



## EFFECT OF TOBACCO RELATED CANCER AWARENESS PROGRAM ON ATTITUDE AND PRACTICES ABOUT CANCER AMONG RURAL YOUTH OF VARANASI, INDIA

<b>Sachchidanand</b>	Senior Resident , Department of Community Medicine Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005, India
<b>C. P Mishra*</b>	Professor, Department of Community Medicine Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005, India *Corresponding Author
<b>Alok Kumar</b>	Associate Professor, Department of Biostatistics, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005, India

**ABSTRACT** **Background:** Tobacco related diseases are among the mostly discussed public health problems, which kills more than 7 million people worldwide every year.

**Objective:** The study was designed to evaluate the effect of tobacco related cancer awareness program in terms of attitude and practices about cancer among rural youth of Varanasi, India.

**Materials and methods:** A community based intervention study was conducted in the Varanasi district. Total One hundred eighty two youth in the age group of 15- 24 years was selected by multistage sampling procedure. After base line assessment, subjects from two intervention villages were oriented about tobacco related cancer and effect of the same was measured by comparing finding for 2 nonintervention village. In order to draw meaningful inferences from results of the baseline and post intervention assessment, intervention and non-intervention groups were compared.

**Result:** Awareness of subjects from non-intervention and intervention groups was similar at the time of basal assessment. At the time of post-intervention assessment after intervention, significant changes, were observed in the opinion of subjects belonging to intervention group in terms of smoking any cigarette at all (87.9% vs. 71.4%), exposure to another person's cigarette smoke (61.5% vs. 19.8)), drinking >1 unit of alcohol a day (73.6 vs. 52.7), eating <5 portions of fruits and vegetable a day (50.5% vs. 23.1%), eating red or processed meat one a day or more (52.7% vs. 26.4%), being overweight (53.8% vs. 36.3%) having a close relative with cancer (64.7% vs. 35.2%), infection with human papilloma virus (47.3% vs. 7.7%), hepatitis B (34.1% vs. 3.3%), hepatitis C (49.5% vs. 7.7%).

**Conclusion:** After intervention there was a significant improvement in attitude and positive changes in practices of rural youth of Varanasi, India regarding Tobacco related Cancer.

**KEYWORDS :** Cancer, hepatitis C, hepatitis B, human papilloma virus, Tobacco

### INTRODUCTION:

Tobacco related diseases are among the biggest public health threats the world have ever faced, killing more than 8 million people a year. Above 7 million of deaths are the results of direct tobacco use while around 1.2 million are the result of non-smokers being exposed to second-hand smoke. Around 80% of the 1.1 billion smokers live in low- and middle-income countries, where the burden of tobacco-related illness and death is heaviest<sup>1</sup>. In India tobacco use is emerging as a major health issue, with a large use of variety of a smoking forms and a group of smokeless tobacco products. According to the Global Adult Tobacco Survey (GATS) conducted among persons 15 years of age or older during 2009–10 indicate that 34.6% of the adults (47.9% males and 20.3% females) are current tobacco users. Fourteen percent of the adults smoke (24.3% males and 2.9% females) and 25.9% use smokeless tobacco (32.9% males and 18.4% females). According to the Global Youth Tobacco Survey (GYTS) conducted among 24,000 students aged 13–15 years in 2009, 14.6% students were tobacco users<sup>2</sup>.

There are approximately 10 different types of cancers with varying prognosis have been found to have a direct or indirect link to tobacco habits<sup>3</sup>. According to the International Agency for Research on Cancer (IARC) monograph, there is sufficient evidence in humans that tobacco smoking causes not only lung cancer, but also cancer of the oral cavity, naso-, oro- and hypo-pharynx, nasal cavity and Para nasal sinuses, larynx, esophagus, stomach, pancreas, liver, kidney, ureter, urinary bladder, uterine cervix and bone marrow (myeloid leukemia). Colorectal cancer is seen to be associated with cigarette smoking, although there is not sufficient evidence for it<sup>4</sup>.

In India approximately 4 lakh deaths occurs yearly due to cancer. According to the World Health Organization (WHO), in developing countries most cases of cancer are detected only in the advanced stages, when they are untreatable (ICMR, 2004). The fact is that in the most common cancers i.e., head and neck cancers, Cervical cancer and Breast cancer, there are proven screening methods to catch the disease at an early stage when it is curable<sup>5</sup>. In few countries various authors have surveyed the awareness of public about warning signs of

cancer in relation to early detection and prevention and results showed poor knowledge among them. Education on risk factors, early warning signals and their management were also found to be lacking in the study<sup>6,7</sup>.

Government of India in 1970s has designed primary and secondary prevention strategies for the cancer to be carried out through the district cancer control projects. Primary Prevention is generating awareness about cancer, good dietary and healthy living habits, ill effects of tobacco and passive smoking, carcinogens. Secondary prevention is generating awareness on the symptoms of cancer in the primary stages promoting self-examination, followed by early diagnosis and treatment. Despite of that cancer screening is not practiced in an organized fashion in any part of India<sup>8</sup>.

The present study is carried out to assess the effect of tobacco related cancer awareness programme on attitude and practices about cancer among rural youth of Varanasi, India

### MATERIAL & METHOD

The study was conducted in Kashi vidya peeth community Development (CD) Block of Varanasi district, India.

**Study design:** This is a community based intervention study adopted quasi experimental design

**Sample Size:** Sample size for each arm was estimated by using the formula-

$$N = K \times \frac{p_1(1-p_1) + p_2(1-p_2)}{(P1 - p2)^2}$$

$$(Z_{\alpha/2} + Z)^2$$

Taking  $\alpha = 0.05$  and power of the 80%

$$K = (Z_{0.05/2} + Z_{0.20})^2$$

$$= (1.96 + 0.842)^2$$

$$= (2.802)^2$$

$$= 7.9$$

Assuming  $P_1$  = Proportion of subjects knowledge before intervention = 0.3

P<sub>2</sub> = Proportion of subjects knowledge after intervention = 0.5

$$N = 7.9 \times \frac{[0.3 \times 0.7 + 0.5 \times 0.50]}{(0.3 - 0.5)^2}$$

= 91

Thus the estimated sample size worked out to be 91 for each arm.

**SAMPLING METHODOLOGY:**

Multistage sampling procedure was adopted for the selection of subjects. One community development block (Kashi Vidya peeth block) was selected from 8 Community Developments Block of Varanasi District by simple random sampling. In the selected Community Developments Block 4 villages (*Bacchaw, Hariharpur, Badagaon Pratham, and Tikari*) were selected by stratified random sampling; stratification was done on the basis of distance from the block headquarters. Proportionate numbers of study subjects were selected by simple random sampling methods from the universe of youths aged 15-24 years. At the time of post assessment three replacement samples were taken from non-intervention villages.

**Inclusion Criteria:**

Only permanent residents consenting for the study were included in the study.

**Exclusion Criteria:**

Subjects with obvious mental retardation and lack of understanding were excluded from the study.

**Ethical Approval:**

Before starting the study ethical approval was obtained by Institutional Ethical Committee of Banaras Hindu University and Consent was obtained by using bilingual consent form.

**Tools and technique:**

Family level information was obtained by interviewing study subjects/ head of the family or any other responsible family member on the predesigned and pretested proforma. Besides providing family level information this schedule was specifically designed to examine knowledge of study subjects regarding tobacco related cancer. This

study was carried out in 3 phases.

A- Pre-interventional phase: In this phase attitude and practices of the study subjects regarding tobacco related cancer were accessed by interviewing them with the proforma. Based on the findings of the study, educational package was evolved and educational materials were developed in Hindi in the form of posters and charts. Thus developed study material was pretested on sample of rural youth from a non-study village for comprehensibility, content and construct.

B- Interventional phase: In the intervention phase out of 4 selected villages, 2 were selected as intervention group by lottery method and other 2 villages were considered as non-intervention group. Out of 182 subjects selected during intervention phase, 91 were in intervention villages. They were oriented in a group of 20-25 about different types of tobacco and adverse effects of their consumption, initiation of causation of cancer, symptoms, causes, risk factors, prevention and screening of cancer.

C- Post-interventional phase: In the post-interventional stage information pertaining to key parameters regarding attitude and practices of tobacco related cancer was obtained by interviewing subjects from intervention and non-intervention villages.

**Analysis of data:**

Data thus generated were analyzed by using Statistical Packages for Social Sciences (SPSS) version 20. Appropriate tables were generated and z test was applied for statistical association and inference.

**RESULT**

At the baseline, opinion of the subjects from non-intervention and intervention areas did not differ significantly (p>0.05) regarding some of the factors (viz, smoking any cigarette at all , exposure to and other person's cigarette smoke, drinking >1 units of alcohol a day, eating <5 portions of fruits and vegetables a day, eating red or processed meat once a day or more, being overweight, having a close relative with cancer and infections with human papilloma, hepatitis B and Hepatitis C viruses) that can increase a person's chance of developing cancer (Table 1).

**Table-1:** Opinion of subjects regarding some of the factors that can increase a person's chance of developing cancer at the time of baseline assessment.

Parameters	Non-Intervention group (n=91)		Intervention group (n=91)		Test of significance	
	No.	%	No.	%	z value	p value
Smoking any cigarette at all	65	71.4	63	69.2	0.32	>0.05
Exposure to another persons' cigarette smoke	18	19.8	19	20.9	0.18	>0.05
Drinking >1 unit of alcohol a day	48	52.7	43	7.3	0.74	>0.05
Eating <5 portions of fruits & vegetable a day	21	23.1	22	24.2	0.17	>0.05
Eating red or processed meat once a day or more	24	26.4	23	25.3	0.16	>0.05
Being over weight	33	36.3	29	31.9	0.62	>0.05
Having a close relative with cancer	32	35.2	31	34.1	0.15	>0.05
Infection with human papilloma virus (HPV)	7	7.7	10	11.0	0.76	>0.05
Hepatitis –B	3	3.3	1	1.1	1.01	>0.05
Hepatitis-C	7	7.7	10	11.0	0.76	>0.05

In comparison to subjects from non-intervention group after intervention, significant (p<0.1) changes, were observed in the opinion of subjects belonging to intervention group in terms of smoking any cigarette at all (87.9% vs. 71.4%), exposure to another person's cigarette smoke (61.5% vs. 19.8%), drinking >1 unit of alcohol a day (73.6 vs. 52.7), eating <5 portions of fruits and vegetable a day (50.5%

vs. 23.1%), eating red or processed meat one a day or more (52.7% vs. 26.4%), being overweight (53.8% vs. 36.3%) having a close relative with cancer (64.7% vs 35.2%),infection with human papilloma virus (47.3% vs. 7.7%), hepatitis B (34.1% vs. 3.3%), hepatitis C (49.5 % vs. 7.7%) (Table 2).

**Table-2:** Opinion of subjects regarding some of the factors that can increase a person's chance of developing cancer at the time of post assessment.

Parameters	Non-Intervention group (n=91)		Intervention group (n=91)		Test of significance	
	No.	%	No.	%	z value	p value
Smoking any cigarette at all	65	71.4	80	87.9	2.76	<0.01
Exposure to another persons' cigarette smoke	18	19.8	56	61.5	5.78	<0.01
Drinking >1 unit of alcohol a day	48	52.7	67	73.6	2.92	<0.01
Eating <5 portions of fruits & vegetable a day	21	23.1	46	50.5	3.84	<0.01
Eating red or processed meat once a day or more	24	26.4	48	52.7	3.63	<0.01
Being over weight	33	36.3	49	53.8	2.38	<0.01
Having a close relative with cancer	32	35.2	59	64.7	4.00	<0.01
Infection with human papilloma virus (HPV)	7	7.7	43	47.3	5.97	<0.01
Hepatitis –B	3	3.3	31	34.1	5.32	<0.01
Hepatitis-C	7	7.7	45	49.5	6.23	<0.01

At the time of baseline assessment subjects from non-intervention and intervention group did not differ significantly ( $p>0.05$ ) in terms of changes following observation of any health warnings on cigarette packages in the past, 30 days. During basal assessment opinion/

attitude subjects from non-intervention and intervention group were similar in terms of using tobacco products offered by his/ her best friends' responses on the statement once a person has started smoking tobacco it would be difficult to quit (Table 3).

**Table-3:** Opinion of study subjects regarding selected parameters at the time of baseline assessment.

Parameters	Non-Intervention group (n=91)		Intervention group (n=91)		Test of significance	
	No.	%	No.	%	z value	p value
Health warnings on cigarette packages in the past 30 days observed but did not think much of them	27	29.7	25	27.5	0.32	>0.05
Observed and that laid to think about quitting smoking or not starting smoking	27	29.7	35	38.5	1.25	>0.05
Using tobacco products offered by his / her best friends.	41	45.1	36	39.6	0.75	>0.05
Response on the statement once a person has started smoking tobacco it would be difficult to quite	50	54.9	55	60.4	0.75	>0.05

The intervention package was effective in chaining the thinking about quitting smoking or not starting smoking after observing any health warning on cigarette packages in post 30 days, proportions of subjects who observed any health warning on cigarette packages in the past 30 days and this led them to think about quitting smoking or not starting smoking were 28.6% and 61.3% at the time of post assessment. Following intervention there was significant ( $p<0.01$ ) difference in the

attitude of subjects from intervention and non-intervention groups in terms of using tobacco products offered by his/ life best friend (6.6% vs. 45.1%), response on the statement once a person has started smoking tobacco it would be difficult to quit (39.6% vs. 54.9%), response on tobacco smoking from others was harmful to them (68.1% vs. 91.2%) (Table 4).

**Table-4:** Opinion of subjects regarding selected parameters at the time of post-intervention assessment.

Parameters	Non-Intervention group (n=91)		Intervention group (n=91)		Test of significance	
	No.	%	No.	%	z value	p value
Health warnings on cigarette packages in the past 30 days observed but did not think much of them	27	29.7	36	39.6	1.40	>0.05
Observed and that laid to think about quitting smoking or not starting smoking	26	28.6	56	61.5	4.46	<0.01
Using tobacco products offered by his / her best friends.	41	45.1	6	6.6	5.92	<0.01
Response on Tobacco smoking from others was harmful to them	62	68.1	83	91.2	3.86	<0.01

At the time of baseline assessment subjects belonging to non-intervention and intervention groups were similar ( $p>0.05$ ) in terms of smoking of *Bidi* cigarette, consumption of any form of smoked

tobacco products other than *Bidi* cigarette, smokeless tobacco products, *pan* and bitternuts (Table 5).

**Table-5:** Practices of subjects belonging to during baseline assessment.

Parameters	Non-Intervention group (n=91)		Intervention group (n=91)		Test of significance	
	No.	%	No.	%	z value	p value
Smoking of <i>Bidi</i> /Cigarette	16	17.6	15	16.5	0.18	>0.05
Consumption of any form of smoked tobacco products other than <i>Bidi</i> /Cigarette	6	6.6	7	7.7	0.28	>0.05
Consumption of smokeless tobacco products	20	22.0	18	19.8	0.36	>0.05
Consumption of <i>Pan</i>	16	17.6	17	28.7	0.19	>0.05
Consumption of Bitternut	10	11.0	12	13.2	0.45	>0.05

At the time of post assessment the proportion of subjects smoking *Bidi* cigarette from non-intervention and intervention groups were 17.6% and 15.4%, respectively. During post intervention assessment consumption of any form of smoked tobacco products other than *Bidi* and cigarette, smoking tobacco products, *pan* and bitternut were done by 6.6%, 22.0%, 17.6% and 11.0%, subjects from non-intervention area, corresponding values for subjects from intervention area were

3.3%, 16.5%, 12.1% and 7.7%. Although there was declining trend in different parameters of products this was not reached to level of statistical significance. Following intervention, percentage reduction for smoking of *Bidi* cigarette was 12.5% corresponding value for consumption of any form of smoked tobacco product other than *Bidi* cigarette smokeless tobacco products, *pan* betal nut was 50.0%, 25.0%, 31.2% and 30.0%, respectively (Table 6).

**Table-6:** Practices of subjects belonging to non-intervention and intervention groups during intervention assessment.

Parameters	Non-Intervention group (n=91)		Intervention group (n=91)		Test of significance	
	No.	%	No.	%	z value	p value
Smoking of <i>Bidi</i> /Cigarette	16	17.6	14	15.4	0.39	>0.05
Consumption of any form of smoked tobacco products other than <i>Bidi</i> /Cigarette	6	6.6	3	3.3	1.02	>0.05
Consumption of smokeless tobacco products	20	22.0	15	16.5	0.94	>0.05
Consumption of <i>Pan</i>	16	17.6	11	12.1	1.04	>0.05
Consumption of Bitternut	10	11.0	7	7.7	0.76	>0.05

**DISCUSSION**

Poor awareness towards the tobacco related cancer is considered as serious issue, which not only affects the public recognition towards disease but also delays the process of timely diagnosis and treatment. In present study majority of population were unaware of most of the factors that can increase a person's chance of developing cancer. Majority of population identified smoking cigarette and drinking

alcohol as a risk factor of tobacco related cancer. This could be due to the media publicity and programmatic efforts highly concentrate on publicity against cancer due to the 'Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003 (COTPA) prohibiting the consumption of cigarettes and other tobacco products, which are injurious to health (MOHFW, 2003). However, health

education activities hardly publicize other important risk factors like consumption of alcohol and red meat, overweight, having close relative with cancer, Infection with human papilloma virus, Hepatitis-B, Hepatitis-c etc.<sup>5</sup>. At the time of post intervention assessment, opinion of subjects belonging to intervention group on some of the factors that can increase a person's chance of developing cancer have been significantly more affirmative in comparison to those belonging to non-intervention group.

It is often argued by the tobacco industry that smokers are adequately informed about the health risks of smoking<sup>9</sup>. At base line majority of subjects of both the groups were unaware of the statutory and pictorial warnings. The findings are similar to the previous studies done to assess the awareness of health warnings which were found to be 89.9%, 74%, and 73.4%<sup>10,11,12</sup>. After intervention, observations on any health warning on cigarette packages to think about quitting smoking or not starting smoking laid in six out of ten subjects in contrast to nearly three out of ten subjects in non-intervention group. Both the groups also differed considerably on response on tobacco smoking from others was harmful to them. There have been perceptible decline on the attitude of the subjects in the intervention group on using tobacco products offered by him/his best friend. Changes in the opinion/ attitude of the subjects in the intervention group were considerably more at the time of post intervention in comparison to basal values.

Tobacco industry vulnerable targets the youth who are easily influenced by cinema, television, mass media and their peer and friends. The other factors associated with youth tobacco use are the low socioeconomic status, availability, and cheaper price of tobacco products, lack of parental support or involvement, low levels of academic achievement and low self-esteem and a perception that tobacco use is the norm<sup>13</sup>. According to the Global Youth Tobacco Survey (GYTS), 2009 nearly 15% children in the age group of 13-15 years are consuming tobacco in some form. There is also evidence that each day 5,500 new youth are getting addicted to tobacco use<sup>14</sup>. In present study majority of the population were consuming tobacco in some form. At base line response of the subjects belonging to intervention and non-intervention group in terms of smoking of *bidi* / cigarette and consumption of any form of smoked tobacco products other than *bidi* / cigarette, smokeless tobacco products, pan and betelnut was similar. After a gap of 6 months, declining trend in different parameter was observed in the intervention group. However at practice level, changes have been not to extend reported in a study conducted by Tata Institute of Fundamental Research, where time gap after intervention was ten years<sup>15</sup>.

All parameter pertaining to Attitude and Practices of subjects belonging to non-intervention group was similar at the time of baseline and post intervention phase assessments. Post-intervention there was significant difference among all parameters related to Attitude and Practices of subjects belonging to interventional group. Thus the effect of education package has been significant.

## CONCLUSION:

The study employing interpersonal communication has been able to bring out considerable changes at the level of attitude and opinion about Tobacco related Cancer among rural youth of Varanasi, India. Declining trend at practice level reflects positive effect of the educational package on the Attitude and Practices of the study subjects on cancer in general and tobacco related cancer in particular. However, there is a need and scope for translational research adopting systems approach and community based approach.

## REFERENCES

1. World Health Organization. Tobacco. WHO, 29 May, 2019. Available from: <https://www.who.int/news-room/fact-sheets/detail/tobacco>. Last assessed on 12.06.2019.
2. Mishra GA, Pimple SA, Shastri SS. An overview of the tobacco problem in India. Indian journal of medical and paediatric oncology: official journal of Indian Society of Medical & Paediatric Oncology. 2012 Jul;33(3):139.
3. Regional Cancer Centre, Hospital based Cancer Registry, Consolidated Report 1982-2011, Regional Cancer Centre Publication, Thiruvananthapuram, India, 2012.
4. International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans. IARC, Lyon.
5. Raj S, Piang LK, Nair KS, Tiwari VK, Kaur H, Singh B. Awareness regarding risk factors, symptoms and treatment facilities for cancer in selected states of India. Asian Pacific Journal of Cancer Prevention. 2012;13(8):4057-62.
6. Ali NS, Khalil HZ. Cancer prevention and early detection among Egyptians. Cancer nursing. 1996 Apr 1;19(2):104-11.
7. Brunswick N, Wardle J, Jarvis MJ. Public awareness of warning signs for cancer in Britain. Cancer Causes & Control. 2001 Jan 1;12(1):33-7.
8. Nair MK, Varghese C, Swaminathan R. Cancer: Current scenario, intervention

strategies and projections for 2015. NCHM Background papers-Burden of Disease in India. 2005:219-5.

9. Cummings KM, Hyland A, Giovino GA, Hastrup JL, Bauer JE, Bansal MA. Are smokers adequately informed about the health risks of smoking and medicinal nicotine?. Nicotine & Tobacco Research. 2004 Dec 1;6(Suppl. 3):S333-40.
10. Raute LJ, Pednekar MS, Gupta PC. Pictorial health warnings on cigarette packs: A population based study findings from India. Tobacco Use Insights. 2009 Jan;2:TUI-S2751.
11. Perception of pictorial warning present on cigarette packet used in India among graduating dental students of Bangalore city. J Indian Assoc Public Health Dent 2009;14:158-68.
12. Karibasappa GN, Nagesh L, Usha GV, Prakash S. Assessment of Awareness about Pictorial Warnings on Tobacco Products Among 15 Years and Above Age in Davangere City, Karnataka, India-A Cross Sectional Survey. Indian Journal of Stomatology. 2011 Dec 1;2(4).
13. Philip PM, Parambil NA, Bhaskarapillai B, Balasubramanian S. Evaluation of a specially designed tobacco control program to reduce tobacco use among school children in Kerala. Asian Pacific Journal of Cancer Prevention. 2013;14(6):3455-9.
14. Annual Report 2013-14, Department of Health & Family Welfare Ministry of Health & Family Welfare Government of India p 139.
15. Gupta PC, Mehta FS, Pindborg JJ, Bhonsle RB, Murti PR, Daftary DK, Aghi MB. In: Primary prevention trial of oral cancer in India: a 10-year follow-up study. Journal of Oral Pathology and Medicine 1992, 21:433-9.