Original Article

Knowledge, Attitude and Perceptions on Pictorial Warnings on Tobacco Packaging in Relation to Age, Gender and Socio-economic Status among Patients Visiting a Dental Hospital in Mysuru City

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ABSTRACT

Objectives: The objectives of the study were to assess knowledge, attitude and perceptions on pictorial warnings on tobacco packaging in relation to age, gender and socio-economic status (SES) among patients visiting a dental hospital in Mysuru city.

Materials and Methods: This cross-sectional study was conducted among patients visiting a dental college and hospital in Mysuru. Initial questionnaire development was done using synthesis of inputs from subject experts and literature review. This questionnaire was then validated by three subject experts. Cognitive interview using concurrent verbal probing technique was undertaken on three prospective participants to elicit response process validity. Known group validity was assessed by distributing the questionnaire among three public health dentists and three 3rd year BDS students. Questionnaire was then subjected to reliability assessment on five participants using test retest method. Final questionnaire having 30 items was used on 400 participants aged more than 18 years visiting dental college hospital. Census enumeration of all eligible adult participants was done till the required sample size was reached.

Results: Mean knowledge score on warning signs on tobacco packaging was significantly higher among those aged <40 years (7.47 ± 2.47) compared to those aged 40 years and above (6.59 ± 2.47). It was also significantly higher among those from the upper classes (7.55 ± 2.41) compared to those from the lower classes (6.52 ± 2.52) with no significant difference in relation to gender and smoking status.

Conclusion: Knowledge on pictorial health warning labels was higher among younger individuals and those from the upper socio-economic classes with no significant difference in the attitude and perception in relation to age, gender, SES and smoking status.

Keywords: Pictorial health warnings, Tobacco packaging, Knowledge, Attitude, Perceptions

INTRODUCTION

Tobacco refers to a product prepared using the leaves of tobacco plants. Tobacco plants belong to the genus 'Nicotiana' and family 'Solanaceae.'[1] Tobacco is the only product that is legally permitted to be sold that kills most of its users when the product is consumed according to the

manufacturer's instructions. According to estimates of the World Health Organisation (WHO), worldwide, 6 million deaths occur annually which can be attributed to tobacco use either in the form of smoked tobacco or smokeless tobacco. Within this annual tobacco related mortality, it is estimated that around 600,000 deaths every year is because of exposure to second hand smoke. Tobacco use has far reaching adverse consequences on health, social status, economic status and environment.[2] Despite adverse consequences; tobacco use is very common around the globe. This can be due to low prices, aggressive and extensive marketing, low awareness about its dangers among general public and lack of consistent public policies against its use.[2] World Health Assembly unanimously espoused the WHO Framework Convention on Tobacco Control (WHO FCTC) in 2003 which is in force since 2005. The intension was to safeguard present and future generations from the devastating consequences of tobacco use and second hand exposure on health, social, environmental and economic conditions. The WHO FCTC was ratified by 180 countries as on March 2015. It covers about 90% of the population in the world.[2] It becomes legally binding to the parties to the convention that they develop and implement evidence based policies to regulate marketing activities of tobacco industry, sales, demand for tobacco while providing agricultural alternatives for those involved in tobacco cultivation.[2] The WHO introduced 'MPOWER' strategy in 2008 which include six evidence based measures to reduce the demand for tobacco. 'MPOWER' is an abbreviation where 'M' refers to 'Monitoring tobacco use and prevention policies,' 'P' refers to: 'Protecting people from tobacco smoke,' 'O' refers to: 'Offering help to quit tobacco use,' 'W' refers to: 'Warning about the dangers of tobacco,' 'E' refers to: 'Enforcing bans on tobacco advertising, promotion and sponsorship,' and 'R' refers to: 'Raising taxes on tobacco.'[2]

Tobacco is consumed in several smoked and smokeless forms besides exposing non users also to the dangers of exposure to second hand smoke. India is the second largest consumer of tobacco and third largest tobacco producer. According to the National Family Health Survey-3 conducted in 2005–2006, one-third (33.3%) of the men and 1.6% of women aged 15–49 years smoked while smokeless tobacco use was found among more than one-third (38.1%) of the men and one-tenth (9.9%) of the women.[3,4] Ministry of Health and Family Welfare Government of India had enacted 'The Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003' (COTPA) in 2004 even before it became party to the WHO FCTC. COTPA is a comprehensive legislation to control production, supply, distribution and sales of tobacco products in India.[5] Government of India also launched National Tobacco Control Programme (NTCP) in 2007–08 during the 11th 5-Year-Plan. NTCP was aimed at creating awareness on

harmful effects of tobacco, reducing production and supply of tobacco products, ensuring effective implementation of the provisions under COTPA, helping people to quit tobacco use, while facilitating implementation of MPOWER strategies for prevention and control of tobacco.[6]

Two Global Adult Tobacco Surveys (GATS) have been conducted in India. It was found that the tobacco consumption has reduced by around 6% points in GATS 2 (2016–17) compared to GATS 1 (2009–10). Tobacco use among adult participants aged 15 years or more in India in 2009–10 was 34.6% which reduced to 28.6% in 2016–17. This clearly indicates that the strategies adopted by Government of India has helped in reducing tobacco use to certain extent.[7]

Tobacco is an integral component of culture and tradition in many South-East Asian countries including India. Tobacco is used for various purposes in local communities with different societal mores and relations attached to its use. In Myanmar, tobacco use is culturally and socially accepted and is an element of social norm. Tobacco products are offered to guests during social congregations and religious festivities. Children offer raw tobacco to the elderly as a present when elderly visit their homes. This is a culturally ingrained practice in some communities in Kerala, India. The use of tobacco in celebrations including marriage is very common in most regions of India. *Taibur* (Tobacco water) is served to guests or visitors at parties in rural areas of Mizoram, India. Sharing a *hookah* is considered a symbol of companionship and solidarity among North Indian men. Tobacco chewing is socially acceptable and highly prevalent than smoking among rural women in Nepal. Contrary to this, some countries have certain beliefs and practices about tobacco that reduce its use. There is a belief among people in Myanmar that tobacco smoke is harmful to foetus. In view of this belief, men keep away from smoking and some choose smokeless tobacco when their wives become pregnant. Tobacco use is not permitted in Sikkism as it was banned by a Sikh Guru in the 17th century. As a result, the prevalence of tobacco use is low in Punjab compared to other regions. In Bhutan, tobacco use is considered as a sin. Tobacco consumption in Bhutan is very low. It's evident that tobacco use is intimately laced into social and cultural fabrics of many South-East Asian countries including India.[8]

Pictorial warnings on tobacco packaging are expected to motivate a tobacco user to quit the habit. Insertion of warning labels on tobacco packaging was first notified in 2006 in India and enforced from 31 May 2009 under Section 7 of The Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production and Supply and Distribution) Act, 2003. Studies have shown that warning labels on tobacco products help in communicating the adverse consequences of tobacco use even for an illiterate person. These warning labels are

expected to bring about behavioural changes which help in quitting and/or at least in reducing tobacco consumption to certain extent.[9-12]

Literature evaluating the effectiveness of pictorial warning signs on tobacco products among Mysore population was scanty. Hence, the present study was undertaken to assess knowledge, attitude and perceptions (KAP) on pictorial warnings on tobacco packaging in relation to age, gender and SES among patients visiting a dental hospital in Mysuru city.

MATERIALS AND METHODS

This cross-sectional study was conducted among patients visiting the OPD of JSS dental college and hospital, Mysuru over a period of 4 months from December 2019 to March 2020. Permission to conduct the study was obtained from head of the institution. Ethical clearance for the study was obtained from Institutional Ethics Committee vide JSSDCH IEC Research protocol number 84/2019 dated 25 October 2019. Investigator distributed the participant information sheet in the OPD registration counter in local language and requested informed consent from the participants willing to complete the questionnaire. Participant information sheet and consent forms were given either in English or local language based on participant preference. Participants willing to enrol into the study offered the informed consent and completed the questionnaire.

Development and validation of the questionnaire

The questionnaire development was done using synthesis of inputs from subject experts and literature review. A questionnaire used in the previous study[10] was identified and permission to use this questionnaire after requisite additional validation process in our study was obtained from the authors concerned. The initial questionnaire having 35 items was shared among three subject experts with a template to submit their scoring for each item in the questionnaire for its relevance on a scale of 1–5 (1 = Not all relevant, 2 = Not Relevant, 3 = Relevant, 4 – Quite relevant and 5 – Very much relevant). The subject experts were also requested to submit their comments on clarity of wordings used in each item and suggest revisions in the wordings (if essential). Based on inputs from subject experts, five items were deleted due to redundancy.[13,14] The item level and scale level content validity index for the final questionnaire having 30 items was 1.[15] The final questionnaire having 30 items was then subjected to reliability assessment on five participants using test retest method. The questionnaire was given in the morning session for these participants and the filled questionnaires were collected. The same questionnaire was distributed again to these participants in the afternoon session after explaining the need for collecting the information again. The consistency in the scores between first and second examination was determined using Kappa coefficient. It was found to be 0.84. The questionnaire was then subjected to cognitive interview on three prospective participants visiting the department to elicit response process validity. Concurrent verbal probing technique was used to elicit respondent's interpretation of each item during cognitive interview process.[13] Investigator interviewed the respondents with regard to their interpretation of each item in the questionnaire at the time when respondents were choosing their answers for each item. If the interpretation by respondent was as intended by the investigator, a score of 1 was assigned and a score of 0 was given when the interpretation was different from the intended interpretation. The respondents were requested to rephrase the item in their own words after explaining the intended meaning. Revised item using the wording suggested by the prospective participants only was considered for the study. Known group validity was assessed by distributing the questionnaire among three public health dentists and three 3rd year BDS students. The mean knowledge score from public health dentists was significantly higher (11 ± 1) compared to that obtained from students (5.7 ± 0.58) demonstrating known group validity evidence for the tool. Final questionnaire in English and Kannada is attached as [Annexure 1].

Sample size estimation and sampling technique

The sample size was estimated based on single proportion using nMaster software. The sample size was computed to be 384 at an assumed proportion of 0.8 with relative precision of 5% at 95% confidence level. However, the sample size was rounded off to 400 anticipating 5% non-response. Census enumeration of all eligible adult participants aged more than 18 years visiting dental college hospital who were willing to participate in the study during the data collection period were considered for the study. Data collection was done till the required sample size was reached. Final questionnaire was distributed among the study participants with a request to complete the questionnaires.

Data analysis

Data were entered onto a personal computer and statistical analysis was done using SPSS version 24.0 (IBM, Chicago, Illinois, USA). A score of 1 was given for each correct response from item number 9–20 while an incorrect response was given a score of 0. The scores for all the 11 items were totalled and mean knowledge score was compared between different sub groups using independent sample *t*-test. Pearson's Chi-square test was used for comparing the frequency distribution between different sub groups. Statistical analysis was fixed at 0.05.

RESULTS

A total of 400 participants completed the questionnaire. Among them, 238 participants were aged <40 years and 162 were aged 40 years and above. 269 participants were males and 131 were females. Although, SES was assessed using modified Kuppuswamy scale, considering the smaller sample size in some SES groups, we categorised the participants into two SES groups. 230 participants were from upper and upper middle classes and 170 participants were from lower middle, upper lower and lower classes. There was no statistically significant difference in the distribution of participants in relation to age, gender and SES ($P > 0.05$, [Table 1]). Among, 400 participants, 94 (23.5%) were current smokers with no statistically significant difference in the distribution of current smokers in relation to age and SES. However, a significantly higher percentage of males (33.8%) were current smokers compared to female current smokers (2.3%) ($P < 0.001$, [Table 2]). The most common reasons for initiating smoking

among current smokers in the descending order were stress (36.2%), style statement (23.4%), combination (13.8%) and Peer influence (11.7%), fascinated by watching movies (106%) and others (4.3%) with no significant difference in relation to age and SES [Table 3]. Each correct response for item numbers 9–20 which were knowledge based questions was assigned a score of 1 and an incorrect response was scored 0. The mean knowledge score was 7.11 ± 2.50 among the participants. Mean knowledge score on warning signs on tobacco packaging was significantly higher among those aged <40 years (7.47 ± 2.47) compared to those aged 40 years and above (6.59 ± 2.47) ($P = 0.001$) and those from upper classes (7.55 ± 2.41) compared to those from lower classes (6.52 ± 2.52) ($P < 0.001$). There was no significant difference in the mean knowledge score in relation to gender ($P = 0.513$) and smoking status ($P = 0.140$) [Table 4]. Most participants expressed positive attitude about the pictorial warnings on tobacco products with no significant difference in relation to age, sender and SES ($P > 0.05$, [Table 5]). There was no

Table 1: Age and gender distribution of study participants in different SES categories.

SES	Less than 40 years			40 years and above			Age groups combined		
Gender	Males *n* (%)	Females *n* (%)	Total	Males *n* (%)	Females *n* (%)	Total	Males *n* (%)	Females *n* (%)	Total
Upper and upper middle class	99 (67.3)	48 (32.7)	147 (100)	61 (73.5)	22 (26.5)	83 (100)	160 (69.6)	70 (30.4)	230 (100)
Lower middle, upper lower and lower class	56 (61.5)	35 (38.5)	91 (100)	53 (67.1)	26 (32.9)	79 (100)	109 (64.1)	61 (35.9)	170 (100)
Total	155 (65.1)	83 (34.9)	238 (100)	114 (70.4)	48 (29.6)	162 (100)	269 (67.2)	131 (32.8)	400 (100)
Statistical inference		χ²=0.835 df=1 P=0.361			χ²=0.835 df=1 P=0.361			χ²=1.317 df=1 P=0.251	

SES: Socio-economic status

Table 2: Distribution of current tobacco users in relation to age, gender and SES.

Variable	Current and past tobacco users Yes *n* (%)	Non tobacco users No *n* (%)	Total *n* (%)	Statistical inference
Age				
Less than 40 years	57 (23.9)	181 (76.1)	238 (100)	χ²=0.066
40 years and above	37 (22.8)	125 (77.2)	162 (100)	df=1
Total	94 (23.5)	306 (76.5)	400 (100)	P=0.797
Gender				
Males	91 (33.8)	178 (66.2)	269 (100)	χ²=48.745
Females	3 (2.3)	128 (97.7)	131 (100)	df=1
Total	94 (23.5)	306 (76.5)	400 (100)	P<0001
SES				
Upper and upper middle class	55 (23.9)	175 (76.1)	230 (100)	χ²= 0.051
Lower middle, upper lower and lower class	39 (22.9)	131 (77.1)	170 (100)	df=1
Total	94 (23.5)	306 (76.5)	400 (100)	P=0.821

SES: Socio-economic status

Table 3: Reasons for initiating tobacco habits among current tobacco users in relation to age, gender and SES.

Variable	Fascinated by watching movies n (%)	Stress n (%)	Style statement n (%)	Peer's Influence n (%)	Combination n (%)	Others n (%)	Total n (%)	Statistical inference
Age								
Less than 40 years	6 (10.5)	23 (40.4)	14 (24.6)	5 (8.8)	8 (14.0)	1 (1.8)	57 (100)	χ²=3.980
40 years and above	4 (10.8)	11 (29.7)	8 (21.6)	6 (16.2)	5 (13.5)	3 (8.1)	37 (100)	df=5
Total	10 (10.6)	34 (36.2)	22 (23.4)	11 (11.7)	13 (13.8)	4 (4.3)	94 (100)	P=0.552
Gender								
Males	10 (11.0)	33 (36.3)	22 (24.2)	11 (12.1)	13 (14.3)	2 (2.2)	91 (100)	χ²=30.219
Females	0 (0.00)	1 (33.3)	0 (0.00)	0 (0.00)	0 (0.00)	2 (66.7)	3 (100)	df=5
Total	10 (10.6)	34 (36.2)	22 (23.4)	11 (11.7)	13 (13.8)	4 (4.3)	94 (100)	P<0.001
SES								
Upper and upper middle class	9 (16.4)	16 (29.1)	15 (27.3)	6 (10.9)	6 (10.9)	3 (5.5)	55 (100)	χ²=8.106 df=5
Lower middle, upper lower and lower class	1 (2.6)	18 (46.2)	7 (17.9)	5 (12.8)	7 (17.9)	1 (2.6)	39 (100)	P=0.150
Total	10 (10.6)	34 (36.2)	22 (23.4)	11 (11.7)	13 (13.8)	4 (4.3)	94 (100)	

SES: Socio-economic status

Table 4: Comparison of mean knowledge score in relation to age, gender, SES and tobacco status.

Variable	Sub groups	Mean ± SD	95% CI	Statistical inference
Age	Less than 40 years n=238	7.47 ± 2.47	0.39–1.37	t=3.50 df=398 P=0.001
	40 years and above n=162	6.59 ± 2.47		
Gender	Males n=269	7.17 ± 2.33	−0.35–0.70	t=0.655 df=398 P=0.513
	Females n=131	6.99 ± 2.82		
SES	Upper and Upper middle Class n=230	7.55 ± 2.41	−1.52 ± − 0.54	t=−4.150 df=398 P<0.001
	Lower Middle, upper lower and lower class n=170	6.52 ± 2.52		
Tobacco status	Current users n=94	6.78 ± 2.52	−1.02–0.14	t=−1.478 df=398 P=0.140
	Non users n=304	7.21 ± 2.49		
Total	Overall	7.11 ± 2.50	2.11–12.11	

SES: Socio-economic status

significant difference in the perception of participants on the impact of pictorial warning on tobacco packaging in relation to age, gender and SES among current tobacco users with most participants expressing that the pictorial warnings had an impact in motivating a tobacco user to quit and non-user to continue being a non-user (P > 0.05, [Table 6]).

DISCUSSION

Tobacco results in death among half of its users. If the present pattern of morbidity and mortality continues with no stringent efforts to reduce tobacco consumption, it is estimated that more than 8 million people around the world will experience tobacco related morbidity and mortality annually by 2030.[16] Textual and pictorial health related warnings cover 85% of the tobacco packaging. They are inserted on front and back of tobacco packaging with 25% dedicated to text and 60% dedicated to the picture.[17] These pictorial health warnings are expected to enhance motivation of people indulging in tobacco habits to make quit attempts. Warning about dangers of tobacco is one among the six evidence based approaches under MPOWER strategies recommended by the WHO to

Table 5: Attitude about the pictorial warnings on tobacco products in relation to age, gender and SES.

	Variables	Agree	Uncertain	Disagree	Total	Statistical inference
Item No 21	Do you agree that Pictorial warning labels should be present on the tobacco packs?					
	Age					
	Less than 40 years	210 (88.2)	22 (9.20	6 (2.5)	238 (100)	χ^2=0.001
	40 years and above	143 (88.3)	15 (9.3)	4 (2.5)	162 (100)	df=2
	Total	353 (88.2)	37 (9.2)	10 (2.5)	400 (100)	p=0.999
	Gender					
	Males	232 (86.2)	29 (10.8)	8 (3.0)	269 (100)	χ^2=3.193
	Females	121 (92.4)	8 (6.1)	2 (1.5)	131 (100)	df=2
	Total	353 (88.2)	37 (9.2)	10 (2.5)	400 (100)	P=0.203
	SES					
	Upper	200 (87.0)	24 (10.4)	6 (2.6)	230 (100)	χ^2=0.928
	Lower	152 (89.4)	13 (7.6)	5 (2.9)	170 (100)	df=2
	Total	352 (88.0)	37 (9.2)	11 (2.8)	400 (100)	P=0.629
Item No 22	Do you agree that Pictorial warnings labels on tobacco products create awareness about hazards on general health?					
	Age					
	Less than 40 years	191 (80.3)	35 (14.7)	12 (5.0)	238 (100)	χ^2=1.065
	40 years and above	135 (83.3)	22 (13.6)	5 (3.1)	162 (100)	df=2
	Total	326 (81.5)	57 (14.2)	17 (4.2)	400 (100)	P=0.587
	Gender					
	Males	213 (79.2)	40 (14.9)	16 (5.9)	269 (100)	χ^2=6.335
	Females	113 (86.3)	17 (13.0)	1 (0.8)	131 (100)	df=2
	Total	326 (81.5)	57 (14.2)	17 (4.2)	400 (100)	P=0.042
	SES					
	Upper	188 (81.7)	32 (13.9)	10 (4.3)	230 (100)	χ^2=0.059
	Lower	138 (81.2)	25 (14.7)	7 (4.1)	170 (100)	df=2
	Total	326 (81.5)	57 (14.2)	17 (4.2)	400 (100)	P=0.971
Item No 23	Do you agree that Pictorial warnings labels on tobacco products create awareness about hazards on oral health?					
	Age					
	Less than 40 years	181 (76.1)	40 (16.8)	17 (7.1)	238 (100)	χ^2=3.114
	40 years and above	127 (78.4)	30 (18.5)	5 (3.1)	162 (100)	df=2
	Total	308 (77.0)	70 (17.5)	22 (5.5)	400 (100)	P=0.211
	Gender					
	Males	201 (74.7)	52 (19.3)	16 (5.9)	269 (100)	χ^2=2.427
	Females	107 (81.7)	18 (13.7)	6 (4.6)	131 (100)	df=2
	Total	308 (77.0)	70 (17.5)	22 (5.5)	400 (100)	P=0.297
	SES					
	Upper	181 (78.7)	38 (16.5)	11 (4.8)	230 (100)	χ^2=1.004
	Lower	127 (74.7)	32 (18.8)	11 (6.5)	170 (100)	df=2
	Total	308 (77.0)	70 (17.5)	22 (5.5)	400 (100)	P=0.605
Item No 24	Do you agree that Pictorial warning labels on the tobacco products encourage one to quit the habit of tobacco usage?					
	Age					
	Less than 40 years	169 (71.0)	49 (20.6)	20 (8.4)	238 (100)	χ^2=4.009
	40 years and above	116 (71.6)	40 (24.7)	6 (3.7)	162 (100)	df=2
	Total	285 (71.2)	89 (22.2)	26 (6.5)	400 (100)	P=0.135
	Gender					
	Males	185 (68.8)	65 (24.2)	19 (7.1)	269 (100)	χ^2=2.460
	Females	100 (76.3)	24 (18.3)	7 (5.3)	131 (100)	df=2
	Total	285 (71.2)	89 (22.2)	26 (6.5)	400 (100)	P=0.292
	SES					
	Upper	165 (71.7)	47 (20.4)	18 (7.8)	230 (100)	χ^2=1.771
	Lower	119 (70.0)	42 (24.7)	9 (5.3)	170 (100)	df=2
	Total	284 (71.0)	89 (22.2)	27 (6.8)	400 (100)	P=0.412

(Contd...)

Table 5: *(Continued)*

	Variables	Agree	Uncertain	Disagree	Total	Statistical inference
Item No 25	After seeing Pictorial warning labels on tobacco packs, a non-tobacco user prefers to stay as nonuser.					
	Age					
	Less than 40 years	164 (68.9)	52 (21.8)	22 (9.2)	238 (100)	χ^2=1.906
	40 years and above	118 (72.8)	35 (21.6)	9 (5.6)	162 (100)	df=2
	Total	282 (70.5)	87 (21.8)	31 (7.8)	400 (100)	P=0.386
	Gender					
	Males	183 (68.0)	63 (23.4)	23 (8.6)	269 (100)	χ^2=2.443
	Females	99 (75.6)	24 (18.3)	8 (6.1)	131 (100)	df=2
	Total	282 (70.5)	87 (21.8)	31 (7.8)	400 (100)	P=0.295
	SES					
	Upper	170 (73.9)	46 (20.0)	14 (6.1)	230 (100)	χ^2=3.587
	Lower	112 (65.9)	41 (24.1)	17 (10.0)	170 (100)	df=2
	Total	282 (70.5)	87 (21.8)	31 (7.8)	400 (100)	P=0.166
Item No 26	Do you agree that Pictorial warning is more impactful than statutory warning alone on the tobacco packets?					
	Age					
	Less than 40 years	176 (73.9)	42 (17.6)	20 (8.4)	238 (100)	χ^2=2.570
	40 years and above	126 (77.8)	29 (17.9)	7 (4.3)	162 (100)	df=2
	Total	302 (75.5)	71 (17.8)	27 (6.8)	400 (100)	P=0.277
	Gender					
	Males	201 (74.7)	48 (17.8)	20 (7.4)	269 (100)	χ^2=0.641
	Females	101 (77.1)	23 (17.6)	7 (5.3)	131 (100)	df=2
	Total	302 (75.5)	71 (17.8)	27 (6.8)	400 (100)	P=0.726
	SES					
	Upper	170 (73.9)	46 (20.0)	14 (6.1)	230 (100)	χ^2=0.631
	Lower	112 (65.9)	41 (24.1)	13 (7.6)	170 (100)	df=2
	Total	282 (70.5)	87 (21.8)	27 (6.8)	400 (100)	P=0.729
Item No 27	Do you agree that Pictorial warning in present form is more impactful than the previous forms used?					
	Age					
	Less than 40 years	181 (76.1)	39 (16.4)	18 (7.6)	238 (100)	χ^2=5.413
	40 years and above	125 (77.2)	33 (20.4)	4 (2.5)	162 (100)	df=2
	Total	306 (76.5)	72 (18.0)	22 (5.5)	400 (100)	P=0.067
	Gender					
	Males	206 (76.6)	50 (18.6)	13 (4.8)	269 (100)	χ^2=0.823
	Females	100 (76.3)	22 (16.8)	9 (6.9)	131 (100)	df=2
	Total	306 (76.5)	72 (18.0)	22 (5.5)	400 (100)	P=0.663
	SES					
	Upper	178 (77.4)	42 (18.3)	10 (4.3)	230 (100)	χ^2=1.383
	Lower	128 (75.3)	30 (17.6)	12 (7.1)	170 (100)	df=2
	Total	306 (76.5)	72 (18.0)	22 (5.5)	400 (100)	P=0.501
Item No 28	Do you agree a tobacco user avoids looking at Pictorial warning labels on tobacco products?					
	Age					
	Less than 40 years	146 (61.3)	47 (19.7)	45 (18.9)	238 (100)	χ^2=0.033
	40 years and above	98 (60.5)	33 (20.4)	31 (19.1)	162 (100)	df=2
	Total	244 (61.0)	80 (20.0)	76 (19.0)	400 (100)	P=0.984
	Gender					
	Males	160 (59.5)	62 (23.0)	47 (17.5)	269 (100)	χ^2=5.137
	Females	84 (64.1)	18 (13.7)	29 (22.1)	131 (100)	df=2
	Total	244 (61.0)	80 (20.0)	76 (19.0)	400 (100)	P=0.077
	SES					
	Upper	139 (60.4)	45 (19.6)	46 (20.0)	230 (100)	χ^2=0.218
	Lower	104 (61.2)	35 (20.6)	31 (18.2)	170 (100)	df=2
	Total	243 (60.8)	80 (20.0)	77 (19.2)	400 (100)	P=0.897

SES: Socio-economic status

Table 6: Perception on the impact of pictorial warning on tobacco packaging in relation to age, gender and SES among current tobacco users.

Item No	Variable	Always n (%)	Sometimes n (%)	Never n (%)	Total n (%)	Statistical Inference
Item 29	Have you thought of quitting it because of the Pictorial warning label and image on the tobacco package?					
	Age					
	Less than 40 years	14 (24.6)	37 (64.9)	6 (10.5)	57 (100)	χ^2=1.327
	40 years and above	6 (16.2)	25 (67.6)	6 (16.2)	37 (100)	df=2
	Total	20 (21.3)	62 (66.0)	12 (12.8)	94 (100)	P=0.515
	Gender					
	Males	20 (22.0)	60 (65.9)	11 (12.1)	91 (100)	χ^2=1.686
	Females	0 (0.00)	2 (66.7)	1 (33.3)	3 (100)	df=2
	Total	20 (21.3)	62 (66.0)	12 (12.8)	94 (100)	P=0.430
	SES					
	Upper	9 (16.4)	37 (67.3)	9 (16.4)	55 (100)	χ^2=2.883
	Lower	11 (28.2)	25 (64.1)	3 (7.7)	39 (100)	df=2
	Total	20 (21.3)	62 (66.0)	12 (12.8)	94 (100)	P=0.237
Item No 30	Have you made an attempt to quit, because of the Pictorial warning label on the tobacco package?					
	Age					
	Less than 40 years	15 (26.3)	33 (57.9)	9 (15.8)	57 (100)	χ^2=0.870
	40 years and above	11 (29.7)	18 (48.6)	8 (21.6)	37 (100)	df=2
	Total	26 (27.7)	51 (54.3)	17 (18.1)	94 (100)	P=0.647
	Gender					
	Males	26 (28.6)	50 (54.9)	15 (16.5)	91 (100)	χ^2=5.151
	Females	0 (0.00)	1 (33.3)	2 (66.7)	3 (100)	df=2
	Total	26 (27.7)	51 (54.3)	17 (18.1)	94 (100)	P=0.076
	SES					
	Upper	13 (23.6)	32 (58.2)	10 (18.2)	55 (100)	χ^2=1.153
	Lower	13 (33.3)	19 (48.7)	7 (17.9)	39 (100)	df=2
	Total	26 (27.7)	51 (54.3)	17 (18.1)	94 (100)	P=0.562
	Total	86 (37.9)	112 (49.3)	29 (12.8)	227 (100)	

SES: Socio-economic status

reduce the demand for tobacco. Pictorial health warnings on tobacco packaging are a cost effective way of creating awareness about tobacco even among illiterate users. The present study made an attempt to elicit knowledge, attitude and perceptions on pictorial health warnings on tobacco packaging in relation to age, gender and SES among patients visiting a dental college hospital in Mysuru city. The study had 23.5% current smokers with more prevalence among males compared to females with no significant difference in relation to age and SES. The prevalence of tobacco use among adults aged more than 15 years in Karnataka was found to be 22.8% in 2016–17 according to the results of GATS-2.[18] These results were almost similar to the results of our findings. Stress (36.2%) was quoted as the most common reason for initiating tobacco use among current tobacco users in our study with no significant difference in relation to age and SES. This was consistent with a finding from a study conducted by Patel *et al.* in India.[19] It is perceived by people in stress that tobacco use reduces stress. This false perception is responsible for initiating tobacco use especially among adolescents who most often will be under stress.

A review on how stress modulates negative consequences of nicotine abuse concludes that there is a need to address the issue of reducing stress among adolescents in future policies as a means of reducing adolescent nicotine abuse.[20] Risky behaviours, such as substance abuse including tobacco use, are considered as coping mechanism among adolescents who most often will be in search of an identity and also, feel vulnerable and self-conscious during this stage of intrapersonal flux.[21] Knowledge score on pictorial warning signs on tobacco packaging was significantly higher among those aged <40 years compared to those aged 40 years and above as well as among those from upper classes compared to those from the lower classes with no significant difference in relation to gender and smoking status. Better educational opportunities that the younger individuals and upper classes would have had compared to their older counterparts and people from the lower classes enhances their educational attainment. This improved educational attainment will help them to gather information from variety of sources on tobacco legislations. Our results were similar to results of study by Hall *et al.*[22] There was no significant difference in

the attitude and perceptions on pictorial health warnings in relation to age, gender, SES and tobacco status. This finding indicates the fact that the attitude and perceptions on pictorial health warnings are similar in relation to various demographic factors. This finding was consistent with the results of a study conducted in United States[23] which found that the impact of pictorial warning label was consistent across diverse racial/ethnic and socioeconomic populations. It was found that pictorial health warnings in comparison with textual messages have greater reach. It was concluded that the incorporation of pictorial warning labels was one of the few tobacco control policies having potential to reduce communication inequalities across various socio-demographic groups while being instrumental in reducing the morbidity and mortality related to tobacco epidemic among vulnerable communities.

CONCLUSION

Knowledge on pictorial health warning labels was higher among younger individuals and those from the upper socio-economic classes with no significant difference in the attitude and perception in relation to age, gender, SES and smoking status. This indicates that pictorial health warnings are an effective way of creating awareness, positive attitude and perceptions, among population with different socio-demographic nature.

Novelty

This study assessed the KAP on pictorial warnings pertaining to tobacco packaging in relation to age, gender and SES among Indian Population.

Limitations and future proposal

This was a cross-sectional study and sampling distribution between five different SES categories was unequal with some SES categories having very less number. This compelled us to dichotomise SES categories by combining the upper two classes as one category and lower three SES classes as the other category. A study with larger sample size with almost equal distribution of participants in different socio-demographic variables is essential to validate the results of present study.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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ANNEXURE 1

Department of Public Health Dentistry

JSS DENTAL COLLEGE AND HOSPITAL

Knowledge, attitude and perceptions (KAP) on pictorial warnings on tobacco packaging in relation to age, gender and socio-economic status among patients visiting a dental hospital in Mysuru city.

Guided By: Dr. Chandrashekar BR   **Investigator: Anne Mary**

Head of the Department   **Under graduate student**

QUESTIONNAIRE (Kindly TICK [✓] on appropriate option)

DEMOGRAPHIC DETAILS:

- Name (optional):
- Age:
- Gender:
- Level of education attained:
- Occupation:
- What is the Family Income per month?

HISTORY OF TOBACCO USE

1. **Do you presently use tobacco in any form?**
   1. Yes
   2. No (If Yes, go to question 4)
   If no,
2. **Did you use tobacco previously?**
   1. Yes
   2. No (If No, please answer from question 9–30)
   If yes,

3. **What was the reason to quit?**
   1. Medical problem
   2. Family pressure
   3. Health professionals
   4. Warnings
   5. Own willingness
   6. Others, specify_____
4. **What form of Tobacco do you use?**
   1. Cigarette
   2. Bidis

3. Cigar
4. Hookah
5. Chillum
6. Gutkha
7. Khaini
8. Others, specify _____

5. **What was the reason to start using tobacco?**
   1. Fascinated by watching movies
   2. Stress
   3. Style statement
   4. Peer's influence
   5. Combination
   7. Others, specify _____

6. **Since how long have you been using Tobacco in any form?**
   1. <1 years
   2. 1–5 years
   3. 6–10 years
   4. >10 years

7. **How often do you indulge in the habit?**
   1. Daily
   2. Once in 2 days
   3. Once in a week
   4. Occasionally

8. **How many times do you consume tobacco in any form in a day?**
   1. <5 times
   2. 6–10 times
   3. 11–20 times
   4. >20 times

KNOWLEDGE AND UNDERSTANDING OF PICTORIAL WARNINGS ON TOBACCO PRODUCTS

9. **Do you know about the presence of pictures on the Tobacco packets?**
   1. Yes
   2. No
   If yes,

10. **Why do you think they are present?**
    1. Company Logos
    2. Warnings
    3. Entertainment
    4. Others, specify

11. **Have you noticed presence of Pictorial warning labels on tobacco packets?**
    1. Yes
    2. No
    3. Don't know

12. **Do you understand the Pictorial warning labels on tobacco packets?**
    1. Yes
    2. No
    3. Don't know

13. **Do the Pictorial warnings signify any of the following?**
    1. Lung cancer
    2. Oral cancer
    3. Combination
    4. None of the following

14. **Do you think usage of tobacco product can cause oral diseases?**
    1. Yes
    2. No
    3. Don't know

15. **Do you think pictorial warning labels represent any of the oral diseases?**
    1. Yes
    2. No
    3. Don't know

16. **Can you identify what is given in this picture?**
    1. Injury
    2. Oral Cancer
    3. Ulcer
    4. Dont know

17. **Do you know about implementation of Govt. legislation on Pictorial health warnings on tobacco packets?**
    1. Yes
    2. No
    If yes,

18. **How much percentage of tobacco packs should be covered with Pictorial and statutory warning?**
    1. 15%
    2. 40%
    3. 60%
    4. 85%

19. **On which side the Pictorial warning is present on the tobacco packs?**
    1. Front side
    2. Back side
    3. Both sides
    4. Don't know

20. **Can you identify what is given in this picture?**
    1. Lung cancer
    2. Burning sensation
    3. Asthma
    4. Don't know

ATTITUDE ABOUT THE PICTORIAL WARNINGS ON TOBACCO PRODUCTS

21. **Do you agree that Pictorial warning labels should be present on the tobacco packs?**
    1. Agree
    2. Uncertain
    3. Disagree

22. **Do you agree that Pictorial warnings labels on tobacco products create awareness about hazards on general health?**
    1. Agree
    2. Uncertain
    3. Disagree

23. **Do you agree that Pictorial warnings labels on tobacco products create awareness about hazards on oral health?**
    1. Agree
    2. Uncertain
    3. Disagree

24. **Do you agree that Pictorial warning labels on the tobacco products encourage one to quit the habit of tobacco usage?**
    1. Agree
    2. Uncertain
    3. Disagree

25. **After seeing Pictorial warning labels on tobacco packs a non tobacco user, prefers to stay as nonuser.**
    1. Agree
    2. Uncertain
    3. Disagree

26. **Do you agree that Pictorial warning is more impactful than statutory warning alone on the tobacco packets?**
    1. Agree
    2. Uncertain
    3. Disagree

27. **Do you agree that Pictorial warning in present form is more impactful than the previous forms used?**
    1. Agree
    2. Uncertain
    3. Disagree

28. **Do you agree a tobacco user avoids looking at Pictorial warning labels on tobacco products?**
    1. Agree
    2. Uncertain
    3. Disagree

IMPACT OF PICTORIAL WARNING ON TOBACCO PRODUCTS PACKETS

29. **Have you thought of quitting it because of the Pictorial warning label and image on the tobacco package?**
    1. Always
    2. Sometimes
    3. Never

30. **Have you made an attempt to quit, because of the Pictorial warning label on the tobacco package?**
    1. Always
    2. Sometimes
    3. Never

Thank you for your time and cooperation