Original Article

Effect of magnification and changes in tobacco pictorial warning on asceticism of tobacco use: An exploratory survey

Suresh K. Sharma[1], Prasuna Jelly[1], Kalpana Thakur[1], Manoj Gupta[2]

[1]College of Nursing, and [2]Department of Radiation Oncology, All India Institute of Medical Sceinces, Rishikesh, Uttarakhand, India

Abstract

Background: Tobacco usage-related diseases pose serious threat for not only public health but also for country's economy and warning labels are considered as an effective strategy to spread more awareness on tobacco hazards. **Aim:** The aim of this hospital-based questionnaire survey was to assess the effect of magnified pictorial warning over tobacco products on asceticism of tobacco use and to measure the association of selected tobacco habits variables and asceticism of tobacco use. **Materials and Methods:** Present exploratory survey based on triangulation method of data collection was conducted among conveniently selected 1,008 tobacco users or smokers attending OPD services at tertiary care center during the year 2018–2019. Quantitative survey data was collected through structured questionnaire and two FGDs were conducted for qualitative information. Data was analyzed using descriptive and inferential statistics. **Results:** Magnification of health warnings over tobacco packets had impact on tobacco or cigarette consumption to some extent (415; 41.25%); but insisted only one third (383; 38.0%) participants to quit tobacco use. A significant association was observed between awareness about bad effect of tobacco use and attempt of quit tobacco uses (OR 0.29; CI 95%, 0.223–0.390; $P = 0.001$). Furthermore, significant effect of magnified warning over tobacco products was seen on reduction in tobacco use (OR 0.39; CI 95%, 0.300–0.531; $P = 0.001$) and quitting the tobacco (OR 0.38; CI 95%, 0.28620.513; $P = 0.001$). **Conclusion:** Study results concluded that magnification of pictorial warning is associated with the asceticism of tobacco use to some extent but alone it is not sufficient. Therefore, adjunct intervention of mass public education about bad effect of tobacco use is more essential to augment asceticism of tobacco use.

Keywords: Asceticism, behaviour change, graphics, substance abuse, tobacco use, warning labels

Introduction

Deleterious effects of tobacco consumption are the leading cause of preventable deaths and disability around the globe. In India, tobacco is accountable for around 800,000 deaths every year, out of which approximately 700,000 are related to smoking.[1] World Health Organization (WHO) report says that around 10 million deaths are expected to occur because of the heavy usage of tobacco products around the globe by the year 2030.[2] Cardiovascular diseases, pulmonary illnesses, and cancer are the three main categories of illness result from chronic use of smoked and smokeless tobacco. Smoking attributed as a risk factor for myocardial infarction among 37.4% population in South-Asian Countries.[3] For a developing country like India, tobacco related diseases pose a serious threat for not only public health but also for country's economy. Thus, new measures and strategies are required to deal with this progressive tobacco usage.

Address for correspondence: Prof. Suresh K. Sharma, Professor & Principal, College of Nursing, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India.
E-mail: skaiims17@gmail.com

Received: 23-07-2020 **Revised:** 29-09-2020
Accepted: 12-10-2020 **Published:** 31-12-2020

Access this article online

Quick Response Code:

Website: www.jfmpc.com

DOI: 10.4103/jfmpc.jfmpc_1509_20

How to cite this article: Sharma SK, Jelly P, Thakur K, Gupta M. Effect of magnification and changes in tobacco pictorial warning on asceticism of tobacco use: An exploratory survey. J Family Med Prim Care 2020;9:6051-60.

Introduction of health warning over tobacco products are considered as one such measure to promote awareness regarding hazards of tobacco use. The first warning label over tobacco products was placed in 1970s but it did not solve the purpose and then during 1980s and 1990s many countries made it mandatory with increase in size and more specific warnings that focus on direct connection between smoking and fatal lung diseases. Around 40 countries have adopted modified health warning labels with more scary visual images and increased coverage area over each packets although the specifications may vary.[4]

India has started working too late on warning labels and first it was notified in 2006; continuous changes in policies and recent amendment which came in 2018 conveys a hope to bring the desired outcome in reducing the trends of tobacco usage. Indian government has taken initiative and amended rules that were applicable from September 1, 2018 for all tobacco related products available for sale in market (packaging and labelling) and as per this rule two images of diseased were printed over tobacco packets and these images will be rotated by two different set of images in coming September 2020.[5] Instead of various research projects and government guidelines on tobacco consumption, use of tobacco is still very evident.

Framework Convention on Tobacco Control had stated that everyone should be well informed of the health hazards and fatal consequences of tobacco consumption.[4] Warning labels printed over tobacco packs are considered as an effectual strategy to convey the health hazards of consuming tobacco related products that ultimately results in bringing desired positive behavioral change like quitting and reducing tobacco consumption.[6,7] Designing and packaging of tobacco products attracts users' attention and sometimes reassures them to use it instead of feeling anxious after noticing printed warning labels and also reduce the visibility of warning labels.[7,8] Smoker who consumes one packet of cigarette is exposed to health warnings on an average 20 times and pictorial warnings can be more beneficial in educating people with low literacy level and children regarding harmful effects of tobacco use whether smoked or smokeless.[9]

Pictorial warnings are considered to be most noticeable among all other health warnings and WHO called it as the six MPOWER to combat with tobacco abuse.[2] Longitudinal study on smokers of multiple countries suggested that pictorial warning labels are more noticeable than text warnings and motivate cessation activity.[7,10] Research studies from developed countries have shown that large, colorful, and scary warnings placed on tobacco products are more beneficial in informing consumers about potential hazard and risks associated with tobacco consumption,[11] although limited but data from experimental studies show effectiveness of pictorial warnings over text warnings in creating more awareness and capturing more attention.[12,13]

Findings from a systematic review on effect of pictorial warnings on smoking behavior clearly stated that pictorial warnings create modest impact on smoking behavior and suggested that more studies with sound methodology are required to validate this fact.[14] Hence, current study was performed to evaluate the effect of modified pictorial warning on tobacco users' asceticism behavior and to measure the association of selected tobacco habits variables and asceticism of tobacco use. It would be useful to gather data on tobacco user's opinion and suggestions in current warning labels and further it can be used to bring changes in framing policies for future endeavor.

Methodology

Present exploratory survey based on triangulation method of data collection was conducted among conveniently selected tobacco users or smokers attending OPD services at All India Institute of Medical Sciences, Rishikesh during the year 2018–2019. This study was intentionally conducted as an institutional survey because our tertiary care center is visited by the patients from different parts of state and nearby states; hence there are possibilities of better and wider representation of sample viz-a-viz convenience of data collection. It was also feasible for authors to collect data for a large number of population considering this method. Considering the overall prevalence of tobacco users as 28.6% in Indian population[15] and with the use of Epi Info Calculator Version 7[16]; the calculated sample size was 884. However, authors considered additional 20% of total sample size to make generalization possible as it was an institute based survey; a total of 1,060 sample size was initially considered. After complete data collection it was found that around 52 questionnaires were not properly filled; thus, there was a final sample size of 1,008 included in data analysis.

The individual who were using tobacco since last 3 years were enrolled in the study and those who were not ready or interested to participate were excluded from the study. Triangulation method with quantitative survey and qualitative focus group discussions was used for gathering information from study participants. The study was approved by Institutional Ethical Committee wide letter no. ECR/16/73; dated 15.04.16. All the participants signed written informed consent before participating in study.

Quantitative survey data was collected through structured questionnaire including demographic details, tobacco habits, and effects of modified pictorial warnings on asceticism of tobacco use. Experts in the field of psychiatry, community health, and de-addiction were consulted and they suggested modifications in the tool. Three items were merged and wordings of few statements were also changed. Authors' decided to split the information on effect of modified pictorial warnings into two sections; effect of modified pictorial warning on asceticism of tobacco use with twelve questions and opinion of tobacco users on modified pictorial warning questions with nine questions. Final draft of the questionnaire had four domains: Demographic details, tobacco habits, effect of modified pictorial warnings on

asceticism behavior, and opinion of tobacco users on modified pictorial warning labels. Crohnbach's alpha was used to establish reliability of the questionnaire and it was found to be 0.78.

In-depth understanding and variety of opinion on impact of warning labels and suggestions for modification in warning labels were assessed in detail from study participants with qualitative information. Participants who were willing to talk freely and express their opinion were included in focus group discussions. Two focus group discussions were conducted till point of data saturation with 12 people in each (1 each from group of religion, educational qualification, and gender) and total duration of FGDs were 25–30 min. Investigator was trained in conducting FGDs and invited equal participation of all the participants and detailed report of group discussions was prepared.

Data was entered into spreadsheet and analyzed using SPSS version 23. Analysis was performed using descriptive and inferential statistics based on study objectives. For selected demographic and tobacco habits variables, multivariate linear regression analysis was used to find the association with the asceticism of tobacco use. Qualitative data was sorted under categories and codes for expressions of participants' opinion.

Results

Present study includes a total of 1,008 participants and there was 100% response rate. The mean age of study participants was 46.47 ± 14.00, with a range of 45.6–47.3. Out of 1,008 participants, 878 (81.7%) were males and 130 (12.9%) were females. Around 193 (19.1%) participants were working as professionals, 201 (19.9%) were semi-professionals, 214 (21.2%) were working as clerks/shopkeepers/farmers, 167 (16.6%) were skilled workers, 187 (18.6%) were semi-skilled workers, and only 46 (4.6%) were working as unskilled workers. Data regarding social class revealed that nearly one third of the respondents 306 (30.4%) were from lower middle class and only 16 (1.6%) participants belong to upper class. On asking about details of residence, 593 (58.8%) were residing in rural areas, 263 (26.1%) in semi-urban areas and very minimum 152 (15.1%) were from urban residential places. [Table 1]

Tobacco or smoking habits

Among 1,008 participants, 615 (61.0%) were cigarette/bidi smokers followed by 275 (27.3%) tobacco chewers and around 118 (11.7%) were using both cigarette/bidi smokers and tobacco chewers. Mean duration (in years) of tobacco consumption were reported as 12.95 ± 10.75 with a range of 12.2–13.6. Frequency of daily tobacco consumption shown that around one third of the respondents 333 (33.0%) consumed it for less than 5 times a day followed by 456 (45.2%) who consumed tobacco around 6–15 times a day, 157 (15.6%) did consume for 16–25 times a day, and around 62 (6.2%) consumed tobacco more than 25 times a day. More than one half of the participants 569 (56.4%) responded that no one in their family or friend uses tobacco products. Data also revealed that around 312 (30.9%) participants had diagnosed disease related to tobacco use. [Table 2]

Effect of modified pictorial warnings on asceticism of tobacco use

Dichotomous responses were used to identify the effect of modified tobacco packets pictorial warning on asceticism of tobacco use among study participants and only two statements with multiple responses were included to explore reasons for quitting tobacco or smoking and type of health hazards that was noticed by participants. More than half of the respondents 554 (55%) have tried to quit their tobacco or smoking habits and around 578 (57.3%) have noticed recent change in size of health warning printed over tobacco or cigarette packets. As per reported response, text warning was noticed by only 23 (3.9%) followed by 198 (34.2%) who noticed pictorial warnings and around 357 (61.8%) noticed both text and pictorial warnings. There were only 385 (38.2%) respondents who noticed health warning each time when they purchased or borrowed tobacco or cigarette packets. Fear and anxiety in response to modified health warning labels was experienced by around 199 (19.7%) participants and 99 (9.8%) reported night terrors. Magnification of health warnings on tobacco or cigarette consumption did impact on tobacco or cigarette consumption of 415 (41.25%) did insist around 383 (38.0%) participants to quit tobacco or smoking. [Table 3]

Tobacco users' opinion on modified pictorial warnings

Around 429 (42.6%) participants reported that pictorial warning was more understandable while other only 34 (3.6%) reported that text warning as more understandable, 451 (44.7%) participants stated that both (text and pictorial) were understandable to them and there were 94 (9.3%) for whom none of the warning labels were understandable. More than half of the participants 555 (55.1%) stated that placement of pictorial/graphic labels should be on both the sides of tobacco or cigarette packets and 294 (29.2%) stated that pictorial warning labels should cover 100% area over tobacco or cigarette packets. Majority of the study participants 864 (85.7%) had an opinion that present magnification of health warning on tobacco or cigarette packets is not useful for influencing people to stop/quit tobacco or cigarette consumption. However, 436 (43.2%) of the study participants think that present magnification of health warning may influence people to reduce the daily frequency of tobacco or cigarette consumption. Majority of the participants 888 (88.1%) did not suggest any change in the existing pictorial warning on tobacco or cigarette packets. [Table 4]

Association of selected tobacco habits variables and asceticism of tobacco use

The result of multivariate linear regression analysis was used to find independent factors (tobacco habits) associated with the asceticism of tobacco use. The significant association was

Table 1: Demographic Characteristics of the Study Participants (*n*=1008)

Variables	Categories	Number (%)	95% CI*
Age (Years)	18-29	137 (13.6)	11.5-15.8
	30-41	232 (23.0)	20.4-25.7
	42-53	321 (31.8)	28.9-34.8
	54-65	227 (22.5)	19.9-25.2
	66 and above	91 (9.0)	7.3-10.9
	Mean±SD=46.47±14.00 (CI: 45.6-47.3)		
Gender	Male	878 (87.1)	84.8-89.1
	Female	130 (12.9)	10.8-15.1
Religion	Hindu	755 (74.9)	72.1-77.5
	Muslim	243 (24.1)	21.5-26.8
	Christian	10 (1.0)	0.5-1.8
Education	Profession or Honours	256 (25.4)	22.7-28.2
	Graduate or Post graduate	163 (16.2)	13.9-18.9
	Intermediate or Post High School Diploma	217 (21.5)	19.0-24.2
	High School Certificate	223 (22.1)	19.6-24.8
	Middle School Certificate	62 (6.2)	4.7-7.8
	Primary School Certificate	79 (7.8)	6.2-9.6
	Illiterate	08 (0.8)	0.3-1.6
Occupation	Professional	193 (19.1)	16.8-21.7
	Semi-professional	201 (19.9)	17.5-22.5
	Clerical or Shop owner or Farmer	214 (21.2)	18.7-23.9
	Skilled worker	167 (16.6)	14.3-19.0
	Semi-Skilled worker	187 (18.6)	16.2-21.0
	Unskilled worker	46 (4.6)	3.4-6.0
Monthly Income (INR)	≥41985	190 (18.8)	16.5-21.4
	20992-41984	278 (27.6)	24.8-30.4
	15706-20991	254 (25.2)	22.5-28.0
	10496-15705	166 (16.5)	14.2-18.9
	6298-10495	08 (0.8)	0.3-1.6
	2102-6297	110 (10.9)	9.0-13.0
	≤2101	02 (0.2)	0.0-0.7
Social Class	Upper Class	16 (1.6)	0.9-2.6
	Upper Middle Class	112 (11.1)	9.2-13.2
	Lower Middle Class	306 (30.4)	27.5-33.3
	Lower Upper Class	436 (43.3)	40.2-46.3
	Lower Class	138 (13.7)	11.6-16.0
Type of Family	Nuclear	487 (48.3)	45.2-51.4
	Joint	500 (49.6)	46.5-52.7
	Extended	21 (2.1)	1.3-3.2
Place of Residence/Locality	Rural	593 (58.8)	55.7-61.9
	Semi- urban	263 (26.1)	23.4-29.0
	Urban	152 (15.1)	12.9-17.4

found between amount of cigarette/bidi smoking and reduction of tobacco or cigarette consumption after modification of health warnings (OR 0.98; CI 95%, 0.980–0.998, P = 0.013). Awareness about bad effects of tobacco use had significant association with the attempt of quitting tobacco or smoking (OR 0.29; CI 95%, 0.223–0.390, P = 0.000), awareness of change in size of tobacco or cigarette warning labels (OR 0.23; CI 95%, 0.179–0.314, P = 0.000), reduction of tobacco or cigarette consumption after modification of health warnings (OR 0.39; CI 95%, 0.300–0.531, P = 0.000), and magnification insisting to quit tobacco or cigarette (OR 0.38; CI 95%, 0.286–0.513, P = 0.000). Diagnosed disease related to tobacco use had a significant association with attempt to quit tobacco or smoking (OR 0.001; CI 95%, 0.730–0.921, P = 0.001) and awareness of change in size of tobacco or cigarette warning labels (OR 1.11; CI 95%, 0.99121.244, P = 0.070) [Table 5].

Focus group discussions

Findings from focus group discussions was done with participants in two different groups till exhaustion of data. Two main categories were formed under two different codes, that is, impact of warning labels and modification in warning labels. Most commonly reported impact of modified warnings along with few suggestions for modification in warning labels are explained in detail [Table 6].

Table 2: Tobacco Habits of the Study Participants *n*=1008

Variables	Categories	Number (%)	95% CI*
Type of Tobacco Use	Cigarette/Bidi Smoking	615 (61.0)	57.9-64.0
	Tobacco Chewing	275 (27.3)	24.5-30.1
	Both (smoking & tobacco chewing)	118 (11.7)	9.8-13.8
Amount of Cigarette/Bidi Smoking (*n*=733)	1-19 Cigarette/Bidi	310 (42.3)	38.7-46.0
	≥20/day	423 (57.7)	54.0-61.3
Amount of Tobacco Chewing (*n*=393)	>1 pack/day	86 (21.9)	17.9-26.3
	1-3 pack/day	265 (67.4)	62.5-72.0
	4-6 pack/day	32 (8.1)	5.6-11.3
	7-9 pack/day	05 (1.2)	0.4-2.9
	≥10 pack/day	05 (1.2)	0.4-2.9
Duration of Consuming Tobacco (Years)	≤5	267 (26.5)	23.8-29.3
	6-15	464 (46)	42.9-49.2
	16-25	163 (16.2)	13.9-18.6
	26-35	65 (6.4)	5.0-8.1
	>35	49 (4.9)	3.6-6.4
	Mean±SD=12.95±10.75 (CI: 12.2-13.6)		
Daily Frequency of Tobacco Consumption	≤5 times/day	333 (33.0)	30.1-36.0
	6-15 times/day	456 (45.2)	42.1-48.4
	16-25 times/day	157 (15.6)	13.4-18.0
	>25 times/day	62 (6.2)	4.7-7.8
Use of Tobacco by Family or Friend	Yes	365 (36.2)	33.2-39.3
	No	569 (56.4)	53.3-59.5
	Do not Know	74 (7.3)	5.8-9.1
Awareness About Bad Effects of Tobacco Use	Yes	649 (64.4)	61.3-67.3
	No	359 (35.6)	32.7-38.7
Source of Knowledge* (*n*=649)	Personal Experience	136 (21.0)	17.9-24.3
	Print & Electronic Media	317 (48.8)	44.9-52.7
	Participation in Awareness Programme	250 (38.5)	34.8-42.4
Diagnosed with Disease Related to Tobacco Use	Yes	312 (30.9)	28.1-33.9
	No	696 (69.0)	66.1-71.9
Type of Diagnosed Disease Related to Tobacco Use (*n*=312)	Respiratory Diseases	192 (61.5)	55.9-67.0
	Cardiovascular Diseases	45 (14.4)	10.7-18.8
	Other (Tooth decay, non-healing ulcer)	75 (24.0)	19.4-29.2

Discussion

Warning labels are an informative source of creating awareness among tobacco users. It has been observed that out of all, pictorial warning labels create more impact among tobacco users. Present study produced various novel findings: tobacco habits of participants, impact of pictorial warning on asceticism, and tobacco users' opinion on warning labels. Present study found that more numbers of tobacco users prefer cigarette/bidi than tobacco chewing and this is consistent with findings from another studies where majority were consuming cigarette.[7] Findings of qualitative FGDs revealed impact of modified pictorial warnings and further need of any modifications for effective pictorial warnings. Collected data could be a very productive in formulating tobacco control policies and programme both at community as well as country wide.

About 77.6% participants responded that they noticed warnings over tobacco or cigarette packs and these findings are in concordance with other studies where majority of the participants 90.26%,[17] 90%,[18] 72.3%[19] noticed warning labels. Study conducted by Dahiya *P et al.*[20] stated that pictorial warnings are helpful in reducing the tobacco habits and our study finding also stated similar findings as around 41.2% reduced their tobacco habits and 38% tried to quit after observing modified warnings. On the contrary, study conducted among Indian population by Oswal *et al.*,[21] Arora *et al.*[22] revealed that pictorial warnings are ineffective.

Tobacco users' opinion revealed that for 44.7% tobacco users, pictorial warnings are more understandable and only 27.4% did not understand anything from warning labels while others could comprehend it very well. It was concluded in a study that around 58.2% respondents understood pictorial warning but unable to have any impact on shunning tobacco habits.[20] Similarly, our study findings also depicted this interesting fact that 56.8% respondents had no influence of modified warnings on their tobacco habits and it only insisted 38% to quit tobacco products. It was stated in a study that it is difficult for tobacco users to avoid large pictorial warnings and those warnings serve as a deterrent to smokers.[8] However, in our study only 57.3% participants noticed magnification of pictorial warning on

Table 3: Effect of Modified Tobacco Packets Pictorial Warning on Asceticism of Tobacco Use (*n*=1008)

Questions	Number (%)	95% CI*
Have you ever tried to quit tobacco or smoking habits?		
Yes	555 (55)	51.9-58.2
No	453 (45)	41.8-48.1
What made you to quit tobacco or smoking? (n=555)		
Text Warning	22 (3.9)	2.5-5.9
Pictorial Warning	134 (24.1)	20.6-27.9
Suffered from disease	137 (24.7)	21.1-28.5
Family or Peer Pressure	170 (30.6)	26.8-34.6
Multiple Factors (Text Warning, Pictorial & Family Pressure)	74 (13.3)	10.6-16.4
Self-Realization	18 (3.2)	1.9-5.1
Are you aware of printed health hazards warning on tobacco or cigarette packets?		
Yes	782 (77.6)	74.9-80.1
No	226 (22.4)	19.9-25.1
Have you recently noticed any change in size of health warning on tobacco or cigarette packets?		
Yes	578 (57.3)	54.2-60.4
No	430 (42.7)	39.6-45.8
What are those health hazards warning that you noticed in modified pictorial? (*n*=578)		
Text Warning (Written)	23 (3.9)	2.5-5.9
Pictorial Warning (Pictures)	198 (34.2)	30.4-38.3
Both	357 (61.8)	57.7-65.7
Have you discussed with your family, friend or colleague about modified warning printed on tobacco or cigarette packets? (*n*=578)		
Yes	201 (34.8)	30.9-38.8
No	377 (65.2)	61.2-69.1
Do you notice health warning on tobacco or cigarette packets each time when you purchase or borrow from others?		
Yes	385 (38.2)	35.1-41.3
No	623 (61.8)	58.7-64.8
Have you ever experienced fear and anxiety when you notice health warning on tobacco or cigarette packets?		
Yes	199 (19.7)	17.3-22.3
No	809 (80.3)	77.7-82.7
Have you ever experienced night terrors regarding health warning on tobacco or cigarette packets?		
Yes	99 (9.8)	8.0-11.8
No	909 (90.2)	88.2-91.9
Did recent modifications of health warning on tobacco or cigarette packets impact your tobacco consumption?		
Yes	415 (41.2)	38.1-44.3
No	593 (58.8)	55.7-61.9
Did present magnification of health warning insist you to quit tobacco or smoking use?		
Yes	383 (38.0)	35.0-41.1
No	625 (62.0)	58.9-65.0
Do you know someone who quit tobacco due to health warnings on tobacco or cigarette packets?		
Yes	319 (31.6)	28.8-34.6
No	689 (68.4)	65.4-71.2

tobacco pickets and majority of them (61.8%) avoided seeing pictorial warning each time when they smoke or chew tobacco. While majority of the tobacco users in our study were satisfied with present warning labels, 11.9% suggested few changes like including more scary images, warnings in local language, and enlargement of size.

Graphic images have more retention and also motivate tobacco users to reduce or quit their tobacco habits; magnification in size of images can be considered an effective measure for awareness. It was suggested in earlier study findings that around 70–80% area over tobacco or cigarette packets should be covered with warning labels[17,18,20,23,24] and in present study around 29.2% think that 100% area should be covered for more impact. It was observed that participants' education and awareness of bad effects of tobacco consumption had significant association with participants' attempt to quit tobacco, noticed change in health warning, impact of magnification of warning labels in reduction and quitting tobacco. This is in accordance to other study findings where educated people were aware of health hazards of tobacco use and interested in quitting tobacco habits.[19,21,24] Interesting findings from this study was that participants felt that self-realization is more important than warning labels and also, there were few who could not even comprehend the pictorial warnings.

Tobacco users in our study gave their honest opinion and it can be concluded that modified pictorial warnings can be only effective to some extent but having self-realization and willpower is more important. As there were few who felt that impulse for tobacco intake is so strong that pictorial warnings does not matter. Similar

Table 4: Opinion of Tobacco users on Modified Tobacco Packets Pictorial Warning (*n*=1008)

Questions	Number (%)	95% CI
Which of the warning is more understandable?		
Text Warning	34 (3.4)	2.3-4.7
Pictorial Warning	429 (42.6)	39.5-45.7
Both	451 (44.7)	41.6-47.9
None	94 (9.3)	7.6-11.3
Where should be the placement of pictorial/graphic labels on tobacco or cigarette packets?		
One Sided	158 (15.7)	13.5-18.1
Two Sided	555 (55.1)	51.9-58.2
Unsure	295 (29.3)	26.5-32.2
How much area should be covered by pictorial warnings on the cover-page of the tobacco or cigarette packets to influence more people regarding its health hazards?	294 (29.4)	26.4-32.1
100%	314 (31.2)	28.3-34.1
50%	93 (9.2)	7.5-11.2
30%	305 (30.3)	27.4-33.2
Unsure		
What do you understand from the printed warning over tobacco or cigarette packets?		
Spread awareness on ill effects of tobacco consumption	431 (42.8)	39.7-45.9
Reduce the risk of heart & Lung diseases	57 (5.6)	4.3-7.3
Warning for cancer prevention	244 (24.2)	21.6-27.0
Nothing	276 (27.4)	24.6-30.2
Do you think that present magnification of health warning on tobacco or cigarette will be more helpful in creating awareness about ill effects?	514 (51.0)	47.9-54.1
Yes	494 (49.0)	45.9-52.1
No		
Do you think that present magnification of health warning on tobacco or cigarette is not useful for influencing people to stop/quit tobacco or cigarette consumption?	144 (14.3)	12.2-16.6
Yes	864 (85.7)	83.4-87.8
No		
Do you think that present magnification of health warning on tobacco packet may influence you to reduce daily frequency of tobacco use?	436 (43.3)	40.2-46.4
Yes	572 (56.7)	53.6-59.8
No		
What will be the effect of modified health warnings on tobacco or cigarette packets? (*n*=514)		
Non-tobacco users will think twice before starting the habit	121 (23.5)	19.9-27.5
Tobacco users will think before opening the packet	109 (21.2)	17.7-25.0
Tobacco users will think of reducing the frequency	168 (32.7)	28.6-36.9
Tobacco users will think to quit tobacco or smoking	108 (21.0)	17.5-24.8
All of the above	502 (97.7)	96.0-98.8
Do you suggest any changes in existing pictorial warning on tobacco or cigarette packets to bring the most desired effect?		
Yes	120 (11.9)	10.4-14.0
No	888 (88.1)	85.9-90.0

CI: Confidence interval

response was observed in another study where pictorial warning labels did not motivate tobacco users to reduce or quit tobacco.[17] Around 29.2% tobacco users in present study expressed that 100% area should be covered with pictorial warning labels on the cover-page of tobacco products. On the contrary, it has been stated that severe health warnings can lead to defensive reactions like avoidance and reluctance and also damage users' self-concept.[25] It has also been observed in recent studies that high level of exposure to discrimination which causes anxiety and depression make people more vulnerable to tobacco use.[26,27] Effective coping strategies and self-affirmations are commonly viewed as method to minimize the psychological discomfort and in present study tobacco users verbalized that more focus should be on remedial measures rather than harmful impact of tobacco products.

The data of current study unfolds one important information that tobacco users want to quit but unable and felt that self-realization is the only method for those who are addicted and they would like to volunteer in tobacco control movement so that youth could be prevented from tobacco abuse at very early stage. Indian government had already launched specific awareness programmes and campaigns to deal with the problem of substance abuse, where primary health care professionals have an important role for patients by counselling about potential harmful effects of tobacco consumptions and spreading awareness on harmful effects and different quitting measures. Therefore, it is important to understand that only placement of warning labels will not be sufficient. Rather, more vigorous approach by collaborating with self-help groups and volunteers is required to deal with this problem of tobacco abuse.

Table 5: Association of Tobacco Habits and Asceticism of Tobacco Use with Modified Pictorial Warnings (Multivariate linear regression Analysis) *n*=1008

Variable	Have you tried to quit tobacco or smoking?		Did you notice change in size of health warnings printed on tobacco or cigarette packets?		Did magnification of health warning result in reduction of tobacco or cigarette consumption?		Did Magnification of health warning insist you to quit tobacco or cigarette?	
	OR (95% CI)	*P*	OR (95% CI)	*P*	OR (95% CI)	*P*	OR (95% CI)	*P*
Type of Tobacco Use	1.19 (0.829-1.1716)	0.343	0.829 (0.573-1.198)	0.318	0.96 (0.679-1.3767)	0.835	0.88 (0.624-1.267)	0.515
Amount of Cigarette/ Bidi Smoking	0.99 (0.990-1.002)	0.202	1.00 (0.996-1.008)	0.550	0.98 (0.980-0.998)	0.013*	0.99 (0.989-1.003)	0.228
Amount of Tobacco Chewing	1.05 (0.793-1.398)	0.720	1.32 (0.984-1.771)	0.064	1.07 (0.822-1.410)	0.593	1.12 (0.857-1.477)	0.395
Duration Since Consuming Tobacco	0.82 (0.541-1.254)	0.366	1.21 (0.820-1.803)	0.330	1.15 (0.782-1.697)	0.475	1.02 (0.694-1.516)	0.899
Use of Tobacco by Family or Friend	0.93 (0.747-1.172)	0.562	0.96 (0.769-1.213)	0.766	1.00 (0.807-1.253)	0.960	1.04 (0.833-1.298)	0.730
Awareness About Bad Effects of Tobacco Use	0.29 (0.223-0.390)	0.000*	0.23 (0.179-0.314)	0.000*	0.39 (0.300-0.531)	0.000*	0.38 (0.286-0.513)	0.000*
Diagnosed Disease Related to Tobacco Use	0.001 (0.730-0.921)	0.001*	1.11 (0.991-1.244)	0.070*	0.97 (0.872-1.088)	0.640	0.97 (0.872-1.090)	0.660

CI: Confidence interval; OR: Odd ratio; *P<0.05 is considered significant

Table 6: Content Analysis of the Focus Group Discussions

Category	Codes	Responses of the Participants
Responses on effect of pictorial warning modification on Tobacco Consumption	Impact of Tobacco Warning Labels	Never noticed and bothered about text or pictorial warnings. Warning labels are frightening and no one like them. Disturbing images cause fear or anxiety as it is more prominent then company labels. Sometimes it feels like there are chances of getting one of those diseases projected in pictures placed over tobacco packs. Impulse for tobacco/smoking is so strong that warning labels never catches attention. Feels good when got indulge in such things which is dangerous and avoided by others. Even it is harmful but it gives pleasure and looks cool. Bad effects do not matter because it is not true that everyone who smokes or takes tobacco suffer. Warning labels are just placed because of government orders and if it is that dangerous they should ban tobacco sales. Warnings are of no use because only self-realization matters the most. Pictorial graphics increases emotional value and turn mood off. Warning are only for those who do heavy consumption. Labels are noticeable but no one remembers what is written word to word. Difficult to change habit just by seeing a picture or reading a single line message. Warning labels are of no use because information should be given only if someone asks for it.
Suggestions for any changes in present pictorial warnings on tobacco or smoking packets	Modification in Warning Labels	Everyone knows about harms of tobacco so no need to display over packets. No changes required and present warning labels are appropriate. Content needs to be more clear and influential. Pictorial warnings should be on both sides covering 100% area of packet. Size of the text labels should be enlarged and to be written in capitals. Leaflet on harmful effects of tobacco should be there inside every packet and it should be in local language. Plain packaging should be used because tobacco and cigarette packaging are very attractive and influence more people to start tobacco. More focus should be on remedial measures to quit tobacco/smoking.

Conclusion

Study concludes that there were only few participants who tried to quit or reduce tobacco consumption after modification of warning labels on tobacco packs; it may be because most of the participants did not understand it properly and others did not give attention toward these changes. Furthermore, we found that participants' awareness about bad effects of tobacco use had significant association with the attempt of quitting smoking/tobacco chewing, awareness of change in size of tobacco or cigarette warning labels, reduction of tobacco consumption after modification of health warnings and also magnification insisted to quit smoking and tobacco chewing. Qualitative data provided tobacco users' opinion about effect of tobacco warning label magnification and suggested changes in current graphic warning labels. It is therefore important in developing countries like India

to plan community-based tobacco control programmes to spread more awareness regarding health hazards of tobacco consumption with detailed information on de-addiction and antabuse treatment. Furthermore, we recommend to conduct well-designed community-based qualitative studies to get better understanding about the effectiveness of modified health warnings on tobacco packs and experimental studies to measure effect of different types and sizes of warning labels on tobacco packs.

Limitations

The study has few limitations like:

- It was a single institute based exploratory survey, thus study findings must be generalized with a great caution.
- We are unable to draw a conclusion on pictorial warnings' impact on adolescents' tobacco initiation behavior.

Key Message

Magnification of warning labels on tobacco packs showed limited effect of reduction or quitting of tobacco usages. However, participants' awareness about harmful effect of tobacco use was significantly associated with increased effect of magnified warning labels on tobacco packs. Therefore, in addition to magnification of warning labels on tobacco packs, government must heavily focus on increasing awareness of people about harmful effect of tobacco through community based mass awareness programs focusing mainly of underprivileged population.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

This intramural research project was funded by All India Institute of Medical Sciences, Rishikesh.

Conflicts of interest

There are no conflicts of interest.

References

1. John RM, Sung HY, Max W. Economic cost of tobacco use in India, 2004. Tob Control 2009;18:138-43.
2. World Health Organization Fresh and alive: Mpower, WHO report on the global tobacco epidemic, 2008. Geneva, Switzerland: World Health Organization; 2008 [Google Scholar].
3. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, *et al.* Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): Case-control study. Lancet 2004;364:937-52.
4. World Health Organization. Framework convention on tobacco control. elaboration of guidelines for implementation of article 11 of the convention. World Health Organization, 2008. Available from: www.who.int/fctc/guidelines/adopted/article_11/en/.
5. New specified health warning on tobacco products packs. Ministry of Health and Family Welfare. Available from: https://pib.gov.in/PressReleasePage. aspx?PRID=1527824.
6. Strahan EJ, White K, Fong GT, Fabrigar LR, Zanna MP, Cameron R. Enhancing the effectiveness of tobacco package warning labels: A social psychological perspective. Tobacco Control 2002;11:183-190.
7. Fong GT, Hammond D, Hitchman SC. The impact of pictures on the effectiveness of tobacco warnings. Bull World Health Organ 2009;87:640-3.
8. Hammond D. Tobacco packaging and labeling policies under the U.S. Tobacco Control Act: Research needs and priorities. Nicotine Tob Res 2012;14:62-74.
9. Janet H, Ninya M, Phil G. Effects of Cigarette On-Pack Warning Labels Onsmokers' Perceptions and Behaviour [Internet]. Acrwebsite.org. 2020 [cited 2020 Jul 06]. Available from: http://www.acrwebsite.org/volumes/13082.
10. Fong GT, Cummings KM, Borland R, Hastings G, Hyland A, Giovino GA, *et al.* The conceptual framework of the International Tobacco Control (ITC) policy evaluation project. Tob Control 2006;15(Suppl 3):iii3-11.
11. Thompson ME, Fong GT, Hammond D, Boudreau C, Driezen P, Hyland A, *et al.* Methods of the International Tobacco Control (ITC) four country survey. Tob Control 2006;15(Suppl 3):iii12-8.
12. Cantrell J, Vallone DM, Thrasher JF, Nagler RH, Feirman SP, Muenz LR, *et al.* Impact of tobacco-related health warning labels across socioeconomic, race and ethnic groups: Results from a randomized web-based experiment. PLoS One 2013;8:e52206.
13. Loeber S, Vollstädt-Klein S, Wilden S, Schneider S, Rockenbach C, Dinter C, *et al.* The effect of pictorial warnings on cigarette packages on attentional bias of smokers. Pharmacol Biochem Behav 2011;98:292-8.
14. Monárrez-Espino J, Liu B, Greiner F, Bremberg S, Galanti R. Systematic review of the effect of pictorial warnings on cigarette packages in smoking behavior. Am J Public Health 2014;104:e11-30. doi: 10.2105/AJPH.2014.302129. Epub 2014 Aug 14. Erratum in: Am J Public Health 2015;105:e5. PMID: 25122019; PMCID: PMC4167086.
15. Global Adult Tobacco Survey data-WHO. [Internet]. Who.int. 2020 [cited 2020 Jul 06]. Available from: https://www.who.int/tobacco/surveillance/survey/gats/ind/en/.
16. Sharma SK, Mudgal SK, Thakur K, Gaur R. How to calculate sample size for observational and experimental nursing research studies? Natl J Physiol Pharm Pharmacol 2020;10:1-8.
17. Vanishree N, Narayan RR, Naveen N, Bullapa D, Vignesh D, P Raveendran NM. Impact of pictorial warning labels on tobacco products among patients attending outpatient department of a dental college in Bangalore city: A cross-sectional study. Indian J Cancer 2017;54:461-6.
18. Chopra A, Rao NC, Gupta N, Vashisth S. Communicating tobacco health risks: How effective are the warning labels on tobacco products? Niger Med J 2014;55:411-6.
19. Shah VR, Dave VR, Sonaliya KN. Impact of anti-tobacco warning labels on behaviour of tobacco users in one of the cities of Gujarat, India. J Prev Med Hyg 2013;54:109-13.

20. Dahiya P, Kamal R, Gupta R, Bhatt S, Didhra G, Bansal V. Assessment of awareness about pictorial warnings on tobacco products in tobacco users in paonta sahib, Himachal Pradesh, India. Arch Med Health Sci 2017;5:39-43.
21. Oswal KC, Raute LJ, Pednekar MS, Gupta PC. Are current tobacco pictorial warnings in India effective? Asian Pac J Cancer Prev 2011;12:121-4.
22. Arora M, Tewari A, Nazar GP, Gupta VK, Shrivastav R. Ineffective pictorial health warnings on tobacco products: Lessons learnt from India. Indian J Public Health 2012;56:61-4.
23. Wigg S, Stafford LD. Health warnings on alcoholic beverages: Perceptions of the health risks and intentions towards alcohol consumption. PLoS One 2016;11:e0153027.
24. O'Hegarty M, Pederson LL, Nelson DE, Mowery P, Gable JM, Wortley P. Reactions of young adult smokers to warning labels on cigarette packages. Am J Prev Med 2006;30:467-73.
25. Sherman DK, Cohen GL. The psychology of self-defense: Self-affirmation theory. In: Zanna MP, editor. Advances in Experimental Social Psychology: Vol. 38. Advances in Experimental Social Psychology. Vol 38. Elsevier Academic Press; 2006. p. 183–242. https://doi.org/10.1016/S0065-2601 (06) 38004-5.
26. McCabe SE, Hughes TL, Matthews AK, Lee JGL, West BT, Boyd CJ, *et al*. Sexual orientation discrimination and tobacco use disparities in the United States. Nicotine Tob Res 2019;21:523-31.
27. Dyar C, Sarno EL, Newcomb ME, Whitton SW. Longitudinal associations between minority stress, internalizing symptoms, and substance use among sexual and gender minority individuals assigned female at birth. J Consult Clin Psychol 2020;88:389-401.