A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Management and Prevention of Tuberculosis in Health Care Personnel Among B.Sc. Nursing 2nd Year Student in Selected Nursing College, Bhilai, Chhattisgarh

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Abstract: Tuberculosis (TB) infection control is a combination of measures aimed at minimizing the risk of transmission within a population. It is well established that health care workers (HCWs) have a considerably higher risk of occupationally acquired tuberculosis (TB). To reduce the transmission of TB to HCWs and patients, TB infection control programs should be implemented in health care settings. The first and most important level of all protection and control programs is administrative control. Its goals are to prevent HCWs, other staff, and patients from being exposed to TB, and to reduce the transmission of infection by ensuring rapid diagnosis and treatment of affected individuals. Administrative control measures recommended by the United States Centers for Disease Control and Prevention and the World Health Organization include prompt identification of people with TB symptoms, isolation of infectious patients, control of the spread of the pathogen, and minimization of time spent in health care facilities. Another key component of measures undertaken is the baseline and serial screening for latent TB infection in HCWs who are at risk of exposure to TB. Although the interferon-gamma release assay has some advantages over the tuberculin skin test, the former has serious limitations, mostly due to its high conversion rate. Objectives: To develop and administer structured teaching programme regarding management and prevention of tuberculosis in health care personnel among B.Sc. Nursing 2nd year student in selected Nursing college of Bhilai (C.G.). To assess the pre-test and post-test knowledge regarding management and prevention of tuberculosis in health care personnel among B.Sc. Nursing 2nd year student in selected Nursing college of Bhilai (C.G). To assess the effectiveness of structured teaching programme on post-test knowledge regarding management and prevention of tuberculosis in health care personnel among B.Sc. Nursing 2nd year students. To find association between pre-test knowledge regarding management and prevention of tuberculosis in health care personnel and selected socio demographic variables. Material and Methods: The research approach used was an experimental approach, and the research design of the study was pre-experimental one group pre-test, post-test research design. The non-probability convenient sampling techniques was used to select 60 nursing students from P.G. College of Nursing Bhilai, Durg (C.G). The variables under the study are independent and dependent variables. Independent variables is structured teaching programme regarding Management and prevention of TB in health care personnel and dependent variables is knowledge of nursing student regarding Management and prevention of TB. A self-structured questionnaire was prepared to assess knowledge regarding Management and prevention of TB in health care personnel. Reliability of the tool was 0.98. The data obtained were analyzed and interpreted in terms of objective and hypothesis. Descriptive and inferential statistics were used for data analysis, the level of highly significance was at 0.001. Results: major findings of these studies are out of 60 sample, in relation over all Analysis related to pre-test and post-test knowledge score regarding management and prevention of tuberculosis in health care personnel among B.Sc. Nursing 2nd year student. In post-test, majority of subjects 36 (60%) had excellent knowledge, 24 (40%) had good knowledge, and none of subjects had average poor knowledge.

Keywords: Evaluation, effectiveness, knowledge, structured teaching programme regarding management and prevention of tuberculosis in health care personnel, nursing students.

1. Introduction

Tuberculosis (TB) is the world's deadliest infectious disease, with over 95% of deaths occurring in low- and middle-income countries. Tuberculosis mostly affects young adults in their most productive years, but all age groups are at risk.

Tuberculosis (TB) is a communicable bacterial disease caused by *Mycobacterium tuberculosis (MTB)*. As an airborne disease, TB is transmitted from person to person via droplets from the throat and lungs. Globally, TB is ranked first among the causes of deaths attributable to communicable diseases and the highest killer disease that occurs as a result of a single infectious agent worldwide.

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Tuberculosis is a chronic communicable infectious disease with a long history. Tuberculosis is a major cause of ill health and among the top 10 causes of death globally. It is an airborne infectious disease that spreads easily among humans and a common nosocomial infection that widely affects healthcare workers (HCWs). Tuberculosis is considered a serious problem among HCWs. It has been recognized as an occupational hazard since the 1950s when many hospitals succumbed to an outbreak of tuberculosis among patients and health staff. However, it was only recently that this problem was highlighted. In fact, most countries only started to report the incidence of tuberculosis among HCWs after observing the annual increase in the number of cases. The problem was greater in a country with a high burden of tuberculosis disease in the community. Tuberculosis burden worldwide was affected by the COVID-19 pandemic, which caused diagnostic delay and disruption of tuberculosis care services, causing increase in clinical severity.

The World Health Organization (WHO) revealed that the incidence of tuberculosis among HCWs is increasing yearly, and in most countries, it exceeds the community incidence of the disease. In 2019, a total of tuberculosis cases among HCWs were reported to the WHO by 76 countries, with India contributing the highest numbers by accounting for 47% of the total cases. Based on the reports to the WHO, the notification rate of tuberculosis among HCWs was more than two times the rate in the general adult population in 42 countries. Several studies also reported the prevalence and incidence rate of contracting tuberculosis disease were much higher among HCWs compared to the community.

Nurses are the core personnel to provide information to the people. Keeping in view all these aspects researcher wants to create or provide awareness programme to nursing students, who are directly contact with peoples. Hence the researcher wants to assess the effectiveness of methods of teaching on management and prevention of TB like structured teaching programme which will increase the nursing student's knowledge in performing safe practices.

2. Material and Method

Pre experimental one group pre-test post-test research design was utilized to assess the effectiveness of structured teaching programme on knowledge regarding management and prevention of tuberculosis in health care personnel among B.Sc. Nursing 2nd year student in selected nursing college Bhilai, (C.G.). Where subjects were selected non probability convenient sampling technique. An extensive review of literature was undertaken in various related concepts. The study adopted "Ludwig von Bertalanffy" modified system model. Target population was B.Sc. Nursing 2nd year students. A convenient sampling technique was used to obtain 60 samples. The tool was self-structured questionnaires for assess the knowledge. The tool was validated by experts. The pilot study was conducted from 19/11/2021 to 26/11/2021 at Bharat institute of Nursing Danitola, Balod. The reliability co-efficient was calculated using Karl – Pearson correlation coefficient, the Reliability of knowledge questionnaire was found in pre-test knowledge on management and prevention of tuberculosis in health care personnel ($r = 0.74$), and post-test knowledge on management and prevention of tuberculosis in health care personnel ($r = 0.98$), so the tool was found to be highly reliable for data collection. The main study was conducted in the month of December 2021.Data for main study was collected from the P.G. College of nursing Bhilai, (C.G). the data obtained were analyzed and interpreted in terms of objective and hypothesis. Descriptive and inferential statistics were used for data analysis the level of significance was <0.001.

3. Results

1) Overall analysis of pre-test and post-test knowledge regarding management and prevention of tuberculosis in health care personnel among B.Sc. Nursing second year students in selected nursing college Bhilai (C.G).

Overall analysis of pre and post-test knowledge score regarding management and prevention of tuberculosis in health care personnel out of 60 B.Sc. Nursing student, majority 36 (60%) subjects had excellent knowledge, 24 (40%) had good knowledge, and none had poor and average knowledge regarding management and prevention of tuberculosis in health care personnel.

2) Effectiveness of structured teaching programme on knowledge regarding management and prevention of tuberculosis in health care personnel

In relation to analysis of effectiveness of structured teaching programme on knowledge regarding management and prevention of tuberculosis in health care personnel. pre-test mean score of knowledge is 26.03 and post-test mean score of knowledge is 39.25, the calculated "t" value 32.71 where is greater than the table value i.e. 3.46 at $p <0.001$ level of highly significance. The data highly signifies that the structured teaching program was very effective in term of gain in knowledge regarding management and prevention of TB in health care personnel.

3) Association between sociodemographic variables of knowledge

In relation to analysis of association between knowledge score and two selected division i.e. posted in TB ward as the calculated chi square value is 18.5 which is higher than table value i.e. 13.81 and source of previous knowledge significant there chi square is 7.83 which is higher than table value i.e. 05.5

Table 1
Analysis of overall pre-test and post-test knowledge regarding blood donation among B.Sc. nursing second year students

Level of Knowledge	Pre-Test		Post-Test	
	Frequency (f)	Percentage (%)	Frequency (%)	Percentage (%)
Excellent (31-40)	03	05	36	60
Good (21-30)	33	55	24	40
Average (11-20)	24	40	0	0
Poor (1-10)	0	0	0	0
Total	**60**	**100**	**60**	**100**

at the degree of freedom 2 so, the h2, there was significant association between pre-test knowledge regarding management and prevention of TB and above selected sociodemographic variables is accepted with regard to knowledge of students.
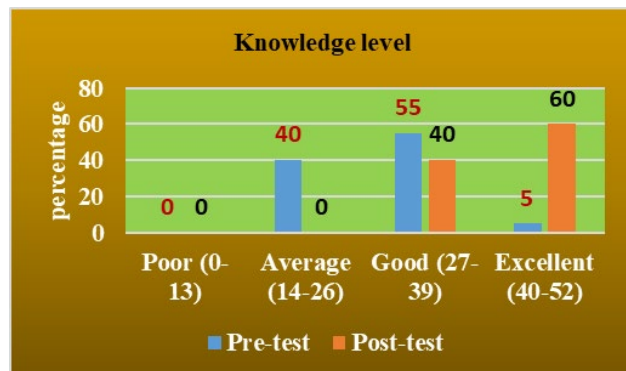

Fig. 1. Overall knowledge

4. Discussion

In present study overall analysis of pre-test and post-test knowledge score on management and prevention of TB in health care personnel out of 60 nursing students in pre-test, majority 3(5%) subjects had excellent knowledge 33(55%) had good knowledge, 24 (40%) had average knowledge regarding management and prevention of tuberculosis in health care personnel.

In post-test, majority 36 (60%) subjects had excellent knowledge, 24 (40%) had good knowledge, and none had poor and average knowledge regarding management and prevention of tuberculosis. It is concluded that after administration of STP, maximum knowledge score was improved regarding management and prevention of tuberculosis in health care personnel.

The above finding is supported by Prasanna Kumar. conducted a study on level of knowledge regarding prevention of TB was assessed and 11.out of 30 JHAF students (56.67%) had average knowledge, whose scores ranged between 21-30, about 36.67% of the subjects had poor knowledge, whose scores ranged between 0-20and only 6.66% of subjects had good knowledge, whose scores ranged between 31-40.

5. Conclusion

On the basis of finding of the study, following conclusion was drawn:

- After intervention in posttest all students in post-test, majority 36 (60%) subjects had excellent knowledge, 24 (40%) had good knowledge and none had poor and average knowledge regarding management and prevention of tuberculosis in health care personnel.
- This study was done to evaluate the effectiveness of structured teaching programme on knowledge reading management and prevention of TB among nursing students. The result of this study showed that structured teaching programme was effective in improving knowledge among nursing students.
- Calculated "t" value 32.71 is greater than the table value 3.46 at $p < 0.001$ level of highly significance, the data signifies that the structured teaching program was very effective in term of gain in knowledge regarding management and prevention of TB in health care personnel.
- There is significant association between pretest knowledge score regarding management and prevention of TB in health care personnel and selected socio demographic variables.

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