



## Original Research Article

# AWARENESS ABOUT PICTORIAL HEALTH WARNING ON TOBACCO PRODUCTS AND ITS CORRELATES AMONG PATIENTS ATTENDING THE OUTPATIENT DEPARTMENT OF A TERTIARY HEALTH CARE CENTRE

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### ABSTRACT

**Background:** Tobacco use is still a massive health crisis in India. It claims lives on a huge scale every year. To fight this problem, the government requires to mandate pictorial warnings on all tobacco packaging under COTPA laws. These images are supposed to make people realize the danger and encourage them to quit. But in reality, they don't always work as intended. This study was conducted to see if patients visiting a tertiary care hospital actually notices these pictorial warnings on the tobacco products and if they understand what the images are trying to communicate. And whether any association is there with their behavioural risk factors and the pictorial warnings. **Objectives:** To study awareness about pictorial health warning on tobacco products among outpatients & to determine the socio-demographic and behavioural risk factors associated with awareness of pictorial health warnings.

**Materials and Methods:** A hospital-based cross-sectional study was conducted among 410 adult outpatients (18–65 years) at a tertiary care centre using convenience sampling. Data were collected through a pretested semi-structured questionnaire. Awareness of pictorial health warnings was defined as having seen them and correctly understanding their purpose. Associations were analysed using Chi-square/Fisher's exact test.

**Results:** Out of 410 patients, 51.2% were aware of pictorial health warnings. The findings from the study showed that awareness was significantly higher among individuals with higher education and those of urban residence. The study also shows cased that the behavioural factors such as current tobacco use, higher frequency usage and duration of use, and attempts to quit were all show cased significant association with greater awareness ( $p < 0.05$ ). However, no significant association was observed with type of tobacco used.

**Conclusion:** Only about half of OPD patients of the total participants were aware of pictorial health warnings. Awareness was significantly associated with education of the patients, residence of the patients, tobacco use patterns, and quit attempts. While warnings do improve the awareness and it might encourage

cessation, additional targeted interventions are needed to enhance their impact on the general populace.

**Keywords:** Tobacco, Pictorial health warning, Awareness, Tobacco Cessation, COTPA, Outpatients.

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## INTRODUCTION

As per World Health Organization (WHO), the tobacco epidemic is identified as one of the biggest public health threats the world has ever faced and it's still on the rise. To address this, the WHO Framework Convention on Tobacco Control (FCTC) advised the usage of prominent pictorial health warnings (PHWs) on tobacco packaging.<sup>[1]</sup> The concept was that "a picture speaks a thousand words". As visual messages which are more easily remembered than written text alone. The WHO emphasizes that these warnings help users to better understand and visualize the harmful effects of tobacco, which serve as a continuous reminder for repeated health messaging until the product is fully consumed, while also helping them make informed decision-making and about the potential risks with the tobacco product.<sup>[2]</sup> Tobacco use remains a major threat to public health worldwide. It causes severe medical conditions for users, specifically heart disease, lung illness, and multiple forms of cancer. In India, the situation is particularly difficult. A massive population, wide differences in literacy, and a vast geography create specific barriers to effective health interventions. The tobacco costs has resulted in significant burden to Indian economy of nearly USD 27.5 billion And is also responsible for approximately 1.35 million deaths annually in India.<sup>[3]</sup> India being ranked as the second-largest consumer and producer of tobacco globally, with around 275 million users.<sup>[4]</sup> A major proportion of this burden comes from smokeless tobacco products such as gutkha, khaini, paan masala, and zarda, which accounts for nearly 206 million users, particularly common among the poorer populations and women.<sup>[4]</sup> In this context, pictorial warnings do help reach people who cannot read and also serve as an important strategy to overcome cultural barriers, making them a critical tool for opportunistic health messaging.<sup>[5]</sup>

Around the world, the implementation of health warnings on tobacco products is a widely spread strategy in both developed and developing nations to deter use and promote cessation. In India, this is mandated under the Cigarettes and Other Tobacco Products Act (COTPA).<sup>[6]</sup> Since 2009, pictorial warning regulations have undergone several revisions, with the current mandate requiring 85% coverage of the packaging.<sup>[7]</sup> Revised pictorial warnings came into force on 1st September 2018, featuring images such as a scorpion for smokeless tobacco products and diseased lungs or lung cancer for smoked forms.<sup>[7]</sup> However, despite these stringent laws, studies have shown that the mere visibility of warnings does not inherently translate to adequate awareness, and the impact of these labels fluctuates

significantly depending on socio-demographic factors and baseline awareness of anti-tobacco laws.<sup>[8,9]</sup>

Being a large state with a high rural and semi-urban population, evaluating the real-world impact of these revised 85% pictorial warnings within specific clinical environments is crucial. While national surveys provide a macro-level perspective, only a few studies have been conducted to determine the awareness of these warnings in Maharashtra, and no studies were done focusing on outpatient departments in central rural districts. With this context and background, the current cross-sectional study was conducted to find out the awareness, socio-demographic profile, and behavioural factors associated with pictorial health warnings on tobacco products among patients attending the outpatient department of a tertiary health care centre in a rural field practice area of central Maharashtra. The aims and objectives of the present study are as follows:

1. To study awareness about pictorial health warnings on tobacco products among outpatients.
2. To determine the socio-demographic and behavioural risk factors associated with awareness of pictorial health warnings.

## MATERIALS AND METHODS

**Study Design and Setting:** A hospital-based cross-sectional study conducted in the outpatient department (OPD) of a tertiary health care centre, Maharashtra, the data collection was carried out from August 2025 to January 2026.

**Study population:** It included all adult patients who have come on OPD basis, aged between 18 years and above during the study period. Among those adult patients who met the eligibility criteria and the ones who provided informed consent, were taken as respondents. The study included current or former users of tobacco products, as well as individuals who were generally aware of tobacco packaging. Patients who were critically ill or mentally unfit, individuals with cognitive impairment or communication difficulties, who are not able to provide relevant information and those with repeated visits to the hospital during the study period were excluded.

**Operational definition:** For the purpose of this study, a 'Pictorial Health Warning (PHW)' was defined, as graphic images and text messages displayed on tobacco packaging to indicate health risks, as per COTPA guidelines. 'Awareness' was defined as participants reporting having seen the pictorial warnings and correctly identifying their purpose (e.g., indicating serious health hazards such as cancer or death). As for the 'Tobacco User', it was

considered to be any individual currently using or having used any form of tobacco (smoked or smokeless) within the past 12 months.

**Sample size:** It was calculated using the formula

$$n = \frac{Z^2 \cdot p(1-p)}{d^2}$$

The prevalence of awareness of pictorial warning (p) was considered as 50%, a 95% confidence level (Z = 1.96), and margin of error (d) 5%, the minimum sample size was calculated to be 384. After adding the 10% non-response rate, the sample size was estimated as 423. A total of 410 participants were ultimately included in the study based on consecutive enrolment and the inclusion criteria.

**Sampling technique:** Convenience sampling was used to recruit eligible adult outpatients. All eligible outpatients that were attending the OPD of the tertiary care centre, during the study period were enrolled until the required sample size was achieved.

**Study instruments:** The collection of data were done using a face-to-face interview via pretested, semi-structured questionnaire. The study tool covered basic socio-demographic details, and tobacco use characteristics (such as type, frequency, duration, and quit attempts). It also measured how much the participants are aware regarding the pictorial health warnings on the tobacco products.

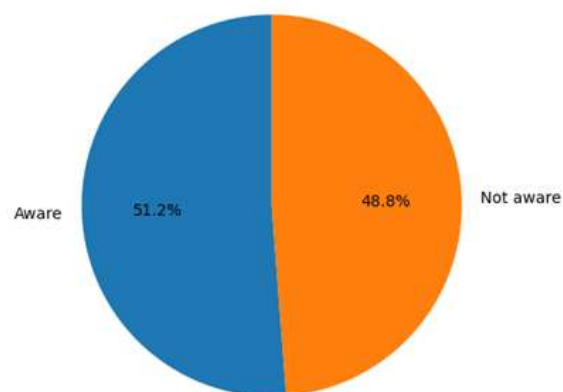
**Study Variables:** The awareness of pictorial health warnings was the dependent variable. Independent variables included socio-demographic factors like age, sex, education, place of residence as well as behavioural factors which included tobacco use status, type of tobacco, frequency, duration of use, and previous attempts to quit.

**Data Analysis:** After data collection, entry was done in Microsoft Excel 2021 and descriptive analysis was done using Jamovi software version 2.6.44.0. Descriptive statistics were used to summarize the data. The Chi-square test/Fisher's exact test were used wherever applicable, to find out the associations between variables. A p-value of <0.05 was considered as statistically significant.

**Research Ethics:** The ethical approval for this research was approved by the Institutional Ethical Committee (IEC-97 :19/09/2025).

## RESULTS

A total of 410 outpatients attending the tertiary care centre participated in this cross-sectional study. Based on the operational definition of having seen pictorial health warnings in the last 30 days and correctly understanding their purpose, the overall awareness among respondents was found to be 51.2% (210). [Figure 1]



**Figure 1: "Awareness of Pictorial Health Warnings among Study Participants"**

### 1. Socio-Demographic Variables and its Association:

Table 1 shows the socio-demographic variables of the study respondents and their association with the awareness of pictorial health warnings. Educational status showed a significant gradient in awareness. The lowest awareness was seen in participants with no schooling at 14.7% (10), while it was notably higher among those with secondary education (62.6%), higher secondary (61.7%), and graduates and above (64.8%). Regarding the place of residence, participants residing in urban areas demonstrated a higher awareness prevalence of 62.8% (81) compared to rural residents at 45.9% (129).

A p-value of < 0.05 was considered statistically significant. As seen in Table 1, a statistically significant association was observed between education level and awareness (p < 0.001), with higher prevalence noted among secondary school educated individuals and above. Place of residence also showed a significant association (p = 0.002), with a higher prevalence of awareness reported among urban residents.

**Table 1: Socio-Demographic Variables and its Association with Awareness about Pictorial Health Warning on Tobacco Products**

Variables	n	( % )	Awareness		λ <sup>2</sup>	p-value
			Aware (%)	Not aware (%)		
Age group (in years)	18-30	146	35.6	82 (56.2)	4.21	0.12
	31-45	154	37.6	83 (53.9)		
	46-65	110	26.8	45 (40.9)		
Sex	Male	268	65.4	145 (54.1)	1.38	0.24
	Female	142	34.6	65 (45.8)		
Religion	Hindu	332	81	175 (52.7)	2.06	0.36
	Muslim	58	14.1	26 (44.8)		

	Others	20	4.9	9 (45.0)	11 (55.0)		
Education	No Schooling	68	16.6	10 (14.7)	58 (85.3)	38.72	<0.001*
	Primary	54	13.2	18 (33.3)	36 (66.7)		
	Secondary	99	24.1	62 (62.6)	37 (37.4)		
	Higher Secondary	81	19.8	50 (61.7)	31 (38.3)		
	Graduate & above	108	26.3	70 (64.8)	38 (35.2)		
Residence	Urban	129	31.5	81 (62.8)	48 (37.2)	9.52	0.002*
	Rural	281	68.5	129 (45.9)	152 (54.1)		

\*p-value was tested by Chi square test. A p-value <0.05 was taken as statistically Significant.

## 2. Behavioural Risk Factors and its Association:

Table 2 showcases the behavioural risk factors that are related to tobacco use and their association with awareness. It was noted that the awareness was highest among current tobacco users at 72.2% (130), compared to never-users which was at 36.4% (40) and former users which was at 34.5% (10). Furthermore, participants consuming higher frequency of tobacco use (Daily, >5/day) showed a remarkably high awareness rate of 79.6% (109). Regarding quit attempts, individuals who had tried to quit but failed demonstrated the highest awareness at 73.1% (87), followed by those who successfully quit

at 58.1% (18). When evaluating the specific form of tobacco used, awareness appeared to be comparatively higher among those having smokeless tobacco users 70.3% (111), compared to those having smoked tobacco users 87.5% (14).

Statistically significant associations were also seen between awareness and tobacco use status, frequency of use and previous attempts to quit (all  $p < 0.001$ ). However, no statistically significant association was found between the specific type of tobacco being used among current smokers (i.e. smoked, smokeless vs dual consumption) and awareness ( $p = 0.18$ ) was found when Fisher's Exact Test was applied.

**Table 2: Behavioural factors and its Association with Awareness about Pictorial Health Warning on Tobacco Products**

Behavioural Factors		n	( % )	Awareness		$\lambda^2$	p-value
				Aware (%)	Not aware (%)		
Tobacco Use Status	Current	180	43.9	130 (72.2)	50 (27.8)	52.84	<0.001*
	Former	29	7.1	10 (34.5)	19 (65.5)		
	Never	110	26.8	40 (36.4)	70 (63.6)		
	Not Applicable	91	22.2	30 (33.0)	61 (67.0)		
Frequency	>5/day	137	33.4	109 (79.6)	28 (20.4)	61.27	<0.001*
	Daily	31	7.6	15 (48.4)	16 (51.6)		
	Weekly/less	25	6.1	12 (48.0)	13 (52.0)		
	Not applicable	217	52.9	74 (34.1)	143 (65.9)		
Attempt to quit	Quit successfully	31	7.6	18 (58.1)	13 (41.9)	46.11	<0.001*
	Tried but failed	119	29	87 (73.1)	32 (26.9)		
	No attempt	57	13.9	37 (64.9)	20 (35.1)		
	Not applicable	203	49.5	68 (33.5)	135 (66.5)		
Type of Tobacco (Current)	Smoked	16	3.9	14 (87.5)	2 (12.5)	-	0.18 <sup>#</sup>
	Smokeless	158	38.5	111 (70.3)	47 (29.7)		
	Dual	6	1.5	3 (50.0)	3 (50.0)		

\*p-value was tested by Chi square test. A p-value <0.05 was taken as statistically Significant  
<sup>#</sup>Fisher's Exact Test was applied.

## DISCUSSION

The overall awareness regarding pictorial health warnings (PHWs) on tobacco products in our hospital-based cross-sectional study was found to be 51.2% (210 out of 410). In contrast, several studies report significantly higher awareness levels. For instance, Vanishree et al. (2017),<sup>[10]</sup> found that 92.6% of patients in a dental college OPD in Bangalore had noticed pictorial warnings. Similarly, a study in Jammu by Gupta et al. (2019),<sup>[11]</sup> reported that 100% of smokers had noticed the labels, though only 78.1% could correctly spell out the warning statement. A population-based study by Raute LJ et al. (2009)<sup>[12]</sup> in Mumbai and Thane also showed high awareness at 89.6%. A possible explanation for the lower awareness (51.2%) in our rural/semi-urban setting might be related to purchasing habits; as highlighted

by Thangaraj and Hemalatha (2025),<sup>[13]</sup> a significant proportion of smokers (43.8% in their study) purchase cigarettes as single sticks rather than whole packs, which drastically reduces their probability of viewing the pictorial representation on the packaging. Other studies present a more moderate picture closer to our findings. Karinagannanavar et al. (2011),<sup>[14]</sup> in Bellary found that while 72.5% had seen the warnings, only 25.5% comprehended them correctly. Research focusing on younger demographics, like the study by Bansal et al. (2021),<sup>[15]</sup> among 15-17-years old school children in Lucknow, where it was found that 82.08% of the children had observe rate of warnings. The variations across these studies largely depend on whether "awareness" is defined merely as seeing the image versus actually understanding the specific health message.

In this study, educational status showed a highly significant association with awareness ( $p < 0.001$ ), with the lowest awareness among those with no schooling. Furthermore, urban residents demonstrated higher awareness (62.8%) compared to rural residents (45.9%). These findings perfectly align with Karinagannavar et al. (2011),<sup>[14]</sup> who identified through multivariate analysis that younger age, urban locality, and better educational status are important independent determinants for both the awareness and correct interpretation of pictorial warnings. Yuvashree and Leelavathi (2020),<sup>[16]</sup> also corroborated this educational gradient, noting that participants with primary qualification had taken no steps to quit, whereas graduates were more proactive in taking steps to rid themselves of the habit. Regarding behavioural factors, our study indicated that awareness is significantly associated with quit attempts ( $p < 0.001$ ). However, the actual translation of awareness into cessation remains a challenge across the literature. Vanishree et al. (2017),<sup>[10]</sup> found that 63.7% of users attempted to quit after seeing the warnings which was a positive impact. Gupta et al. (2019),<sup>[11]</sup> in their study found that 69.37% were persuaded to quit, and Bansal et al. (2021),<sup>[15]</sup> recorded an 84.45% positive response toward intent to quit among adolescents.

Contrary to the previous studies, Yuvashree and Leelavathi (2020),<sup>[16]</sup> found that 75% of their participants felt that the pictorial warnings did not stop them from tobacco. Just observing the images like the skull and bone had very little effect. This gap between motivation and action is highlighted by Thangaraj and Hemalatha (2025),<sup>[13]</sup> who found that while 61.4% of users were motivated by pictorial warnings, only 6.2% actually intended to quit smoking in the following month. This indicates that while large PHWs act as an effective visual reminder for establishing health risks, but in due course of time they may get used to them and they may need of supplementary interventions—such as adding local language texts, which was recommended by 54.6% of users in the Jammu study—to convert visual awareness into sustained behavioural change.

## CONCLUSION

The study reveals that being in a rural and semi-urban field practice area of a tertiary care centre in Maharashtra was associated with a moderate but suboptimal awareness of pictorial health warnings on tobacco products. Awareness was significantly linked to the educational status, place of residence, tobacco use status, frequency of consumption, and previous quit attempts of the study participants. Even with the strict government mandate requiring 85% coverage on tobacco packaging, the translation of mere visibility into actual comprehension of specific health hazards remains inadequate, particularly among those with lower educational attainment and rural backgrounds.

Frequent handling of tobacco packaging served as the main source of exposure in this study. Heavy, current regular users reported higher awareness as they saw the visual messaging constantly. Participants in the present study who had tried to quit in the past had showed a strong association with awareness, suggesting that these pictorial warnings can serve as a crucial psychological trigger to stay away from tobacco. However, the tendency to become used to static images over time and combine that with the purchasing of loose cigarettes, it might dilute this impact and undermine its long-term effectiveness, and posing a significant challenge to public health cessation efforts.

Future efforts should include opportunistic screening and specific health education in hospital outpatient departments, emphasizing on the specific disease risks shown on these warnings, healthcare workers can help patients better understand these risks. This educational approach should focus to bridge the comprehension gap, particularly for lower-literacy populations, and encourage active tobacco quitting within the community. The effectiveness of pictorial health warnings is a complicated matter that needs continuous and detailed research. Based on the study findings from this study it might assist future researchers, policymakers, public health planners, and medical professionals. To better understand where these awareness gaps exist so they can create more robust, culturally appropriate, and highly regulated tobacco control measures.

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