



Small Steps, Big Gains: Impact of Health Promotion in Combating Viral Hepatitis

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Authors' contributions

This work was carried out in collaboration among all authors. Authors AB, AC and SC conceived and planned the study. Authors AB and SC carried out the study. Authors PK, AR and SS worked out almost all of the technical details, and performed the numerical calculations for the data collected. Authors PK and AR contributed to the interpretation of the results. Author PK took the lead in writing the manuscript. All authors provided critical feedback and helped to shape the manuscript. All authors contributed to the final version of the manuscript. Author AB supervised the implementation of overall project. All authors read and approved the final manuscript.

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ABSTRACT

Background: Medical training in health sector is primarily aimed at holistic development of healthcare workers with respect to change in knowledge, attitude and practice, but the majority of trainings merely evaluate the change in knowledge of the participants after attending the training program. Since knowledge gain is immediate whereas change in attitude and practice requires time. Thus, limited evidence is available with respect to the effect of training on attitude and practice over a period of time.

Aim: To assess the effect of training on modification of attitude and medical practices among nursing professionals at least six months of post-training period.

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Methods and Material: A longitudinal study from January 18, 2018 to January 31, 2020 was undertaken among nursing professionals who have taken pre and post-test knowledge assessment and have completed six months of post training period. The link to 28-item questionnaire was shared thrice with the eligible participants. All analyses were performed using IBM SPSS Version 22. The statistical significance level considered as $p < 0.05$.

Results: A total of 623 responses were received, of which 534 were included in the final analysis. The median follow-up period for the included participants was 9.4 months (IQR: 8.9–10.3 months). Mean age of the participants was 31.99 ± 7.03 years and 68% were females. Approximately 75% agreed that there was a change in their clinical practices with respect to viral hepatitis and approximately 72% unvaccinated individuals got themselves vaccinated post training.

Conclusion: Health promotion through trainings is a pragmatic approach towards combating diseases and achieving sustainable development goals.

Keywords: Nurses; hepatitis; capacity building; health promotion; vaccination.

1. INTRODUCTION

Training is an important element of professional as well as personal growth of an individual [1]. Training and continuing education among healthcare workers is often known to improve the quality of healthcare services and eventually, patient outcomes [2,3]. In low-and-middle-income countries (LMIC), like India, where there is severe shortage of healthcare workers, it is essential to train the existing manpower for efficient utilization [4]. The specialized healthcare training is also an essential component to achieve health-related sustainable development goals [5].

Further, several continuing medical education programs are conducted with the focus of improvement of medical or clinical practices of healthcare workers, which empower them on management of patient care [6]. However, only a few training programs are conducted to enhance the behavioral and attitudinal changes of healthcare workers. These training programs not only help in improving the patient management but also help in reducing occupational hazards and stigma associated with the communicable diseases such as HIV, Hepatitis B and Hepatitis C [7]. Moreover health care workers are considered to have an essential role in health promotion as they help in increasing awareness among patients concerning lifestyle modification [8]. Health care worker's own knowledge towards healthy behaviour have influence on their attitude and practices and also influence the promotion of such healthy activities [9,10]. Thus, comprehensive training focusing on knowledge, attitude and practice among healthcare workers is important in inculcating these preventive measure in lifestyle [11].

Though these trainings are aimed at holistic development of healthcare workers with respect to change in knowledge, attitude and practice, but the majority of trainings merely evaluate the change in knowledge of the participants after attending the training program [12]. Unlike change in knowledge is immediate, but change in attitude and practice requires time, even though it is for their benefit in terms of providing quality of patient care or for their personal safety [13]. Moreover, changes in practice disturbs the existing equilibrium and healthcare workers have to struggle to re-establish the equilibrium that incorporates the change, which may require some time [14]. Thus, least priority is given to assess the impact of training on attitudinal and practical aspects, on which the training was equivalently focused. Hence, there are limited studies which have evaluated the effect of training on attitude and practice over a period of time [15,16]. Contemplating this, Project PRAKASH (PRogrammed Approach to Knowledge And Sensitization on Hepatitis), a capacity building initiative for healthcare workers especially for nurses designed a one-day training program on viral hepatitis titled Hepatitis Induction Program. The project team followed a sub-sample to assess the effect of training on modification of attitude and medical practices among healthcare workers who have completed at least six months of post-training period of Hepatitis Induction Program organized by Project PRAKASH.

2. METHODOLOGY

2.1 Study Design and Setting

A descriptive longitudinal study was conducted among nurses who attended Hepatitis Induction Program under project PRAKASH, Institute of

Liver and Biliary Science (ILBS), New Delhi between January 2018 to January 2020. Hepatitis Induction program was a one-day face-to-face training program, which imparted training on prevention and management of viral hepatitis. The scientific training related to viral hepatitis covered six important scientific topics with session duration of 45 minutes each. The scientific sessions associated with training program were (i) Overview, Epidemiology and Management of viral hepatitis (ii) Laboratory Diagnosis of Viral hepatitis (iii) Needle Stick Injury and Infection Prevention (iv) Disinfection and sterilization in context of Viral Hepatitis; (v) Role of Fibro scan; (vi) Counseling of viral hepatitis patients and their family members. The training covered theoretical as well as practical skills with respect to viral hepatitis. A pre and post knowledge assessment was also undertaken to assess the effect of training on knowledge of the participants. However, evaluating change in attitude and practice was difficult immediately after the training as it requires time for modification [13]. Thus an online survey was designed to assess the effect of training on attitude and practice of the nursing professionals at least six months of the post training period. The nursing professionals enrolled in the Hepatitis Induction program were followed up from the day of training to the day of rolling out the online survey for assessing the effect on attitude and practice.

2.2 Study Population

Nursing professionals who have attempted pre and post knowledge assessment and have completed at least six months of their post training period between January 15, 2020 to January 31, 2020 were included in the study.

2.3 Data Collection Tool

The questionnaire was designed in SurveyMonkey platform which had 28 questions distributed across two sections. Section A included questions related to demographics such as Name, email address age, gender, location, qualification and type of facility whereas the section B comprised of questions related to attitude and medical practices such as universal precautions, counselling of patients, availing vaccination against viral hepatitis, personal and professional growth achieved post attending training program. In addition to this, the first page of the online questionnaire consisted of informed consent which stated voluntary participation in the study. It also mentioned about the measures

taken to ensure confidentiality of the participants by anonymizing the collected data. The questionnaire was content validated with the help of faculties at Institute of Liver and Biliary Sciences (ILBS) and College of Nursing associated with ILBS.

2.4 Study Procedure

The link to survey questionnaire was shared on their registered email address and mobile numbers. Three attempts were made to share the link with the eligible participants, in order to increase the participation, and reduce the selection bias. Further attempts were made to increase the coverage by contacting the principals and nodal officers at College of Nursing and other healthcare facilities.

2.5 Data Management

The data was extracted in excel sheet from SurveyMonkey. The personal details of the participants like name and email addresses were excluded from the final data sheet and unique identity numbers were allotted to maintain anonymity and confidentiality of the participants. The data was coded and cleaned for data analysis.

2.6 Statistical Analysis

Percentages were used to describe the categorical variables whereas mean along with standard deviation (SD) or median with Interquartile range (IQR) was used to describe the continuous variables. Further, pre and post assessment knowledge score as well as date of training were compiled for the participants who filled the survey. Independent sample's t-test was used to assess the association between score difference of compiled pre and post knowledge assessment data and various indicators such as vaccination status and Anti-Hbs titre checked status. The statistical significance level was fixed to conventional value of $p < 0.05$ (two-sided). All analyses were performed using Statistical Package for the Social Sciences (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22 Armonk, Chicago, Illinois: IBM Corp).

3. RESULTS AND DISCUSSION

3.1 Results

A total of 5253 participants were trained under Hepatitis Induction program organised for

nursing professionals from January 2018 to January 2020 under Project PRAKASH. Out of which 779 participants were excluded since they haven't responded to either pre or post test, resulting in 4474 participants in the pre and post knowledge assessment for this study. Further, 1859 participants were excluded from the study as they haven't completed six months of post training period when the impact assessment survey was circulated. Hence, the online survey link was circulated to 2615 nurses after excluding ineligible participants. Out of the total eligible participants, a total of 623 responses (response rate of 23.8%) were received from the participants, out of which 534 responses (response rate of 20.4%) were included in the final analysis after removing of duplicates and incomplete entries (Fig. 1). The median follow-up period for the included participants was 9.4 months (IQR:8.9–10.3 months).

Mean age of the participants was 31.99 ± 7.03 years. Approximately 68% of the nursing professionals were females and around 83% of the participants were associated with government healthcare facility (Table 1). The baseline characteristics of the study respondents were found to be similar in characteristics with nursing professionals who completed training under project PRAKASH.

The study found that approximately three-fourth (75.1%) of the respondents agreed that there was a change in their clinical practices with respect to viral hepatitis such as they have included regular hand washing, started the use of Personal Protective Equipment (PPE), initiated counselling of patients on viral hepatitis, advising HbsAg testing among pregnant females, following Injection Safety Protocols at work place etc. The survey also highlighted that 82% of the

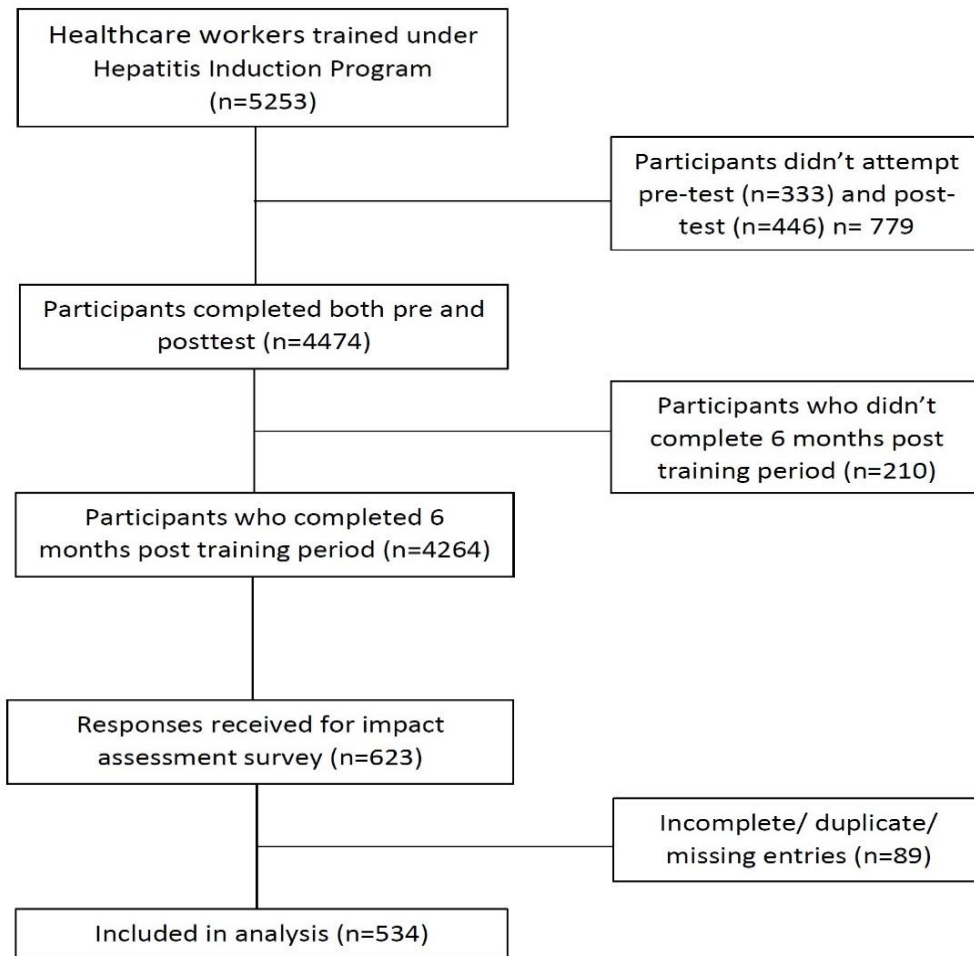


Fig. 1. Flow diagram of study participants

Table 1. Baseline Characteristics of the participants (N=534)

Characteristics	n (%)
Mean age in complete years±SD (n=532)	31.99±7.03
Gender	
Male	167 (31.3)
Female	367 (68.7)
Location	
Delhi	466 (87.1)
Outside Delhi	69 (12.9)
Educational Qualification (n=529)	
Diploma/ ANM/ GNM	211 (39.9)
Bachelors (Nursing)	180 (34.0)
Post Basic	95 (18.0)
Masters (Nursing)	43 (8.1)
Type of Facility	
Government	444 (83.1)
Private	90 (16.9)
Knowledge score	
Pre knowledge score±SD	19.86±3.32
Post knowledge score±SD	26.40±3.09

*SD : Standard deviation

Table 2. Effect on practices after attending training program (n=534)

Survey Questions	Never n (%)	Sometimes n (%)	Always n (%)
Personal Hygiene and Safety Practices			
Started following universal precautions	3 (0.56)	41 (7.68)	490 (91.76)
Started using Personal Protective Equipment's			438 (82.02)
	3 (0.56)	93 (17.42)	
Started following injection safety protocols	1 (0.19)	10 (1.87)	523 (97.94)
Started reporting Needle Stick Injuries	7 (1.31)	43 (8.05)	484 (90.64)
Health promotion activities			
Started advising high risk patients and relatives about Hepatitis B and C testing	6 (1.12)	102 (19.10)	426 (79.78)
Started advising high risk patients and relatives about Hepatitis B vaccination	13 (2.43)	78 (14.61)	443 (82.96)
Started advising pregnant females for HbsAg testing	11 (2.06)	43 (8.05)	480 (89.89)
Effect of training on personal and professional growth		Yes n (%)	No n (%)
Health promotion activities by displaying additional Information, Education and Communication material related to viral hepatitis at workplace, post training		211 (39.5)	323 (60.5)
Changes in clinical practice with respect to viral hepatitis, post training		401 (75.1)	133 (24.9)
Training program helped in achieving:			
Personal safety		512 (95.9)	22 (4.1)
Patient safety		509 (95.3)	25 (4.7)
Professional growth		489 (91.6)	45 (8.4)

participants (n=438) initiated the use of PPEs on a regular basis post training. It was found that approximately 98% (n=523) respondents were following the Injection safety protocols on a regular basis, post training. In addition, 79.8% (n=426) participants have started advising

screening of family members for viral hepatitis among HBV and HCV positive patients as a regular practice. Approximately, 83% (n=443) participants started advising high risk patients and their relatives about the need of HBV vaccination (Table 2).

Further, 82.4% (n=440) were vaccinated pre-training whereas of the remaining unvaccinated respondents, 76.6% (n=72) got themselves vaccinated post-training (Fig. 2). In addition to the remaining 22 participants who haven't got themselves vaccinated, 90.9% (n=20) have showed willingness to get themselves vaccinated post training. Only one-fourth (26.4%, n=143) nursing professionals were aware about their Anti-HBs titre pre-training whereas additional 106 participants got themselves assessed for Anti-HBs titre levels. A majority of 53.4% (n=285) didn't get their titre assessed, however among them 91.5% (n=258) showed willingness to get their titre checked.

Approximately 98.3% (n=525) nursing professionals respondents felt that the Hepatitis Induction program training was relevant to their job responsibilities and approximately 91.6% of the respondents felt that the Hepatitis Induction

program training and the certificate helped them in their professional growth. In addition to this, more than 95% of the participants agreed that the training program helped them in achieving personal and patient safety at workplace. Further nearly 40% of the participants displayed additional Information, Education and Communication (IEC) material related to viral hepatitis in their work place post training, with motive of further disseminating the information related to viral hepatitis (Table 2).

The mean score difference of pre and post knowledge assessment was found to be same across the group who availed Hepatitis B vaccination (6.53±3.28) and the group who didn't (6.64±3.59; p=0.895). The mean score difference among the ones who went for assessment of Anti-Hbs titre (6.81±3.06) and the ones who didn't (6.68±3.16) went was found not found to be significantly associated with mean knowledge change (p=0.707) as seen in Table 3.

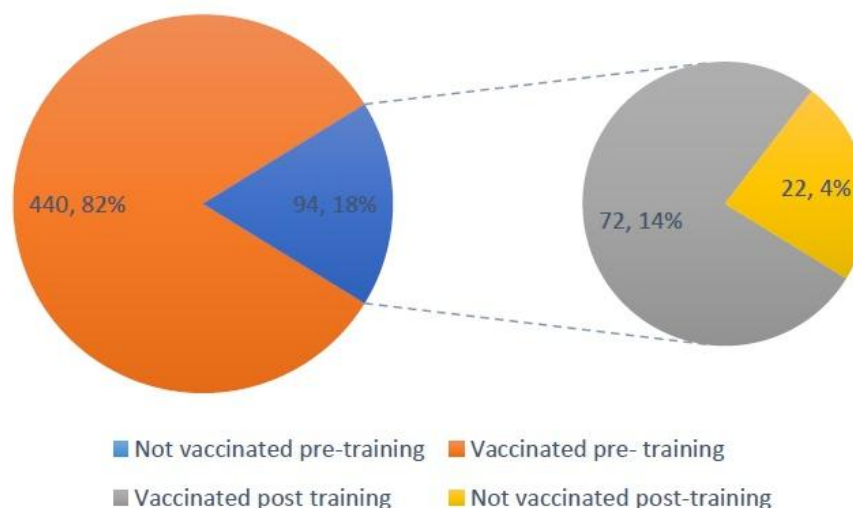


Fig. 2. Vaccination status of nurses attended Hepatitis Induction program training program

Table 3. Association of mean knowledge change with availing of vaccination and Anti-Hbs Titre assessment

Practice related questions	Mean knowledge change±SD	p-value
Vaccination against hepatitis B post training (n=94)		
Yes	6.53±3.28	0.895
No	6.64±3.59	
Checked Anti-Hbs titre test post training (n=391)		
Yes	6.81±3.06	0.707
No	6.68±3.16	

*SD : Standard deviation

3.2 Discussion

Training of healthcare workers is important as it has resulted in improvement of their clinical practices as well as patient outcomes by increasing their clinical knowledge [10,17]. Health promotion through one-day trainings have also found to improve the knowledge of the healthcare workers, eventually modifying their attitude and practices related to lifestyle modification over the course of time [9]. Considering this, project PRAKASH assessed the effect of one-day training program on alteration of medical and personal hygiene and safety practices at least six months post training period.

Over a median follow up of 9.4 months, approximately 75% of health care workers reported that the training has helped in changing their clinical practices with respect to viral hepatitis. The findings of the study were in line with a previous study which suggested training helped in alteration of practices of healthcare workers [18]. The study also highlighted that the modification in behaviour post training with respect to personal hygiene and safety practices related to viral hepatitis such as following of universal precautions and injection safety protocols and initiating use of personal protective equipment was observed in majority of the participants. In addition, training helped in reporting of needle stick injuries to concerned authorities which may eventually reduce the occupational hazards such as Hepatitis B and C in nurses. These findings are consistent with the previous studies which emphasized that educational methods have an important role in reducing percutaneous injuries and increasing reporting of such injuries [7,19].

Furthermore, the improvised knowledge led to modification of lifestyle modification and made the participants more vigilant about their hepatitis B vaccination status as they got vaccinated and also checked their Anti-Hbs antibody titre levels post training. This could be explained as improved knowledge about the disease and need of vaccination has resulted in increased vaccination coverage among healthcare workers as reported by other studies [20–22]. Furthermore, participants who have not got themselves vaccinated, or got their Anti-Hbs titre assessed, majority of participants have shown willingness to get vaccinated or get their titre assessed. The study also suggested a large proportion of the population didn't check their

Anti-Hbs titre levels post training period. This could be probably explained pertaining to high cost associated with Anti-Hbs titre levels test. However, the reason for not getting vaccinated and not assessing their titre levels was not under the purview of the designed study.

Moreover, training about the viral hepatitis also resulted in increased health promotional activities by the healthcare workers such as initiation of counselling and advising the family members of Hepatitis B and Hepatitis C positive individuals to get them screened and vaccinated and advising the pregnant females to get screened for Hepatitis B. Since, there are limited studies available among healthcare workers which have assessed the effect of attitude and practices, after a follow up period post training, authors could not correlate their findings to other studies.

Furthermore, increased knowledge also resulted in displaying of additional Information Education Communication (IEC) materials related to viral hepatitis at work place after attending the training with a motive of further disseminating the information related to viral hepatitis. The additional displaying of IEC material will eventually serve as a health promotional activity to promote prevention measures against viral hepatitis among other health care workers as seen in previous studies [23].

In this study, there could have been a selection bias as the participants who filled the survey were based on voluntary participation, thus, alteration of attitude and practice might not be representative of all nursing professionals in the country. However, several attempts were made to reduce the selection bias by sharing the questionnaire several times with the participants. Additionally, the baseline characteristics of the present study were similar to the characteristics of participants trained under Hepatitis Induction program under PRAKASH, thus could be generalised to the participants who attended the training. Moreover, since the present study was not able to follow all the participants equally, thus we could not study the effect of time from the training and change in attitude and practice. Further, since it was a self-reported questionnaire, there could have been some kind of socially desirable responses while reporting of medical practices, which could have slightly overestimated the practice responses as compared to actual practice.

Despite these inherent limitations, there have been many unique aspects and strengths of the study. Firstly, to the best of our knowledge, this is a unique study in hepatitis capacity building, which had assessed the effect of training on attitude and practice at least six months after the training. The study also provided how training and educating the healthcare workers helps in health promotion of preventive measures among patients and fellow colleagues. Thus training and awareness programs have important role in health promotion which eventually results in combating the diseases such as viral hepatitis and attaining sustainable development goals.

4. CONCLUSION

Health promotion through one-day trainings were found to be effective not only in improving the knowledge of the healthcare workers but also results in modifying their attitude and practices related to themes of the training over the course of time. Thus, such interventions can be adopted in disseminating the information about various lifestyle modifications related to communicable and non-communicable diseases among fellow healthcare workers and their patients, ultimately leading to chain of transmission of information. Hence forth, health promotion through trainings is a pragmatic approach towards combating diseases and achieving sustainable development goals.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

The present activity was undertaken as a part of outreach activity; however, ethical clearance was obtained with IEC No. IEC/2021/84/MA05 via letter no F.37/(1)/9/ILBS/DOA/2020/20217/78 from the institutional ethics committee.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for

any litigation but for the advancement of knowledge.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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