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Original Article

Could the System Side Knowledge towards Hepatitis B be Translated to the Demand Side: A Cross-Sectional Evaluation in Sabarkantha, Gujarat

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ABSTRACT

Introduction: Hepatitis B is the world's prevalent blood-borne viral infection, specifically it is prevalent with its two flip sides of the coin such as in health care workers and pregnant women. Since health care workers have a vital role in providing health care, thus are more vulnerable to occupational risk. On the flip side, the most common method of transmission of HBV around the world is from mother to infant. Hence, both population knowledge and practice should be at an optimal level. The purpose of this study was to assess the influence of the system side knowledge and practice towards Hepatitis B be on the demand-side population in Sabarkantha, Gujarat. **Materials and Methods:** This cross-sectional study was carried out in the Sabarkantha district of Gujarat. Data were obtained by using a piloted structured questionnaire in vernacular language from the supply-side (health workers) and demand-side (antenatal/postnatal mothers) to assess the Knowledge of Hepatitis B at a point in time. **Results:** Study found 6.14 (± 2.89) and 1.69 (± 1.7) mean knowledge score (total score=14) towards the Hepatitis B disease, in the supply-side population and in the demand-side population respectively. The difference was statistically significant. In both populations, the most usual knowledge for symptoms and transmission of hepatitis reported were for Jaundice and hepatitis vaccine. Though the 60.9 % ANC/PNC revealed ASHA, as the most common source of information, the influence of ASHA's knowledge on ANC/PNC was not up to the mark. Furthermore, the study noticed ambiguity between Hepatitis A, E and Hepatitis B knowledge in both populations. **Conclusion:** There is need of frequent context tailored training of Hepatitis B amongst supply-side workers.
Key words: HBsAg, Hepatitis B, ASHA, ANC/PNC, KAP.

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INTRODUCTION

Hepatitis B virus (HBV) is a serious global public health problem, was the 7th leading cause of global mortality in 2015, exceed the number of deaths caused by HIV, tuberculosis, and malaria infection.[1,2] Hepatitis B infection is reported worldwide but, in some regions, it is endemic, especially in Asia and Africa. The prevalence of HBV infection in India is estimated to be between 3 to 4.2%, in the general population; In pregnant women, it is 2 to 7.7% which is very high in comparison to world prevalence amongst pregnant women (1.5 to 2.5%).[3,4] The government of India has set a goal for the prevention and control of viral hepatitis to achieve Sustainable Development Goal (SDG) 3.3 which aims to end viral Hepatitis By 2030,[5] will require a significant scale-up of prevention and screening efforts in India with a focus on efforts on Awareness regarding Hepatitis B prevention and mode of transmission among the high-risk populations.

HBV is prevalent with its two flip sides of the coin such as in health care workers and pregnant women[6–8] Among health care workers Hepatitis B prevalence is two to four folds higher than that of the general population.[9] Besides that, Nurses and midwives have a vital role in the providing of treatment, education about the nature of the disease, diagnosis, prevention, and timely administration of immunoglobulins and health-related behaviours are affected by different aspects of knowledge, attitude, and practices (KAP). Moreover, evidence shows that the most common method of transmission of HBV around the world is from mother to infant, about one in 25 children born in India develop chronic Hepatitis B infection. The likelihood of developing chronic HBV infection is inversely proportional to the age at the time of HBV exposure.[10–12] Routine prenatal screening, vaccination to all pregnant women and children, antiviral therapy in mothers with high viral load, perinatal interventions (Hepatitis B immunoglobulin and HBV vaccination) for the new-borns of infected mothers can prevent a significant number of new infections and the subsequent development of chronic HBV infection. It is highly cost-effective as well.[2–5]

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Therefore, to implement an effective management plan, nurses and midwives along with community people should have an optimal basic understanding of the disease and knowledge of safe practices.[13] ASHA is the first helping hands in the community and an essential link between the community and the health care provider. The study reveals the success of many public healthcare programmes in India depends on how well is the ASHAs knowledge. Research also shows that high client satisfaction and consistent use of health care service are hinged on the trained healthcare staff[14–16] Moreover, awareness for any programme or any preventive measure should include participation and buy-in from community members too[17,18] The very scattered study found to evaluate the KAP and influence of system side knowledge on demand-side population. This study aimed to take a snapshot of these two important sub-populations i.e. health care workers and ANC/PNC women at the same time.

MATERIALS AND METHODS

Study design and Setting

This study adopted a cross-sectional design. It was carried out during May-December 2019 in health institution and community to assess the knowledge and attitude towards Hepatitis B of system side and demand side respectively in the Sabarkantha district of Gujarat.

Study Participants

This study had recruited 60 ASHA from in health facilities and 300 ANC/PNC women of corresponding ASHA from the community to assess the knowledge in supply-side and demand side as well at a point of time. Out of 60 ASHA and 300 ANC/PNC, 2 ASHA and 9 ANC/PNC were not available during the data collection periods. So final participants of the study were 58 ASHA and 281 ANC/PNC.

Method of Sample size selection

Both ASHA from the health system and ANC/PNC from the community were selected by cluster randomization. A total of 30 clusters were selected from the selected Taluka. For the health system survey (supply side) 2 ASHA from each cluster i.e. a total of 60 ASHA and for community survey (demand-side) 5 ANC/PNC which was registered and available under each concerned ASHA, i.e. total of 300 ANC/PNC had been selected from the community of selected block. Out of 60 selected ASHA and 300 ANC/PNC, 2 ASHA and 9 ANC/PNC could not participate in the study due to their unavailability during the data collection period.

Data collection and outcome measures

Data was collected by using a piloted structured questionnaire in vernacular language. The outcome was measured by the knowledge and attitude in both supply and demand side populations at the same point in time. This was further measured coefficient (r^2) to assess the influence of supply-side knowledge on demand-side populations.

Statistical analyses

Data were entered in MS Excel and analysed in SPSS version 20. Data were analysed in terms of mean knowledge score, the frequency for each variable and coefficient. The mean knowledge score for both populations was calculated by counted all correct response as one of each respondent and sum up all correct answer of each respondent. Finally mean score was calculated by using the independent sample "*t*" test.

RESULTS

The result is presented in three items

1. Findings from the supply side evaluation (ASHAs)
2. Findings from the demand side evaluation (ANC/PNC mothers)
3. Influence of supply-side knowledge on demand side participants

Findings from the supply side evaluation (ASHAs)

Table 1 describes the mean age of the study supply-side population (ASHA) was 34 (± 7.81) years. The mean years of experience were 7 (± 3.8) years. The majority of all selected ASHA (60%) were completed their education up to secondary school. Half of the participants (55.2%) were taken Hepatitis B vaccination and among them, only 10.3 % of participants were taken all three doses.

Table 2 describes level of Awareness about Hepatitis B amongst the selected ASHA. It was revealed that 96.6 % of participants were heard about Hepatitis B. At the same time, it was also found that approximately half of the participants knew about it is an infectious disease and 0nly small proportion of participants (20.7%) knew that it effects on liver. The study reported on an average participant could answer six questions out of a total of fourteen questions for Hepatitis B. The questions were about the Method of transmission (5), symptoms (4), Prevention method (4) and child vaccination dose for Hepatitis B (1).

In the method of Transmission and prevention method, it was found that participants had more knowledge of blood and blood-related products in comparison to unprotected sex. The majority of the participants reported vaccination (79.3%) as a prevention method of Hepatitis B. The most common awareness for the symptoms of Hepatitis B found for yellow colouration of the skin, eye (65.5%), and then for fever (53.4%). The study reported a good amount of responses for contaminated water and food as a transmission of Hepatitis B and same for prevention method, which shows that participants had confusion between hepatitis A, E and Hepatitis B

The study reported 79.3 % and 24.1 % awareness for birth dose and correct schedule for child vaccination of Hepatitis B respectively. Practically 98.3 % ASHA counsel for institutional delivery and child immunization to ANC.

Table 3 describes 281 ANC/PNC were enrolled in this study to assess the demand side KAP regarding Hepatitis B, among that 51.2 % were ANC while 48.8 % were PNC. Their mean age was 25 (± 3.54) years. The majority of the participants were from SC/ST/OBC whereas only 10.3% from the open category. The majority of the participants (54.4%) were completed education up to secondary school. 87.9% of ANC/PNC were Housewife and 57.7 % had BPL card

Regarding reproductive history, 89.3 % reported for live births, 96.8 for private or Government institutional delivery and 80 % were delivered normally. Among selected participants, 91.08 % of ANC/PNC had Mamata card and found a record for the Hepatitis B status, among them 83.6 % were nonreactive while and 0.7% were reactive. Among all enrolled participants 13.5 % knew that they had taken one or two-dose of Hepatitis B vaccination.

Table 1: Sociodemographic profile of the supply-side Participants (ASHA, *n*=58).

Variable	Type	Frequency (n)
Age	Mean age of participants	34 ± 7.81
Experience	Mean years of Experience	7 ± 3.8
Education	Secondary	35 (60.3)
	Higher Secondary	18 (31)
	Graduate	5 (8.6)
Taken Hepatitis B vaccine	Yes	32 (55.2)
Complete vaccination	Three doses	6 (10.3)

Table 2: Awareness about Hepatitis B – Supply-side (ASHA, *n*=58).

Variable	Type of Variable	Frequency (n=58) (%)
Mean score of knowledge	Hepatitis B disease in general	6.14 ± 2.89
	Hep B disease in general plus hep B program	9.03 ± 3.07
Heard about Hepatitis B	Yes	56 (96.6)
Awareness about type of disease	Infectious disease	33 (56.9)
Awareness about affected organ	Liver	12 (20.7)
Knowledge regarding Transmission of Hep B	Blood-related products	25 (43.1)
	Infected Needle	23 (39.7)
	Unprotected sex	13 (22.4)
	Mother to child	9 (15.5)
	Skin to skin(biting)	3 (5.2)
Knowledge Regarding Symptoms of Hep B	Yellow colour skin, urine, eyes	38 (65.5)
	Loss of appetite	5 (8.6)
	Fever	31 (53.4)
	Nausea/vomiting	25 (43.1)
Knowledge Prevention of Hep B	Vaccination	46 (79.3)
	Proper disposed of syringe/needle	3 (5.2)
	Avoid Injection	4 (6.9)
	Avoid multiple sex	5 (8.6)
awareness about vaccination	Children dose	25 (43.1)
Awareness about birth dose	Immediate after birth	46 (79.3)
Correct schedule	6th, 10th and 14th week	14 (24.1)
Awareness about screening test	Yes	50 (86.2)
Ever received training of HB	Yes	40 (69.0)

Table 3: Socio-Demographic Profile of Demand Side population (ANC/PNC, *n*=281).

Variable	Type	Frequency (*n*=281)
Age	Mean Age of participants	24.63 ± 3.539
Current statues of Mother	ANC	144 (51.2)
	PNC	137 (48.8)
Reproductive history	First ANC	56 (19.9)
	Live births	201 (89.3)
	Institutional delivery	218 (96.8)
	Normal delivery	180 (80.0)
Caste	SC	47 (16.7)
	ST	57 (20.3)
	OBC	148 (52.7)
Education	Open	29 (10.3)
	Illiterate	42 (14.9)
	Primary/can read and write	33 (11.8)
	Secondary	153 (54.4)
	Higher Secondary	38 (13.5)
	Diploma/Graduate	15 (5.3)
Type of Ration Card	APL	107 (38.1)
	BPL	162 (57.7)
	Antyodaya	2 (0.7)
	Any other card	10 (3.6)
Occupation	Daily Wages	23 (8.2)
	Government Job	1 (0.4)
	Housewife	247
	Student/self employed	10

Table 4 describes level of Awareness about Hepatitis B amongst the selected ANC/PNC. Study found on an average knowledge for 1 to 2 questions out of total 14 questions, which includes ever heard about this disease, method of transmission, symptoms, prevention methods and knowledge about child vaccination. The on-demand side also studies documented most common awareness for jaundice (yellow colouration of skin and eye) with the term of Hepatitis B and vaccination as a prevention method. The study documented contamination food-related awareness in symptoms, transmission and prevention, which shows there was confusion between Hepatitis A, E and Hepatitis B and Hepatitis E. knowledge score was calculated by counting all correct responses of a selected question of each participant. By using of independent "t" test mean knowledge score was calculated.

The study documented $r^2 = 0.005$, which shows there was the influence of supply-side (ASHA) knowledge on demand-side population. However, it was not up to the mark.

DISCUSSION

The findings of the present study revealed poor knowledge regarding some important aspects of Hepatitis B infection which was 56.9 % for the type of infectious disease, 20.7% for the affected organ, and 39.7 % use of an infected needle on the system side, respectively. This is a matter of concern as the role of health education is to not only educate the general and high-risk population but also to prevent themselves from the spread of disease.[19,20] In developing regions Hepatitis B prevalence and carrier state-observed higher than that of the general population, almost 40 to 65% of Hepatitis B virus infections are due to percutaneous occupational exposure and therefore, an awareness of various routes of transmission, prevention by vaccination and knowledge of safe practices is very essential for healthcare worker[9,13,21] The study found 55.2% uptake of vaccine amongst healthcare workers, among them only 10.3 % had taken complete three doses. This study reported a couple of Hepatitis B vaccination camps in selected study block for healthcare workers including grassroots healthcare workers. Regarding knowledge of Hepatitis Virus infection, it was observed that vaccination was the commonest response in both groups for prevention. It was also observed that response for contamination mode of transmission was also noted more than expected number and according to those symptoms of jaundice were the first answer when asked them for symptoms of Hepatitis B. it showed that, still the differential-difference is not seen for hepatitis A, E with Hepatitis B across the health system actors as well as among the community population. It was more in the community population; they could relate hepatitis with jaundice only irrespective of type.

Some of the literature cites that vertical transmission is the most common mode of HBV transmission worldwide with the risk of maternal complication, despite this it is extremely neglected in India[10,22] Our

Table 4: Knowledge of Demand-side population (ANC/PNC, *n*=281).

Variable	Type of Variable	Frequency *n* =281 (%)
Mean Knowledge	Average mean score	1.69 ± 1.7
General Knowledge about Hep b	Heard about Hepatitis B	110 (39.1%)
	ASHA as a Source of information	86 (30.6)
	Other source like TV, newspaper, posters	24 (8.5)
Knowledge regarding Transmission of Hep B	Blood related products	6 (2.1)
	Infected Needle	5 (1.8)
	Unprotected sex	2 (0.7)
	Mother to child	5 (1.8)
	Skin to skin(biting)	0 (0.0)
Knowledge Regarding Symptoms of Hep B	Yellow colour skin, urine, eyes	59 (21.0)
	Loss of appetite	5 (1.8)
	Fever	38 (13.5)
	Nausea/vomiting	18 (6.4)
Knowledge Prevention of Hep B	Vaccination	33 (11.7)
	Proper disposed of syringe/ needle	2 (0.7)
	Avoid Injection	0 (0.0)
	Avoid multiple sex	0 (0.0)
Knowledge about child vaccination	Yes	192 (68.3)

study revealed poor knowledge regarding vertical mode of transmission in antenatal/postanal mothers which was 1.8 % in a community in the mentioned study, similar poor awareness found in several studies.[17] We observed that HBsAg reactive mothers knew about their status even though, had not enough knowledge regarding Hepatitis B, they just knew regarding necessary precaution for health facility like increase expense of delivery and risk of transmission to their partners only. They had no knowledge regarding what precaution they should follow to prevent further transmission.

The study documented a weaker influence of supply-side knowledge on the end-user level. We could find the studies regarding the influence of supply-side knowledge on the coverage of service by end level user and influence on work performance of various training for supply-side and contextual factors influence CHW performance but couldn't find much about the direct influence on knowledge of end level users from supply-side knowledge.

Based on the findings from this study which is also supported by several pieces of literature,[3,10,23,24] it can be stated that it is necessary to encourage awareness campaigns, health education, proper screening of all pregnant women for HbsAg irrespective of risk factors and intensification of existing childhood immunization.

CONCLUSION

This study documented poor knowledge in both supply and demand side as well towards Hepatitis B. There is an urgent need to draw attention to the level of awareness about HBV infection, implementation of National Viral Hepatitis control program (NVHCP) activities on the ground level, and required resources to develop area context intervention for HBV prevention and address barriers for ground-level workers. It can be stated that frequent training and monitoring of healthcare workers and the community may improve in knowledge, attitude, and preventive practices, which can change Hepatitis B outcomes.

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Limitation of the study

The study documented the knowledge parameter for both selected populations but could not be addressed their challenges in detail, especially supply-side participants.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATIONS

ASHA: Accredited Social Health Activist; **HBV:** Hepatitis B Virus; **ANC:** Antenatal Care; **PNC:** Postnatal Care; **KAP:** Knowledge, Attitudes and practice.

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