio	11	32	43	0.06
	25.6%	74.4%	100.0%	
Television	64	128	192	
	33.3%	66.7%	100.0%	
Newspaper	5	12	17	
	29.4%	70.6%	100.0%	
Magazine	16	26	42	
	38.1%	61.9%	100.0%	

Poster/Billboards/Wall writing/Hoarding	26	50	76	
	34.2%	65.8%	100.0%	
Public announcements H	148	318	466	
	31.8%	68.2%	100.0%	
Street play/Drama	1	3	4	
	25.0%	75.0%	100.0%	
Health Service Provider	181	329	510	
	35.5%	64.5%	100.0%	
Multiple sources	7	53	60	
	11.7%	88.3%	100.0%	
Total	459	951	1410	
	32.6%	67.4%	100.0%	
Knowledge about Mother to child transmission				
Don‟t know	13	24	37	0.63
	35.1%	64.9%	100.0%	
Yes	201	393	594	
	33.8%	66.2%	100.0%	
No	269	546	815	
	33.0%	67.0%	100.0%	
Known modes of transmission				
Don‟t know	11	16	27	**0.03**
	33.4%	66.6%	100.0%	
Mother to child transmission	14	37	51	
	27.5%	72.5%	100.0%	
IDU	12	21	33	
	36.4%	63.6%	100.0%	
Tattooing	4	19	23	
	17.4%	82.6%	100.0%	
Body piercing	19	30	49	
	38.8%	61.2%	100.0%	
Unsafe injection	199	335	534	
	37.3%	62.7%	100.0%	
Unsafe sex	71	154	225	
	31.6%	68.4%	100.0%	
Drinking polluted water	14	15	29	
	48.3%	51.7%	100.0%	
Contaminated food	16	31	47	
	34.0%	66.0%	100.0%	
Shared razors/toothbrushes	23	52	75	
	30.7%	69.3%	100.0%	

Multiple answers	101	254	355	
	28.5%	71.5%	100.0%	
Knowledge about Ways of prevention				
Don‟t know	10	23	33	0.87
	30.3%	69.7%	100.0%	
Vaccination	357	746	1103	
	32.4%	67.6%	100.0%	
Avoid infected needles	36	64	100	
	36.0%	64.0%	100.0%	
Others	56	118	174	
	32.2%	67.8%	100.0%	
Known Consequences ofinfection				
Don‟t know	8	29	37	0.39
	21.6%	78.4%	100.0%	
Liver failure	153	346	499	
	30.7%	69.3%	100.0%	
Liver cancer	205	384	589	
	34.8%	65.2%	100.0%	
Impaired liver function	36	71	107	
	33.6%	66.4%	100.0%	
Premature death	14	22	36	
	38.9%	61.1%	100.0%	
Multiple	43	99	142	
	30.3%	69.7%	100.0%	
Knowledge about Cure by traditional medicine				
Don‟t know	13	28	41	0.90
	32.0%	68.0%	100.0%	
Yes	138	275	413	
	33.4%	66.6%	100.0%	
No	308	648	956	
	32.2%	67.8%	100.0%	
Any effective treatment				
Don‟t know	8	17	25	1.00
	34.0%	66.0%	100.0%	
Yes	193	457	650	
	29.7%	70.3%	100.0%	
No	258	477	735	
	35.1%	64.9%	100.0%	
Heard about any vaccine to prevent Hep B				
Don‟t know	16	28	44	**0.03**
	36.4%	63.6%	100.0%	
Yes	216	519	735	
	29.4%	70.6%	100.0%	
No	227	404	631	
	36.0%	64.0%	100.0%	
Ever been immunized for HBsAg				
Not sure	16	37	53	**<0.001**
	30.2%	69.8%	100.0%	
Yes	85	308	393	

	21.6%	78.4%	100.0%	
No	861	1579	2440	
	35.3%	64.7%	100.0%	

Table -2: Knowledge of Hepatitis B among those with and without the disease

Those independent variables which on bivariate analysis yielded p<0.10 on applying test of significance were subjected to binary logistic regression modeling with HBsAg positive as dependent variable. The independent variables which were subjected to model were source of knowledge about HBV, knowledge about mode of transmission, knowledge about vaccination as method of prevention and immunization status.

Receiving information about HBV infection from more than one source (print media, health service providers and entertainment media) had 80% less risk of HBV infection as compared to those who have never heard of the infection (OR: 0.20; 95% CI: 0.07-0.61; p:0.01). Immunization against HBV was a significant protective factor against the infection as compared to non immunized (OR: 0.52; 95% CI: 0.40-0.68; p<0.001); there was 48% reduced risk of HBsAg positive. (Table-3)

	Sig.	Adj OR	95% C.I.for AdjOR	
			Lower	Upper
Source				
Not heard of hepatitis B	0.12	1.00		
Radio	0.13	.444	.152	1.299
TV	0.48	.739	.320	1.707
Newspaper	0.53	.652	.171	2.486
Magazine	0.87	.924	.335	2.544
Poster/Billboards/Wall writing/Hoarding	0.26	.584	.228	1.497
Public announcements	0.24	.621	.278	1.387
Street play/Drama	0.75	.681	.061	7.614
Health Service Provider	0.49	.759	.343	1.678
Multiple sources	0.01	.203	.067	.614
Knowledge of Mode of transmission				
Don't know	0.20	1.00		
Mother to child	0.06	.571	.318	1.025
IDU	0.34	.708	.347	1.443
Tattooing	0.76	.882	.394	1.974
Body piercing	0.14	.424	.136	1.323
Unsafe injection	0.55	1.224	.626	2.393
Unsafe sex	0.21	1.246	.882	1.761
Drinking polluted water	0.99	1.003	.674	1.493
Contaminated food	0.16	1.815	.795	4.144
Shared razor/toothbrush	0.66	1.162	.591	2.282
Multiple answers	0.68	1.129	.637	2.001
Knowledge about vaccines				
No	0.10	1.00		
Don‟t know	0.55	1.249	.602	2.589

Yes	0.06	.773	.590	1.013
Immunization status				
Non immunized	0.00	1.00		
Don't know/ remember	0.30	.716	.378	1.354
Immunized	<0.0001	.523	.400	.683

Table 3: Binary logistic regression analysis to identify risk factors for Hepatitis B infection

DISCUSSION

The study was conducted at Kaza, a sub division of the district, Lahaul & Spiti by the departments of Gastroenterology, Community Medicine and Microbiology, Indira Gandhi Medical College Shimla.

The study was planned owing to increasing number of lab reported cases of HBV hailing from this district from a tertiary care hospital of the state. Various cultural and behavioral factors were hypothesized to be associated with the infection among population.

The bivariate analysis revealed that knowledge about the infection, ways about prevention or transmission was not significantly associated with positivity. Insufficient public awareness of HBV and HCV is a huge barrier to appropriate diagnosis of infection. Also lack of testing tools and confidentiality of results in hard to reach population like these aggravates the problem.[7,8]

After subjecting the variables to the logistic regression modeling knowledge of source of infection, and immunization against HBV emerged as independent factors associated with HBsAg positive test after adjusting for confounders. Hence health education regarding mode of transmission and prevention is not only important for health care workers of high risk groups but also for general public. [9,10]

CONCLUSION

Present study concluded that knowledge of source of infection, and immunization against HBV emerged as independent factors associated with HBsAg positive test after adjusting for confounders. In order to reduce the risk of infection, immunisation of this high-risk group and public awareness are the most cost-effective elements.

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