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Interventional Knowledge, Attitude and Practice Study Regarding Hepatitis B Virus Infection and its Vaccination Using Educational Video among Health Care Workers

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ABSTRACT

Introduction: Hepatitis B infection is a global problem with >350 million carriers in the world. Among health care workers (HCW) prevalence is four folds higher. Objective of the study was to assess the Knowledge, Attitude and Practice (KAP) towards hepatitis B infection and vaccination among HCWs and to assess the impact of educational video on their knowledge and attitude.

Methods: Prospective interventional KAP study was done at a tertiary care hospital using questionnaire survey regarding hepatitis B and its vaccination among 75 participants. A short educational video was shown to them, followed by questionnaire survey of knowledge ant attitude of all the participants.

Results: HCW have poor KAP about some important aspects of hepatitis B and its vaccination. Pre -video KAP mean scores of doctors were highest, followed by Lab. technicians and nurses. Improvement in knowledge and attitude among all three types of HCW were extremely statistically significant (P value < 0.0001, paired t-test) after educational video intervention.

Conclusions: Knowledge and attitude scores were increased after showing them educational video, which shows that training at regular intervals is essential for health care workers.

Key-words: KAP study, Hepatitis B, Hepatitis B Vaccine, Health care workers, Health education video

INTRODUCTION

Hepatitis B infection is one of the major public health problems globally and is the tenth leading cause of death.[1,2] In India, the prevalence of hepatitis B among the general population ranges from 2 to 8%, which places India in an intermediate endemicity zone. India with 40 million cases, is also the second largest global pool of chronic hep B infections.[3]

Hepatitis B is an important occupational hazard for healthcare workers. [4] The risk of infection among medical doctors is two to four-times greater than that of general adult population. [5] With the increasing number of invasive diagnostic and therapeutic procedures, there is an increasing risk of infection to these vulnerable healthcare workers.[6] While earlier studies had shown a high prevalence of HBsAg positivity in this health workers (2.21–10%), recent studies have shown a relatively low prevalence (0.4–1.4%).[7-12]

Enhancing the knowledge about hepatitis B and crafting prevention practice are the major strategies to the prevention of disease to a great extent.[13] Knowledge and practices of these medical doctors play a key role in prevention of spread of infection; however, many health care providers are unable to recognize access and manage hepatitis B from other forms of hepatitis.[14] Occupational exposure among health care workers (HCWs), through blood products, contamination during medical procedures, unprotected sexual contact, perinatal transmission, intravenous drug use are various modes of transmission for hepatitis B virus (HBV).[15,16]

Hence, present study was carried out with objective to assess the Knowledge, Attitude and Practice (KAP) towards hepatitis B infection and vaccination among health care workers, to provide them knowledge by an educational video and assess video's impact on their knowledge and attitude.

SUBJECTS AND METHODS

A prospective interventional KAP study regarding hepatitis B virus infection and its vaccination was done among HCW at tertiary care hospital in Ahmedabad from March 2018 to April 2018, after permission from Institutional Review Board.

Total of 75 HCWs voluntarily participated in the study. A written informed consent was obtained from each participant prior to study. Three groups of HCW were included in the study. Group A: Resident Doctors (n=25), Group B: Laboratory technicians (n=25) and Group C: Nurses (n=25).

The tool used for pre intervention data collection was a structured questionnaire contained 30 questions, 10 each for Knowledge, attitude and practice regarding hepatitis B and its vaccination.

An intervention in form of short educational video prepared by investigators of the study regarding hepatitis B and its vaccination was shown to all the participants. Post intervention data collection was done using questionnaire containing 20 questions, 10 each for knowledge and attitude regarding hepatitis B and its vaccination.

Knowledge based questions were assessed by giving score 1 to correct answer and 0 to the incorrect answer. A score of 1 was given to positive while 0 was given to negative attitudes. For practice questions, score of 1 was given to correct practice while 0 was given to incorrect practice.

Confidentiality of identity & data was maintained. After collecting the data, it was tabulated before data analysis. Descriptive statistics i.e. percentage, mean and standard deviation was used to describe studied variables. Pre and post questionnaire mean scores was compared to access the impact of short educational video on HCW using paired t-test.

RESULTS

Table 1 shows profile of all 75 health care worker participants with respect to variables like gender, educational qualification, healthcare experience and vaccination status. Female (78.6%) participants were more compared to male participants (21.3%). Of these, 44 % were in 18-29 years age group and 38.6% HCW had experience of 3-10 years.

Table 2 shows the correct response to knowledge based questions of all three groups before and after educational video intervention. Awareness about hepatitis B infection and its transmission was found in 74% (n= 56) of the participants. Poor scores were noted in questions related to hepatitis B vaccine dose, schedule, protection and its anti-HBsAg titre.(Ques. no.5

- Ques. No.10).Knowledge scores were improved after post-educational video intervention, ranging from 84% to 98% respectively.

Table 3 shows the correct response to attitude based questions of all three groups before and after educational video intervention.

Table 1: Socio-demographic profile of participants

Variable	Participants (%)
Gender	
Male	16 (21.3)
Female	59 (78.6)
Age groups	
18-29 years	33 (44)
30-39 years	29 (38.6)
40-49 years	11 (14.6)
50 years and above	2 (2.6)
Health care Experience	
3 years-10 years	29 (38.6)
11-19 years	27 (36)
20 years or more	19 (25.3)

Table 2: Correct responses for questions on Knowledge regarding Hepatitis B infection and vaccination

Objective of question	Doctor (%)		Lab Technician (%)		Nurse (%)		Total(%)	
	Previdec	Postvidec	Prevideo	Postvideo	Previdec	Postvidec	Previdec	Postvidec
Mode of transmission of hepatitis B	25 (100)	25 (100)	25 (100)	25 (100)	23 (92)	24 (96)	73 (97.3)	74 (98.6)
Symptoms of Hepatitis B	25 (100)	25 (100)	13 (52)	20 (80)	21 (84)	23 (92)	59 (78.6)	68 (90.6)
Transmission by feco-oral route.	25 (100)	25 (100)	18 (72)	19 (76)	13 (52)	16 (64)	56 (74)	60 (80)
Transmission by biomedical waste handling	22 (88)	25 (100)	22 (88)	25 (100)	25 (100)	24 (96)	69 (92)	74 (98.6)
Incubation period of hepatitis B infection	3 (12)	23 (92)	9 (36)	21 (84)	7 (28)	19 (76)	19 (25.3)	63 (84)
Protective efficacy of hepatitis B vaccine	3 (12)	22 (88)	8 (32)	24 (96)	12 (48)	18 (72)	23 (30.6)	64 (85.3)
Hepatitis B vaccine schedule	12 (48)	25 (100)	18 (72)	23 (92)	19 (76)	23 (92)	49 (65.3)	71 (94.6)
Duration of protection after completion of vaccine schedule	2 (8)	25 (100)	3 (12)	21 (84)	12 (48)	19 (76)	17 (22.6)	65 (86.6)
Protective titre required	5 (20)	25 (100)	8 (32)	20 (80)	20 (80)	21 (84)	33 (44)	66 (88)
Time of testing for anti-HBsAg	1 (4)	25 (100)	7(28)	21 (84)	3 (12)	18 (72)	11 (14.6)	64 (85.3)

Figure in parenthesis indicate percentage

Table 3: Positive responses for questions on Attitude regarding hepatitis B infection and vaccination

Objective of question	Doctor (%)		Lab Technician (%)		Nurse (%)		Total (%)	
	Previdео	Postvideo	Previdео	Postvideo	Previdео	Postvidec	Previdео	Postvideo
Contracting Hepatitis B	23 (92)	25 (100)	18 (72)	24 (100)	15 (60)	18 (72)	56 (74.6)	67 (89.3)
Contact first after exposure to blood/blood products infected with HBV	25 (100)	25 (100)	23 (92)	25 (100)	19 (76)	23 (92)	67 (89.3)	73 (97.3)
Usage of gloves during bl collection & testing	25 (100)	25 (100)	17 (68)	23 (92)	19 (76)	22 (88)	61 (81.3)	70 (93.3)
Requirement of testing before treatment	25 (100)	25 (100)	25 (100)	25 (100)	22 (88)	25 (100)	72 (96)	75 (100)
Transmission by shaking hands	25 (100)	25 (100)	19 (76)	25 (100)	20 (80)	20 (80)	64 (85.3)	70 (93.3)
Effect of vaccine after exposure to contagious fluid/material	11 (44)	25 (100)	16 (64)	23 (92)	13 (52)	21 (84)	40 (53.3)	69 (92)
Need of hepatitis B vaccine	24 (96)	25 (100)	21 (84)	25 (100)	25 (100)	25 (100)	70 (93.3)	75 (100)
Display of guidelines in work areas	21 (84)	25 (100)	20 (80)	25 (100)	23 (92)	25 (100)	64 (85.3)	75 (100)
Participation in training programme	22 (88)	25 (100)	22 (88)	25 (100)	24 (96)	25 (100)	68 (90.6)	75 (100)
any benefit in vaccinating a infected person	7 (28)	25 (100)	8 (32)	24 (96)	8 (32)	24 (96)	23 (30.6)	73 (97.3)

Table 4: Correct responses for questions on Practice regarding hepatitis B infection and vaccination

Objective of question	Doctor (%) Pre-video	Lab Technician (%) Pre-video	Nurse (%) Pre-video	Total (%)
Screening for Hepatitis B?	18 (72)	15 (60)	13 (52)	46 (61.3)
Use of disposable items for collection	25 (100)	25 (100)	24 (96)	74 (98.6)
Procedure to clean the spillage of blood	25 (100)	21 (84)	25 (100)	71 (94.6)
Participation in health education programme	13 (52)	5 (20)	19 (76)	37 (49.3)
Use of disposable medical gloves while working	25 (100)	24 (96)	24 (96)	73 (97.3)
A. Non vaccinated against Hepatitis B	24(96)	21(84)	22(88)	67(89.3)
B. Doses of vaccine received if vaccinated				
1 dose	0	0	1 (1.3)	1 (1.3)
2 doses	4 (5.3)	3 (4)	0	7 (9.3)
3 doses	16 (21.3)	15 (20)	19 (25.3)	50 (66.6)
more than 3 doses	2 (2.6)	1 (1.3)	3 (4)	6 (8)
Time of last dose of vaccine				
Less than 1 month ago	0	0	0	0
1 month - 3 months ago	1 (1.3)	0	0	1 (1.3)
4 months- 6 months ago	12 (16)	4 (5.3)	0	16 (21.3)
more than 6 months ago	12 (16)	14 (18.6)	23 (30.6)	39 (52)
Tested for anti-HBsAg post vaccination	19(76)	17(68)	12(48)	48 (64)
Titre of anti HBsAg				
<10 mIU/ml	13 (17.3)	3 (4)	2 (2.6)	18 (24)
10-100 mIU/ml	4 (5.3)	3 (4)	1 (1.3)	8 (10.6)
>100 mIU/ml	2 (2.6)	10 (13.3)	0	12 (16)
don't know	2 (2.6)	3 (4)	20 (26.6)	25 (33.3)
Importance of booster dose	18(72)	17(68)	12 (48)	47 (62.6)

Table 5: Mean score of Response on Knowledge, Attitude and Practice regarding hepatitis B infection and vaccination pre and post intervention.

Groups	Knowledge (Mean ± SD)			Attitude (Mean ± SD)			Practice (Mean ± SD))
	Pre-intervention	Post-intervention	p value*	Pre-intervention	Post-intervention	p value*	Pre-intervention
Gr A: Doctor	4.92 ± 1.28	9.8 ± 0.40	**<0.001**	10 ± 0	10 ± 0	**>0.05**	6.68± 1.49
Gr B Lab. Technician	5.24 ± 1.36	8.76 ±1.76	**<0.001**	7.36 ± 1.32	9.76 ± 0.59	**<0.001**	5.8±1.63
Gr C: Nurse	6.2 ±1.5	8.2± 1.70	**<0.001**	7.52 ±1.19	9.12±0.72	**<0.001**	6.04 ± 0.9

* Paired t-test

Only 74.6 % (n=56) thought that they can get hepatitis B infection. We found that 89.3% (n=67) healthcare workers showed positive attitude towards contacting in-charge physician after exposure to contaminated blood/blood products. Approximately 85%-90% participants were positive towards changing gloves, screening for hepatitis B and to take vaccine before working in healthcare setting. Surprisingly, 30.6% (n=23) participants had negative attitude towards vaccinating a person who has already been infected with hepatitis B. We noted that 90.6% (n=68) participants were willing to participate in health education programs and showed positive attitude towards having vaccine related guidelines in work areas due to accidental injuries. Positive attitude towards shaking hands with case of hepatitis B was noted in 85.3% (n=64) participants. Great shift towards positive attitude was noted in attitudes of healthcare workers after educational video intervention.

Table 4 shows the correct response to practice based questions of all three groups before educational video intervention. Shockingly, only 61.3% (n=46)

participants had screened for hepatitis B infection and only 89.3% (n=67) had taken vaccine against hepatitis b. While, 98.6% (n=74) participants ask for new syringe and needle before collection of blood/blood products and 97.3% (n=73) wear disposable medical gloves while working. Around 66.6% (n=50) participants has completed the full series of immunization and 64% (n=48) has tested for anti-HBsAg titre. 24% (n=18) people had titres below <10mIU/ml and 62.6% (n=42) doesn't know the minimum anti-HBsAg titre for which revise vaccination schedule is required.

We found that KAP mean scores of doctors were highest, followed by Lab. technicians and nurses as shown in table 5.

DISCUSSION

Most of the earlier KAP studies conducted in India were observational studies. In present study we implemented an intervention in form of educational video demonstration to all the participants and assess its impact on knowledge and attitude scores. The knowledge level has shown a significant improvement after the training, which is in corresponding to study done by Yasobant et al. [17] Great shift towards positive attitude was also noted in HCW after educational video intervention in present study. Improvement in knowledge and attitude among all three types of HCW were extremely statistically significant (P value < 0.0001, paired t-test) after educational video intervention.

The findings of the present study revealed some interesting facts regarding KAP of HCWs concerning some important aspects of hepatitis B infection. Results showed that HCW especially resident doctors had quite poor knowledge, lab technician had negative attitude and poor practice towards hepatitis B infection which is quite a matter of concern. Level of knowledge about type of hepatitis B and the routes of transmission of the infection varied among the different categories of healthcare personnel which might be due to difference in their level and type of education.

Almost 98.6% of HCW knew hepatitis B is transmitted by virus which is comparable to study done by Reang T et al which showed 99.7 % result.[18] In present study78.6% of participants were aware of symptoms of hepatitis B, similar to study done by Vaig BN et al in which 90.7% knew that. [19] Only, 25.3 % of participants were having knowledge about incubation period and 30.6% knew that vaccine is fully protective against hepatitis B. After showing educational video their knowledge increased to 84% and 85.3% respectively. Nearly 94.6% knew that hepatitis B vaccine schedule has 3 doses. In a study done by Reang T et al, showed 78.8% had same knowledge. [18] Shockingly, 48% of doctors were unaware of hepatitis B vaccine schedule and anti-HBsAg protective titres. Laboratory Technicians and nurses were also lacking knowledge regarding schedule, immunization status and anti-HBsAg titre levels. Knowledge was improved in85.3% of participants regarding anti - HBsAg titre after teaching them. However, 92% knew that biomedical waste is important mode for contracting hepatitis B infection if not properly collected and transported. All participants were provided adequate knowledge on hepatitis B and its vaccination through educational video and the results are given in Table 2. It shows that training is necessary in all levels of health care personnel. The findings regarding knowledge level reported were quite similar to that reported in study done Bharti Koria, Biradar SM & S Setia*et al*. [20-22]

In a study done by Reang T et al, 86.3% consulted doctor after exposure to infected blood, similar to our study in which 89.3% believed .[18] Another finding in that study showed 80.2% were aware of contracting the disease was similar to ours in which 74.6% of health care workers were aware of. In our study 85.3% participants believed that shaking hands would not transmit the disease. Reang T et al also reported that 72% would not transmit the disease.[18] On the other hand, Swarnalata et al reported that only 44.8% students were aware that it was not transmitted by hand shaking.[23] We noted that 93.3 % participants believed that they should receive hepatitis B vaccine. Study conducted by Adela, a. et al, 90.7 % agreed that changing gloves during blood collection is necessary, our study showed result of 81.3%. [24] In present study, 85.3 % of HCW believed that there should be vaccine related guidelines in work area, in comparison to study done by Abdela, a. et al in which 83.3 % agreed to that.[24] Majority (96%) participants had positive attitude toward screening for hepatitis B before receiving any health care which is comparable to study done by Afihene MY *et al* (89.3%). [23]

Only 74.6% healthcare workers believed that they can get hepatitis B. It is necessary for them to at least know they are vulnerable for contracting hepatitis B. However, most of them (90.6%) gave positive attitude for participating in health training programme. Lack of awareness about effect of vaccination in already infected person was found in 53.3 % of HCW. Most of them had positive attitude towards hepatitis B protection and availability of vaccine related guidelines in all health care departments, so that immediate measures can be taken for post exposure prophylaxis.

Only 61.3% of HCW had screened for hepatitis B antigen, though they showed positive attitude of 96%. Study done by Baig VN *et al*, also showed that 50% of participants screened for hepatitis B infec-

tion.[19] We noted that 98.6% of health care workers ask for new syringe and needle before collection of blood products. Study done by Baig VN et al, showed the same result.[19] Very few participants 49.3% participated previously in health campaign, so it is evident that training programme should be conducted at regular intervals. Result is quite high compared to study done by Nagah et al (20.7%).[19] In spite of knowing risks, only 89.3% had taken hepatitis B vaccine and amongst them, 66.66% were vaccinated with three doses ,which is comparable to study done by Afihene MY *et al* in which 74.4% had taken vaccine and 41.8% had checked their immunity.[23] We found that 89.3 % of health workers had taken vaccine, which is similar to study done by Baig VN et al, in which 81.9% had taken vaccine.[19] Most of the participants were having appropriate practices related to disposal of gloves and cleaning of floor contaminated with blood. Regarding anti-HBsAg titre, 64% identified their immune status.

CONCLUSION

Results of the current study show that HCW have poor KAP towards hepatitis B virus, with unsatisfactory knowledge about some important aspects of hepatitis B and its vaccination. HCW were unaware and should be encouraged to check their status of post vaccination immunity against hepatitis B virus at regular intervals, because they are in direct contact with the sample and patients. Intervention like short educational video had made a great impact on knowledge and attitude of HCW. Such interventions are economical, time saving and effective, so should be repeated at regular intervals.

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