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# Effectiveness of educational training program on the knowledge of COTPA Act among the nonteaching staff of a tertiary care hospital

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## Abstract:

**BACKGROUND:** Globally, tobacco is among the leading factors attributable to death. The nonteaching staff plays a pivotal role in making a campus a “tobacco-free zone.” The objective of the study is to assess the effectiveness of an educational training program conducted on the Cigarette and Other Tobacco Products Act (COTPA) 2003 among nonteaching staff of a tertiary care hospital.

**METHODS AND MATERIALS:** A hospital-based cross-sectional study was conducted among 500 nonteaching staff of a tertiary care hospital in the Raebareli district of Uttar Pradesh, India. An educational training program on COTPA 2003 was conducted in collaboration with the State Tobacco Control Cell. Data were collected before (pre-test) and after (post-test) the training program. A paired *t*-test was applied to compare both knowledge scores. Multiple linear regression analysis was conducted to identify the factors associated with knowledge scores.

**RESULTS:** Around 187 (37.4%) security personnel, 198 (39.6%) housekeeping staff and 115 (23%) hospital attendants participated in the study. The pre-test mean ( $\pm$  standard deviation (SD)) knowledge score was  $4.91 \pm 1.59$  whereas post-test mean ( $\pm$  SD) knowledge score was  $7.91 \pm 1.42$ . The pre-test knowledge score was associated with residence, age, and history of tobacco consumption of study participants. The female gender was associated with the pre-test knowledge score having a standardized coefficient -0.49 (*P* value = 0.009). The post-test knowledge score was associated with a history of tobacco consumption with a standardized coefficient of 0.42 (*P* value = 0.012).

**CONCLUSION:** The educational training program improved the knowledge of the study participants with maximum improvement among the housekeeping staff. The history of tobacco consumption emerged as a significant factor affecting knowledge even after the training program.

## Keywords:

COTPA, educational training program, knowledge

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## Introduction

Globally, tobacco is one of the leading risk factors attributable to death.<sup>[1]</sup> It accounted for 8.71 million deaths in 2019.<sup>[1]</sup> Around 1.14 billion individuals were current smokers globally in 2019, consuming 7.41 trillion cigarette-equivalents of tobacco.<sup>[2]</sup> India's latest National Family Health Survey-5 (NFHS-5) conducted during 2019-21 estimated that 38% of

men and 8.9% of women use any kind of tobacco.<sup>[3]</sup> The most common form of tobacco consumption among men in India was chewing pan masala or gutkha (15%), followed by smoking cigarettes (13%), using khaini (12%), and smoking bidis (7%).<sup>[3]</sup> To counteract the tobacco epidemic, the World Health Organisation Framework Convention on Tobacco Control (WHO FCTC) was developed in 2003, which provided the foundation for countries to implement and manage tobacco control. Subsequently,

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MPOWER measures were introduced to manage tobacco control. Similarly, the government of India launched “The Cigarettes and Other Tobacco Products Act (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply, and Distribution) (COTPA)” in 2003.<sup>[4]</sup> COTPA focuses mainly on the prohibition of advertisement and regulation of trade and commerce, production, supply, and distribution of tobacco in India.

One of the sections of COTPA 2003 deals with the provision of consumption of tobacco in public places. Violation of this provision in different organizations is reported to the nodal officer by the security personnel. Their active support is essential to making any campus or public place a tobacco-free zone. A study conducted in Goa among security personnel found the level of awareness about COTPA is 68% but there was a lack of in-depth knowledge.<sup>[5]</sup> Other staff members like housekeeping staff, hospital attendants, clerk, etc., play a role in the implementation of COTPA on campus.<sup>[6]</sup> These staff members not only maintain the hygiene and cleanliness of the hospital but also help patients to maintain their health and well-being.<sup>[6]</sup> Hence, creating awareness and educating these personnel on tobacco use and its control will enhance the implementation of the law. These awareness programs will help organizations to provide exposure to newly recruited staff in tobacco control measures. Studies have highlighted in the past that structured educational programs have significantly improved the knowledge of the community as well as a focus group of people (nonteaching hospital staff, security guards, etc.) on different aspects of tobacco and its consumption and related laws.<sup>[6-8]</sup> However, there is very limited evidence from this part of the country regarding the awareness of tobacco, its ill effects, and the COTPA among the nonteaching hospital staff. Hence, the present study aims to assess the effectiveness of an educational training program conducted on COTPA 2003 among nonteaching staff of a tertiary care hospital.

## Materials and Methods

### Study design and setting

A cross-sectional study was conducted in the hospital campus of a tertiary care hospital in Raebareli, India. The hospital has a yearly footfall of 91,884 patients in 2020-2021.<sup>[9]</sup>

### Study participants and sampling

The study was conducted among the security personnel, housekeeping staff, and hospital attendants working in the institute. There was a total of 626 security personnel, housekeeping staff, and hospital attendants. The individuals willing to participate were included in the study. Those not willing to participate and those who were absent during the study period were excluded. The

sample size was calculated based on a previous study conducted in Goa, India, which had reported that 68.6% of the study participants were aware of any tobacco control laws.<sup>[5]</sup> Considering prevalence as 68.6%, absolute error of 4.5%, and nonresponse rate of 15%, a sample size of 500 study participants was estimated. Study participants were included in the study by convenient sampling technique where the first 500 participants who provided consent were included.

The present study was a part of opportunistic research conducted during the time of an educational training program related to the COTPA Act, which was conducted in April 2022. This program was organized in collaboration with the State Tobacco Control Cell. The program was a 3-day program divided into four sessions of half an hour each. These sessions were interactive, and the participants were encouraged to discuss, clarify, and actively participate. The details of the program are given in Figure 1.

### Data collection tool and technique

A pre-designed, pre-tested, structured questionnaire was used for data collection. The tool had two sections, first on the socio-demographic profile of the study participants and second on knowledge related to COTPA 2003. The second section had 10 items with multiple-option questions and a single correct response. Data on knowledge was collected at two cross-sectional points of time using the same study tool, whereas the demographic profile was collected at the beginning of the study. The two cross-sectional points were one before the training program (pre-test) and the second 2 hours after the training program (post-test). The survey instrument was developed based on a literature review,<sup>[5,7,10]</sup> and it was pre-tested among 20 participants for detection of face validity, the ambiguity of words, and the ability to understand by the participants based on the feedback modifications made to make the questionnaire appropriate according

<b>Training Schedule</b>		
Topic: COTPA 2003		
Objective: To make the Campus -A tobacco-free zone		
Day	Participants	Training Program
1	Security personnel	A 2-hour training program was conducted. 1. 1 <sup>st</sup> Half an hour: Tobacco and its ill effects 2. 2 <sup>nd</sup> Half an hour: How to prevent tobacco addiction 3. 3 <sup>rd</sup> Half an hour: COTPA Act and its implementation 4. 4 <sup>th</sup> Half an hour: Role and responsibility of each category of staff in relation to the COTPA Act implementation
2	Housekeeping Staff	
3	Hospital Attendants	
Training material used		Charts, videos, lectures, demonstrations, and PowerPoint presentations. All the materials for training were translated from English to Hindi.
Conducted by the Department of Community & Family Medicine in collaboration with the state tobacco control cell.		

Figure 1: Schedule of the Educational Training Program on COTPA 2003

to the objective and design of the study. A few changes like “Health issues due to tobacco consumption” were changed to “Health problems due to tobacco consumption,” the word “minor” was changed to “individual less than 18 years,” etc., Care was taken to make the questions as simple as possible for the participants to comprehend. The content validity of the questionnaire was assessed based on five experts’ assessments, and it was found to be 0.88.<sup>[11]</sup> Of five experts, two were from public health backgrounds, one each from district and state tobacco cell, and one from institution administration.

### Data analysis

Data collected was entered into Microsoft Excel and analyzed using SPSS version 20.0. Descriptive data was presented using mean, standard deviation (SD), and percentages. Each correct response to an item in the knowledge section of the questionnaire was allotted a score of one. A total score out of 10 was calculated before and after the training program. A comparison of the knowledge score before (pre-test) and after (post-test) the training session was performed using the paired *t*-test. A multiple linear regression analysis of the level of knowledge (both pre- and post-test) with demographic variables was conducted where *P* value < 0.05 was considered significant.

### Ethical consideration

All the steps of biomedical research of the Indian Council of Medical Research (ICMR) were followed during the whole course of the survey. Written informed consent was obtained from all the study participants. An indirect identifier was used to maintain the confidentiality of the participants as well as the confidentiality of the data. All the collected data was kept in a digitally locked

form, and personal identifiers were removed. The data was used only for research purposes. The study was approved by the institutional research committee (Protocol number: 2022-10-IMP-3).

## Results

Out of all study participants, 187 (37.4%) were security personnel, 198 (39.6%) were housekeeping staff and 115 (23%) were hospital attendants. The mean ( $\pm$  SD) age of participants was  $29.9 \pm 7.4$  years. A total of 90 (18%) participants consumed any form of tobacco. Smokeless tobacco was consumed by 54 (60%), smoked form by 30 (33.3%), and 6 (6.7%) consumed tobacco in both forms [Table 1].

All the participants completed both pre-test and post-test assessments. The pre-test mean ( $\pm$  SD) knowledge score of the study participants was  $4.91 \pm 1.59$  whereas the post-test mean ( $\pm$  SD) knowledge score was  $7.91 \pm 1.42$ . The mean knowledge score improved significantly among all three groups of participants [Table 2].

In both pre-test ( $F = 15.86, P = 0.000$ ) and post-test ( $F = 5.740, P = 0.003$ ), there was a significant difference between the knowledge scores among three different types of study participants. However, Tukey’s HSD (Honestly Significant Difference) *post hoc* test showed that housekeeping staff and security personnel had significant knowledge differences during pre- ( $P = 0.000$ ) and post-test ( $P = 0.003$ ) levels. Similarly, hospital attendants and security personnel did not have any significant knowledge score difference during the pre- ( $P = 1.000$ ) and post-test ( $P = 1.000$ ) levels. However, housekeeping staff and hospital attendants had significant knowledge differences at the pre-test level ( $P = 0.000$ ), whereas there was no such difference at the post-test level ( $P = 0.089$ ). So, the maximum benefit

**Table 1: Demographic characteristics of the study participants (n=500)**

Variable	Category	Frequency (%)			
		Security personnel (n=187)	Housekeeping staff (n=198)	Hospital attendant (n=115)	Total (n=500)
Age (in years)	$\leq 20$	0	2 (1.0)	4 (3.5)	6 (1.2)
	20-40	164 (87.7)	178 (89.9)	111 (96.5)	453 (90.6)
	>40	23 (12.3)	18 (9.1)	0	41 (8.2)
Gender	Male	163 (87.2)	158 (79.8)	110 (95.7)	431 (86.2)
	Female	24 (12.8)	40 (20.2)	5 (4.3)	69 (13.8)
Residence	Rural	136 (72.7)	170 (85.9)	95 (82.6)	401 (80.2)
	Urban	51 (27.3)	28 (14.1)	20 (17.4)	99 (19.8)
Education	Up to Primary	0	10 (5.1)	2 (1.7)	12 (2.4)
	Up to Secondary	17 (9.1)	34 (17.2)	10 (8.7)	61 (12.2)
	Up to High school	91 (48.7)	104 (52.5)	32 (27.8)	227 (45.4)
	Up to Intermediate	73 (39.0)	30 (15.1)	41 (35.7)	144 (28.8)
	Up to Graduation	6 (3.2)	20 (10.1)	26 (22.6)	52 (10.4)
	Up to Postgraduation	0	0	4 (3.5)	4 (0.8)
History of tobacco consumption	Yes	28 (15.0)	52 (26.3)	10 (8.7)	90 (18.0)
	No	159 (85.0)	146 (73.7)	105 (91.3)	410 (82.0)

of the educational awareness program was reflected in the knowledge gained by housekeeping staff [Table 3].

The participants residing in urban areas, those with no history of tobacco consumption, and the age of the participants had a significant positive relationship ( $P$  values are  $< 0.05$ ) with the pre-test knowledge score when adjusted

for other variables. The female participants had a significant negative relationship with the pre-test knowledge score with a standardized coefficient of  $-0.49$  ( $P$  value =  $0.009$ ). The post-test knowledge score had a positive relationship only with no history of tobacco consumption, with a standardized coefficient of  $0.42$  ( $P$  value =  $0.012$ ) when adjusted for other variables [Table 4].

**Table 2: Comparison of pre-test and post-test knowledge scores of study participants on COTPA and tobacco consumption ( $n=500$ )**

Knowledge level questions	Type of participants								
	Security guard ( $n=187$ )			Housekeeping staff ( $n=198$ )			Hospital attendant ( $n=115$ )		
	Pretest (mean $\pm$ SD)	Post-test (mean $\pm$ SD)	$P$	Pretest (mean $\pm$ SD)	Post-test (mean $\pm$ SD)	$P$	Pretest (mean $\pm$ SD)	Post-test (mean $\pm$ SD)	$P$
Prohibition of smoking in public places	0.79 $\pm$ 0.41	0.91 $\pm$ 0.28	0.002	0.57 $\pm$ 0.49	0.90 $\pm$ 0.28	0.000	0.50 $\pm$ 0.50	0.94 $\pm$ 0.22	0.000
Awareness about penalties for smoking in public places	0.35 $\pm$ 0.48	0.70 $\pm$ 0.45	0.000	0.28 $\pm$ 0.45	0.75 $\pm$ 0.42	0.000	0.46 $\pm$ 0.50	0.68 $\pm$ 0.46	0.000
Awareness of prohibition of the sale of tobacco products to a minor	0.47 $\pm$ 0.50	0.71 $\pm$ 0.45	0.000	0.50 $\pm$ 0.50	0.61 $\pm$ 0.48	0.17	0.39 $\pm$ 0.49	0.50 $\pm$ 0.50	0.096
Ban on sale of tobacco products near schools/colleges	0.87 $\pm$ 0.32	0.96 $\pm$ 0.17	0.001	0.75 $\pm$ 0.42	0.86 $\pm$ 0.33	0.002	0.91 $\pm$ 0.28	0.93 $\pm$ 0.25	0.595
Ban on sale of loose cigarettes	0.10 $\pm$ 0.30	0.54 $\pm$ 0.49	0.000	0.14 $\pm$ 0.34	0.34 $\pm$ 0.47	0.000	0.08 $\pm$ 0.28	0.51 $\pm$ 0.50	0.000
Health problems caused due to tobacco use	0.95 $\pm$ 0.21	0.94 $\pm$ 0.23	0.656	0.58 $\pm$ 0.49	0.86 $\pm$ 0.33	0.000	0.86 $\pm$ 0.34	0.91 $\pm$ 0.28	0.202
Ban on advertisements related to tobacco	0.72 $\pm$ 0.44	0.89 $\pm$ 0.30	0.000	0.85 $\pm$ 0.34	0.90 $\pm$ 0.28	0.141	0.79 $\pm$ 0.40	0.89 $\pm$ 0.30	0.033
Penalty amount if found smoking in areas prohibited by the law	0.21 $\pm$ 0.41	0.86 $\pm$ 0.34	0.000	0.00 $\pm$ 0.00	0.72 $\pm$ 0.44	0.000	0.27 $\pm$ 0.44	0.96 $\pm$ 0.18	0.000
Legal age for buying or selling tobacco products	0.47 $\pm$ 0.50	0.77 $\pm$ 0.41	0.000	0.55 $\pm$ 0.49	0.79 $\pm$ 0.40	0.000	0.60 $\pm$ 0.49	0.74 $\pm$ 0.43	0.020
Display of pictorial health warnings on tobacco products	0.20 $\pm$ 0.40	0.81 $\pm$ 0.39	0.000	0.18 $\pm$ 0.39	0.85 $\pm$ 0.34	0.000	0.39 $\pm$ 0.49	0.91 $\pm$ 0.28	0.000
Total score	5.19 $\pm$ 1.43	8.1 $\pm$ 1.45	0.000	4.43 $\pm$ 1.64	7.65 $\pm$ 1.32	0.000	5.29 $\pm$ 1.53	8.01 $\pm$ 1.50	0.000

**Table 3: Comparison of the within-group pre- and post-intervention knowledge score comparison among different types of participants using ANOVA**

Variable	Pre-intervention			
	Mean±SD	F	P	Post hoc P
Housekeeping staff (HK)	4.43±1.64	15.856	0.000	*0.000, †0.000, ‡1
Hospital attendant (HA)	5.29±1.53			
Security Guard (SG)	5.10±1.43			
		Post-intervention		
Housekeeping staff (HK)	7.65±1.32	5.740	0.003	§0.089,   0.003, ¶1
Hospital attendant (HA)	8.01±1.50			
Security Guard (SG)	8.10±1.45			

\*Comparison between HK & HA, †Comparison between HK & SG, ‡Comparison between HA & SG. §Comparison between HK & HA, ||Comparison between HK & SG, ¶Comparison between HA & SG

**Table 4: Multiple linear regression for association between pre-test and post-test knowledge score and demographic variables of the participants ( $n=500$ )**

Explanatory variable	Unit of measurement	Pre-test knowledge score			Post-test knowledge score		
		Standardized coefficient	Standard error	$P$	Standardized coefficient	Standard error	$P$
Constant		3.60	0.61		6.74	0.373	
Age	Number	0.02	0.01	0.024	0.01	0.01	0.220
Gender	Male=0, Female=1	-0.49	0.19	0.009	-0.06	0.17	0.705
Residence	Rural=0, Urban=1	0.52	0.18	0.004	-0.03	0.16	0.834
History of tobacco consumption	Yes=0, No=1	0.41	0.18	0.025	0.42	0.17	0.012
Education	Up to secondary=0, High school and above=1	-0.05	0.08	0.544	0.05	0.07	0.442



## Discussion

The study assessed the effectiveness of the educational training program on COTPA 2003 among security personnel, housekeeping staff, and hospital attendants of a tertiary care hospital, with the majority of the study participants being male, residing in rural areas, and belonging to 20-40 years age group.

Similar to the studies conducted in the past, the majority of the study participants in the present study were males.<sup>[5,8,12]</sup> The prevalence of any form of tobacco consumption among males in India was 38%.<sup>[3]</sup> Therefore, it is important to train and educate them to achieve a “tobacco-free zone” in any organization. The majority of the study participants were residing in rural areas, and National Family Health Survey 5 (NFHS-5) clearly showed a higher proportion of tobacco consumption among the rural population.<sup>[3]</sup> Around 18% of the study participants consumed any form of tobacco. The reason for the lower proportion may be due to the social desirability bias among the participants. A similar finding was obtained in a study conducted among hospital staff.<sup>[13]</sup> The present study showed that 60% of the participants consumed smokeless tobacco, which was higher than the studies conducted in different parts of Uttar Pradesh, India.<sup>[14,15]</sup> These studies were conducted among the general adult population with larger sample size and hence reported lower proportions. A study by Solhi *et al.*<sup>[16]</sup> reported the main reasons for the consumption of smokeless tobacco were easy access, friends, and family members being users, culturally acceptable, etc.

The overall mean pre-test knowledge score was less among the participants in the present study. A study conducted by Pillania and Rani<sup>[12]</sup> reported that around 90% of the participants had poor pre-test knowledge about tobacco and its related aspects. However, studies conducted in Goa and Daman among security personnel reflected higher knowledge scores.<sup>[5,17]</sup> The difference noted may be due to differences in methodology, study population, and classification of score. It is to be noted that tobacco is considered a traditional medicine and is also offered to guests at home in the region of the present study.<sup>[18]</sup>

High pre-test knowledge scores about the ban on tobacco product sales near educational institutes ( $0.83 \pm 0.36$ ) as well as in public places ( $0.63 \pm 0.48$ ) probably reflect the good publicity of the law among the participants, and it will help to reduce the use of tobacco among minors as well as in public places in future. However, less awareness about the ban on the sale of loose cigarettes ( $0.11 \pm 0.32$ ) and the amount of penalty for public smoking ( $0.14 \pm 0.35$ ) highlights that in spite of having

good awareness about some components of the law, in-depth understanding of all the different sections of the law demands a structural training program. A similar finding was reflected in a study conducted by Gaunkar *et al.* in Goa<sup>[5]</sup> and Eshwari *et al.* in Karnataka.<sup>[19]</sup>

Females had a negative relationship with pre-test knowledge scores with a standardized coefficient of -0.49 ( $P$  value = 0.009). Goyal *et al.*<sup>[20]</sup> conducted a study in India that also reported similar findings. The underlying reason is the less direct exposure of females to tobacco and poor literacy among females in India. The present study found that participants residing in urban areas had a positive relationship with pre-test knowledge scores. The reason for this is less exposure of the rural population to anti-tobacco campaigns<sup>[21]</sup> and lesser attendance of the rural population at tobacco cessation clinics.<sup>[22]</sup>

The present study showed a significant increase in post-test knowledge scores among the study participants, denoting the effectiveness of the training program. This emphasizes the fact that educational training programs are the cornerstone for health awareness. This also signifies the use of structured training programs with audio-visual aids in delivering health education. Visual media along with group interaction, provided an easy path to impart health content. Similar improvement was obtained in a study conducted by Pillania and Rani.<sup>[12]</sup>

The pre-test knowledge score had a significant relationship with age, gender, residence, and history of tobacco consumption, whereas after the structured training program on COTPA 2003, the post-test knowledge score only had a relationship with the history of tobacco consumption. This implies that it is tobacco consumption that affects the knowledge score when structured education is provided to any individual. An individual with no history of tobacco consumption may be well aware of the harmful effects of tobacco and have a greater level of motivation for the educational session, which has been reflected by a significant positive relationship with the post-test knowledge score. Hence, for tobacco consumer, there may be a requirement for other individualized strategies to improve their knowledge.

## Limitation and recommendation

The strength of the present study is the inclusion of almost all the cadres of nonteaching staff of the hospital responsible for implementing anti-tobacco measures. The data collector was blinded to the training program. The sample was well representative of the nonteaching staff of a hospital with good statistical power. The limitation of our study is that we developed a knowledge questionnaire in accordance with COTPA 2003, while this approach has

been used before, the tool has not been validated. In the future, other components of the validity can be assessed for better replicability. However, there may be the presence of an underlying social desirability bias in the study, and the training session conducted may not be enough to have a long-term memory. The success of this study will act as an impetus for other tertiary care hospitals and organizations to adopt the model and create a “tobacco-free zone.” Shortly, a multicenter study involving different tertiary care hospitals in the country can be conducted to improve the generalizability of the findings. We intend to conduct refresher training programs at regular intervals to improve the retention of knowledge.

## Conclusion

The study was conducted among the nonteaching staff of a tertiary care hospital who had poor knowledge about COTPA 2003. An educational training program effectively improved the knowledge among the study participants; however, for smokers, there is a requirement for different strategies. Training at regular intervals is required to re-emphasize the learning. This will act as a massive step toward controlling tobacco use and in turn, making an organization a “tobacco-free zone.”

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## Conflicts of interest

There are no conflicts of interest.

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