IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 22, Issue 7 Ser.9 (July. 2023), PP 08-13
www.iosrjournals.org

Knowledge On Awareness Of Hepatitis B Virus Transmission And Prevention Among Family Members Of Chronic Asymptomatic HBV Infected In South India: An Update

Dr .Dhevahi Elumalei[3,1], Shiva Shailaa Kasinathan[3], Malavikka Rangappan[3], Dinakaran Nagendran[3], VenkateswaranA.R[4,3] Hemalatha .S[3], Shankar[3] Arulmozhi Chelvi .A [3.,2]., K.Maheswari [3, 2], Murali .R[3, 4] Revathy[3, 5]., Arvind Srinivasan1[3,1] Radha Bai Prabhu[3], Ganesha Muruga Perumal[3]., Kasinathan Balakrishnan[3,1],., MalathyA.R.[6,3]

Dept of Microbiology SMMCH & RI Chennai.[1], Dept of O&G SMMCH &RI[2],., MED Charitable Trust [3], Dept of Gastroenterology RGGGH chennai[4],., Dept of Gastroenterology Stanley Medical College Chennai[5] ., Dept of General Medicine-ESI, KKNagar Chennai[6]

Abstract :
Background: *Hepatitis B virus infection causes life-threatening liver disease with global health problem. Hepatitis B, a silent killer, making infected persons unaware of the infection due to a lack of symptoms, making it difficult to identify the disease, diagnosing it, and manage the infection at an earlier stage . Awareness and knowledge about Hepatitis B infection among the public and high-risk populations are important to decrease the transmission and eradication of the virus. The high prevalence of HBV infection is due to both horizontal and vertical modes of transmission. Household transmission of the hepatitis B virus is a major concern in endemic countries, including India. Probably due to the maintenance of the virus through the household contacts. Majority of the HBV carriers and the family members lack knowledge on Hepatitis B transmission, have misinformation on awareness this often leads to missed opportunities for diagnosis, prevention, and treatments.*
Aim: *The study was to evaluate knowledge on the awareness of HBV intrafamilial transmission and its prevention among the family members of chronic asymptomatic Hepatitis B (HBV) carriers in Tamil Nadu, South India.*
Methods: *A total of 2241 family members above 18 years of the indexed HBV patients formed the study subjects.*
Results*: The mean (SD) age of the study population was 41.19 (12.30) years. 46.5% were males, and 53.5% were females. 22.5% of the study population was illiterate.*
Conclusion*: The study identifies the lack of awareness of HBV transmission, prevention that may lead to new infections within the indexed family members, which is prevented by raising awareness of HBV transmission among them.*
Keywords*: Hepatitis B Virus, Intrafamilial, Awareness, Chronic*

Date of Submission: 11-07-2023 Date of Acceptance: 21-07-2023

I. Introduction:

Hepatitis B virus infection causes life-threatening liver diseas causing both acute and chronic infections, major global health problem. Hepatitis B a silent killer, making infected persons unaware of the infection and manage the infection at an earlier stage. Awareness and knowledge about Hepatitis B infection among the public and high-risk populations are important to decrease the transmission and eradication of the virus. In low and middle-income countries, the burden is greater, with 248 million of the estimated 292 million people affected residing in Asia, Africa, the Pacific, and Latin America. (Platt L et al., 2020)) .Hepatitis B poses unique challenge to elimination as a chronic disease. Affordability by the patient for management of the health impact varies according to the lifespan and mode of transmission of the virus to the patient, thus requiring ongoing monitoring throughout its course (Howell et.al 2021) . The hepatitis B virus (HBV) is found to survive outside the body for at least 7 days; during this time, as the incubation period of the HBV ranges from 30 to 180 days the virus may cause infection with a high-risk person living with indexed family or close contacts. Studies show that major transmission occurs for indexed family members in both vertical and horizontal ways, as HBV can be detected in

blood, serum, urine, saliva, nasopharyngeal secretions, tears, vaginal secretions, menstrual blood, and semen. Despite the vaccine available for Hepatitis B and an effective program for the global elimination of viral hepatitis, many at-risk individuals fail to be prevented. The household transmission of the hepatitis B virus is a major concern in India and endemic countries throughout the world. Knowledge and awareness of HBV among the high-risk population are needed as a basic key to eradication. The high prevalence of HBV infection is due to both horizontal and vertical modes of transmission within the household contacts of HBV carriers. WHO estimates viral hepatitis causes 1.4 million deaths annually 296 million people were living with chronic hepatitis B infections in 2019, with 1.5 million new infections each year particularly in LMICs (WHO 2021 WHO estimates viral hepatitis causes 1.4 million deaths annually 296 million people were living with chronic hepatitis B infections in 2019, with 1.5 million new infections each year particularly in LMICs (WHO 2021). Innovations accelerating awareness of Hepatitis B infection are an absolute need of the hour. Literature studies on awareness and knowledge of HBV transmission methods and prevention among the indexed family members reaching the underprivileged and lower socioeconomic population are sparse in South India. The present study is one of the first of its kind in South India to determine knowledge on awareness of HBV transmission and prevention among indexed household family members in Tamil Nadu, Chennai, South India.

Objective:

To evaluate the knowledge on awareness of Hepatitis B transmission and prevention of infection among family members and close contacts of patients living with chronic asymptomatic HBV in Tamil Nadu, South India.

II. **Methods:**

Subjects and Ethics Approval

The prospective study was done at the Department of Microbiology, Sri Muthukumaran Medical College Hospital & Research Institute Chennai (SMMCH&RI) for a period of two year, from November 2019 to November 2021. Ethical clearance was obtained at the Ethics Committee of SMMCH&RI. The EC No is –R.No: 82/IEC-SMMCHRI/approval of projects/Prop.no.03/14th IEC/2019/DTD:03.07.2019.

Study Subjects:

450 families of healthy HBsAg-positive asymptomatic carriers registered and guided by the MED charitable trust formed the study group. A total of 2241 family members of the indexed HBV patients formed the study subjects. From each indexed family, members above 18 years of age were enrolled in the survey, prior to the enrolment the selected household members were informed of the study aims. Once the participants agreed to participate in the project, face to face interview was conducted after obtaining their willingness in written consent form. A questionnaire was asked to be filled out, and for those needing help in filling was done by volunteers who could communicate and translate in preferred local language Tamil.

Statistical Data Analysis:

The data were analysed using RStudio Desktop Version 2022.07.0+548 for statistical analysis. Reference: RStudio Team (2022). RStudio: Integrated Development for R. RStudio, PBC, Boston, MA URL http://www.rstudio.com/.) Descriptive analysis was carried out by frequency and proportion for categorical variables. A continuous variable was presented as the mean (standard deviation). The Chi-square test was used to test the statistical significance of cross-tabulation between categorical variables. A multivariable logistic regression analysis was performed to assess the factors associated with the outcome. Obtaining a P value of 0.05 was considered statistically significant.

III. Results:

Table 1:

Table Showing the Socio-Demographic Characteristics of the Study Population (N = 2241)

Variables		Frequency	Percentage
Age group	18 to 30 years	502	22.4%
	31 to 50 years	1213	54.1%
	>50 years	526	23.5%
Gender	Male	1043	46.5%
	Female	1198	53.5%
Relationship	Spouse	381	17.0%
	Parents	661	29.5%
	Children	351	15.7%
	Siblings	619	27.6%
	In laws	229	10.2%
Education	Illiterate	505	22.5%
	School	1087	48.5%
	Graduate	557	24.9%
	PG	92	4.1%

A total of 2241 participants, ranging in age from 18 to 75 years were enrolled. The mean (SD) age of the study population was 41.19 (12.30) years, among which 22.4% were between 18 and 30 years, 54.1% were between 31 and 50 years, and 23.5% were >50 years. 46.5% were males, and 53.5% were females. 17.0% were spouses of the patients, 29.5% were parents, 15.7% were children, 27.6% were siblings, and 10.2% were in-laws. 22.5% of the study population were illiterate, 48.5% went to school, 24.9% were graduates, and 4.1% were post-graduates.

Table-2:

Table showing the knowledge on awareness of transmission and preventive measures of HBV among the indexed HB family members

Questions for analysis on awareness & transmission of HBV infection with yes or No options.	Male (n=1043) (yes)	Female (n=1198) (yes)	P value
Have you heard about hepatitis B disease or infection?	985(94.4)	1008(84.1)	<0.001
Did you know that hepatitis B infection causes or manifests as jaundice?	958(91.8)	1026(85.6)	<0.001
Are you aware that it is a virus?	45(4.3)	21(1.7)	<0.001
Do you have any history of hepatitis B infection or unidentified jaundice in the past years?	876(83.9)	985(82.2)	0.266
i) Less than 10 years of age	549(52.6)	478(39.8)	<0.001
ii) Above 10 years of age	54(5.1)	129(10.76)	<0.001
Do you know that you are living with an HBV-positive family member in close contact?	876(83.9)	985(82.2)	0.266
Do you know that if infected with HBV, people become positive for HBV throughout their lives?	578(55.4)	909(75.8)	<0.001
Do you know that HBV is transmitted through contaminated or infected blood transfusions?	634(60.7)	358(29.8)	<0.001
Do you know HBV can be transmitted through tattoos or acupuncture needles shared in the family of an indexed person?	527(50.5)	235(19.6)	<0.001
Do you know that HBV can be transmitted through Blood/ Needle?	879(84.2)	475(39.6)	<0.001
Do you know that multiple sexual partners are at risk of infection?	369(35.3)	372(31.0)	0.03
Do you know that babies born to HBV-positive mothers or fathers are at high risk?	320(30.6)	658(54.9)	<0.001
Do you know you are living with an HBV-positive family member in close contact?	704(67.4)	458(38.2)	<0.001
Do you believe that sharing utensils can cause infections?	254(24.4)	368(30.7)	0.001

Do you believe that sharing food can cause HBV infection?	129(12.4)	238(19.9)	<0.001
Do you know sharing tooth brush can cause infection?	17(1.6)	0(0.0)	0.001
Sharing clothes can transmit infection?	41(3.9)	50(4.1)	0.772
Do you know staying in a crowded house can transmit infections?	37(3.5)	38(3.1)	0.622
Sharing the sharps for shaving or grooming with the same equipment's can cause infection?	987(94.6)	687(57.3)	<0.001
Do you recommend HB vaccination among family members?	987(94.6)	687(57.3)	<0.001

Table III
Table showing knowledge on the HBV vaccine and its importance for protection

Questions based on the sequelae of HBV infection knowledge	**Male (n=1043)**	**Female (n=1198)**	**P value**
Are you aware that Liver cancer (HCC) can be caused by HBV.	27(2.5)	4(0.3)	<0.001
Are you aware that liver damage can be caused by HBV?	166(15.9)	417(34.8)	<0.001
Are you aware that HBV may lead to sudden death due to fulminant hepatic failure (FHF)?	577(55.3)	491(40.9)	<0.001

Table IV
The Table Shows The Awareness And Knowledge Of The Sequelae Of HBV Infections Among Family Members.

Questions based to know the knowledge of HBV vaccine and its importance with yes or No options.	**Male (n=1043) (yes)**	**Female n=(1198) (yes)**	P - value
Are you aware of the need to take precautionary measures if you have been exposed to an infected person's blood or body fluids?	954(88.5)	543(45.3)	<0.001
Do you recommend HB vaccination among the family members?	987(94.6)	687(57.3)	<0.001
Are you aware of the doses of HBV vaccination?	432(41.4)	216(18.0)	<0.001
Do you think if you are not vaccinated for HBV, you need to check for HBV?	294(28.1)	174(14.5)	<0.001
Have you been screened for HBV infection in your life so far?	57(5.1)	130(10.8)	<0.001
Have you taken only one dose of HBV vaccine?	329(31.5)	296(24.7)	<0.001
Have you taken only two dose of HBV vaccine?	139(13.3)	65(5.4)	<0.001
Have you completed the HBV vaccination for three dose schedules?	54(5.1)	21(1.7)	<0.001
Do you not remember the dose of the HBV vaccine taken?	491(47)	956(79.7)	<0.001
If you are vaccinated, are you aware of the protective levels of anti-HBs?	18(1.7)	14(1.1)	0.268

The participants were not aware of the outcome of HBV as cirrhosis or liver cancer, but they knew that it caused liver damage. Only 50 percent of the population, around 30 years of age were aware that HBV would lead to sudden death due to fulminant hepatic failure.

IV. Discussion:

Chronically infected HBV patients are always identified in the last stages of cirrhosis or HCC, probably due to low knowledge of infection outcomes. The results focus on the awareness and knowledge of HBV transmission and prevention among family members of asymptomatically infected individuals in the south Indian population. Indexed family members have the highest chance of acquiring the virus through both vertical and horizontal exposure. The results of the study's analysis on knowledge and awareness of HBV transmission and prevention differ depending on educational, cultural, and socio-economic conditions. There was a lack of awareness of hepatitis B, which added to the stigma against persons living with hepatitis B, and contributed to the avoidance of diagnosis, treatment, and management of follow-up in our study population. Though combined efforts are internationally included in public health agendas, there is still difficulty in screening and identifying chronic viral hepatitis B infection in this high-risk population. The results show that only 1.7% of females and 4.3% of males (p 0.001) were aware that hepatitis B is the causative agent for asymptomatic infection and is a virus that can be transmitted easily, whereas the majority of the participants were unaware it is a virus. Only 50%

of the male participants were aware that shaving and grooming using the same equipment transmitted the infection, compared to less than 2% of the female participants. 60.7% of the male and 29.8% of the female participants were aware of the risk of transmission of viruses through infected blood, tattoos, needle sharing, or sexual modes of transmission. The majority of study participants had little knowledge about the transmission of viruses through sharing toothbrushes, saliva, sexual activities, or crowded living spaces. The study by Mohamed et al. (2012) similarly shows knowledge and awareness of HBV transmission among chronically infected people to be low; the literate participants' awareness of HBV infection is significantly higher than that of the illiterates in the study; only 14.7% are aware of transmission through body piercing, tattooing, and sharing utensils (around 6.8%). Azami et al.'s (2016) study shows the knowledge analysed between the males and females in the study group varied significantly according to the age group, and the spouses of infected people who were educated and literate were found to have a greater awareness of HBV transmission. Abbasi et al.'s (2014) studies found that Pakistani barbers had low awareness of HBV infection, probably due to a lack of education, which leads to a lack of knowledge and awareness of HBV.

Spearman et al. (2016) studies show that greater than 90% of the infected persons are unaware of their hepatitis B infection, remain undiagnosed and unmanaged, and have a risk of developing cirrhosis and HCC. Similar to our results, only 55.3% of the males and less than 50% of the females were aware of the sequelae of HBV infection, which may lead to sudden death due to cirrhosis, FHF, or HCC. Findings from our study further add new information that has to be brought to light. We could notice female partners of the HBV-positive participants were forced into sexual activity in spite of their unwillingness, which probably shows a lack of knowledge on awareness of HBV transmission through sexual transmission among the male participants. The other interesting thing to notice was that participants who belonged to the age group between 40 and 60 years did not insist on prevention by HBV vaccination but were found to prefer and accept traditional ways of prevention. Proving the lack of scientific knowledge of prevention methods for HBV among the study participant.

Hepatitis B infection leads to chronicity, the United Nations Sustainable Development Goals aim to eliminate viral hepatitis as a public health threat by 2030 (2016–2021). The recognition of hepatitis B infection increases, prevention, diagnosis, and treatment are being upgraded, as mentioned by Standway et al. (2016). HBV eradication can improve sensitization for hepatitis prevention, screening, and vaccination. Despite the vaccine availability for Hepatitis B and the effective program for the global elimination of viral hepatitis, infections continue to be reported, and at-risk individuals fail to be prevented in most circumstances.

This is a pilot study that demonstrates the need for sustained and coordinated efforts to be implemented among the high-risk population, focusing on the indexed family members. The diagnosis, prevention, and treatment require a regular international standard protocol to approach both the virus and the host factors among the infected people and the high-risk population in the lower socioeconomic groups. The need for creating awareness among family members living with or in close contact with HBV-infected persons will be more beneficial since they lack knowledge about lifelong HBV infection.

Strengths &Limitations of the Study :

The strength of the present study was its large sample size of high-risk indexed family members for statistical evaluation. The new concept in the study was to do an important awareness study in a tertiary care hospital with the support of a not-for-profit organization that takes care of chronically sick and asymptomatic HBV/HCV positive patients along with their families for the guidance of screening, follow-up, and treatment from a lower socioeconomic population. The limitation of the study to be considered is the time of enrolment of the study participants varied based on the follow-up for guidance and treatment for the infected persons thereby delay in the time period for filling out the questionnaire, which might vary in each family.

V. Conclusion:

Viral hepatitis has seen significant advances over the past decades, now moving towards a global elimination era. Hepatitis B poses many challenges to elimination; the ignorance of transmission by chronic asymptomatic HBV infection is the key to the maintenance of the virus among the high-risk families. The study shows the importance of evaluating the knowledge and awareness of the transmission of HBV among high-risk family members and the need of the hour for awareness camps on HBV prevention and transmission within household contact among the high-risk population in Chennai, South India, and Tamil Nadu.

References:

[1]. Abbasi IN, Fatmi Z, Kadir MM, Sathiakumar N. Prevalence Of Hepatitis B Virus Infection Among Barbers And Their Knowledge, Attitude And Practices In The District Of Sukkur, Sindh. International Journal Of Occupational Medicine And Environmental Health. 2014 Oct;27:757-65.

[2]. Azami M, Khataee M, Beigom Bigdeli Shamloo M, Abbasalizadeh F , Rahmati S, Abbasalizadeh S. Prevalence And Risk Factors Of Hepatitis B Infection In Pregnant Women Of Iran: A Systematic Review And Meta-Analysis. Iran J Obstetr Gynecol Infertil. 2016;19(18): 17–30. Doi: 10.22038/Ijogi.2016.7557. 25216816]

[3]. Chen CJ. Global Elimination Of Viral Hepatitis And Hepatocellular Carcinoma: Opportunities And Challenges. Gut. 2018 Apr 1;67(4):595-8.
[4]. Eni AO, Soluade MG, Oshamika OO, Efekemo OP, Igwe TT, Onile-Ere OA. Knowledge And Awareness Of Hepatitis B Virus Infection In Nigeria. Annals Of Global Health. 2019;85(1).
[5]. Ghadir MR, Belbasi M, Heidari A, Jandagh M, Ahmadi I, Habibinejad H, Et Al. Distribution And Risk Factors Of Hepatitis B Virus Infection In The General Population Of Central Iran. Hepat Mon. 2012;12(2):112– 7. Doi: 10.5812/Hepatmon.822. [Pubmed: 22509188]. [Pubmed Central:
[6]. Howell J, Pedrana A, Schroeder SE, Scott N, Aufegger L, Atun R, Baptista-Leite R, Hirnschall G, Hutchinson SJ, Lazarus JV, Olufunmilayo L. A Global Investment Framework For The Elimination Of Hepatitis B. Journal Of Hepatology. 2021 Mar 1;74(3):535-49.
[7]. Joukar F, Mansour-Ghanaei F, Naghipour MR, Hassanipour S. Knowledge, Distribution And Risk Factors Of Hepatitis B And C Infection In High-Risk Groups In Guilan Province, Iran. Hepatitis Monthly. 2018 Aug 28;18(8).
[8]. Kalem A, Guner R, Eser F, Hasanoglu I, YILMAZ G, Tasyaran M. Evaluation Of Knowledge Levels, Attitudes And Behaviors Among The Relatives Of Patients Infected With Hepatitis B. Viral Hepatit Dergisi-Viral Hepatitis Journal. 2021;27(2).
[9]. Karoney MJ, Some FF, Dip HI, Dip EW, Murgor LK. Burden Of Hepatitis B Infection Among High Risk Populations In Western Kenya. J Infect Dis Epidemiol. 2020;6:132.
[10]. Kheir OO, Freeland C, Abdo AE, Yousif ME, Altayeb EO, Mekonnen HD. Assessment Of Hepatitis B Knowledge And Awareness Among The Sudanese Population In Khartoum State. The Pan African Medical Journal. 2022;41.
[11]. Kim HS, Yang JD, El-Serag HB, Kanwal F. Awareness Of Chronic Viral Hepatitis In The United States: An Update From The National Health And Nutrition Examination Survey. Journal Of Viral Hepatitis. 2019 May;26(5):596-602.
[12]. Krist AH, Davidson KW, Mangione CM, Barry MJ, Cabana M, Caughey AB, Donahue K, Doubeni CA, Epling JW, Kubik M, Ogedegbe G. Screening For Hepatitis B Virus Infection In Adolescents And Adults: US Preventive Services Task Force Recommendation Statement. Jama. 2020 Dec 15;324(23):2415-22.
[13]. Ma, G.X., Zhu, L., Lu, W., Handorf, E., Tan, Y., Yeh, M.C., Johnson, C., Guerrier, G. And Nguyen, M.T., 2022, October. Improving Long-Term Adherence To Monitoring/Treatment In Underserved Asian Americans With Chronic Hepatitis B (CHB) Through A Multicomponent Culturally Tailored Intervention: A Randomized Controlled Trial. In Healthcare (Vol. 10, No. 10, P. 1944). MDPI.
[14]. Milas J, Ropac D, Mulić R, Milas V, Valek I, Zorić I, Kožul K. Hepatitis B In The Family. European Journal Of Epidemiology. 2000 Mar 1:203-8.
[15]. Mohammed HI, Pennap GR, Oti VB, Adoga MP. Markers Of Hepatitis B Virus Infection In A Subset Of Young People In Central Nigeria. Scientific African. 2019 Sep 1;5:E00121.
[16]. Platt L, French CE, Mcgowan CR, Sabin K, Gower E, Trickey A, Mcdonald B, Ong J, Stone J, Easterbrook P, Vickerman P. Prevalence And Burden Of HBV Co-Infection Among People Living With HIV: A Global Systematic Review And Meta-Analysis. Journal Of Viral Hepatitis. 2020 Mar;27(3):294-315.
[17]. Prevalence Of Hepatitis B Virus Infection Among Barbers And Their Knowledge, Attitude And Practices In The District Of Sukkur, Sindh. Int J Occup Med Environ Health. 2014;27(5):757–65. Doi: 10.2478/S13382-014-0299-Z. [Pubmed:
[18]. Spearman CW, Afihene M, Ally R, Apica B, Awuku Y, Cunha L, Dusheiko G, Gogela N, Kassianides C, Kew M, Lam P. Hepatitis B In Sub-Saharan Africa: Strategies To Achieve The 2030 Elimination Targets. The Lancet Gastroenterology & Hepatology. 2017 Dec 1;2(12):900-9.
[19]. World Health Organisation. Hepatitis B Fact Sheet 2021 [Updated 27 July 2021]. Available Online: Https://Www.Who.Int/En/ News-Room/Fact-Sheets/Detail/Hepatitis-B (Accessed On 16 September 2021).
[20]. World Health Organization. Global Hepatitis Report, 2017. Geneva, Switzerland: World Health Organization; 2017.
[21]. Wu H, Yim C, Chan A, Ho M, Heathcote J. Sociocultural Factors That Potentially Affect The Institution Of Prevention And Treatment Strategies For Hepatitis B In Chinese Canadians. Canadian Journal Of Gastroenterology. 2009 Jan 1;23(1):31-6.
[22]. Zafrin N, Sarkar MS, Rahman MM, Salma U, Mahbub T, Azhar MA. Hepatitis B Virus Infection: Knowledge And Awareness Among The Patients Admitted In A Tertiary Care Hospital In Bangladesh. Viral Hepatit Dergisis. 2019 Apr 1;25(1):6.
[23]. Zhao X, Shi X, Lv M, Yuan B, Wu J. Prevalence And Factors Associated With Hepatitis B Virus Infection Among Household Members: A Cross-Sectional Study In Beijing. Human Vaccines & Immunotherapeutics. 2021 Jun 3;17(6):1818-24.