KAP STUDY

# Pictorial health warnings on cigarette packs and effect on smoking: Medical student's perspective

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## Abstract

**Objective:** To evaluate the knowledge, attitude and practice of medical students towards pictorial warnings on cigarette packets.

**Method:** The cross-sectional study was conducted from October 2017 to December 2018 at King Saud bin Abdulaziz University for Health Sciences Riyadh, Saudi Arabia, Riyadh, Saudi Arabia, and comprised medical students from third to sixth year. Data was collected using a self-administered structured questionnaire which was validated through pilot-testing. A five-point Likert scale was used to access each item, with 1 as strongly disagree and 5 as strongly agree. Data was analysed using SPSS 22.

**Result:** Of the 335 subjects, 181(54%) were males. The overall mean age was 23±2.2 years and 307(92%) were non-smokers. The overall knowledge, attitude and practice was low with a total median score of 3.3 (interquartile range: 3.1-3.6). However, knowledge was better 4 (interquartile range: 3.7-4.7). Males had significantly more knowledge about the pictorial health warnings compared to females ($p<0.001$). Having a smoker friend had significantly better effect on the overall knowledge and attitude with ($p<0.05$).

**Conclusion:** The study concludes that pictorial warnings are not helpful in persuading the current smokers to give up smoking. The knowledge about who take the decision of printing these warnings is not known to majority of the participants. Those who had a friend smoker had considerably better knowledge about pictorial warnings. Display of pictorial warnings might not be enough to serve the purpose of discouraging future smokers. Innovative strategies involving the non-smokers (peers and friends) should also be considered in the new era for cessation of smoking.

**Keywords:** KAP, Health warnings, Cross sectional, Peer influence. (JPMA 70: 1042; 2020)
DOI: https://doi.org/10.5455/JPMA.28883

## Introduction

Tobacco smoking has been the prime and most perilous killer of humanity probably since its discovery.[1] It is universally linked to decreased life-span and a premature miserable death.[2] Tobacco is smoked by over 1 billion people worldwide, which is nearly 20% of the world population, according to World Health Organisation (WHO) 2017 statistics.[3] Additionally, greater portion of countries' wealth is lost due to smoking, and a major portion of economy and health resources are spent on treating or decreasing smoking-related diseases.[4] If tobacco smoking continues in the same manner, by 2030, tobacco smoking is expected to be killing more than 8 million people around the world each year, with 80% of these premature deaths among people living in low- and middle-income countries (LMICs).[5] Many approaches and strategies have been tried to prevent and cease tobacco smoking.[6] Governments, health institutions and communities have been cooperating to reduce tobacco smoking losses. Some of the implemented interventions include marketing restrictions, increasing public awareness about smoking hazards, smoking-free polices and laws, curricular education for school students and increasing cigarette price.[7,8]

According to the principles of packaging and labelling of tobacco products, "every person should be informed of the health consequences, addictive nature and mortal threat posed by tobacco consumption and exposure to tobacco smoke".[9] In November 2008, warning pictures on smoking packages was suggested after the third session of the WHO Framework Convention on Tobacco Control (FCTC) conference and was accepted by all parties as indicated in article 11 for the guidelines on packaging and labelling of tobacco products.[9] The International Tobacco Control (ITC) research on the effectiveness of cigarette warning labels in informing smokers about the risks of smoking also indicated that smokers lack full awareness about the risks of smoking, and warnings that are graphic, larger and more

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comprehensive in content are more effective in conveying the dangers of smoking.[10]

Research shows that pictorial warning on tobacco packets can help in delivering the consequences of tobacco smoking and bring behavioural changes such as quitting and reducing tobacco consumption.[11,12] According to a study in Lao People's Democratic Republic (Lao PDR), the context of written health warning were insufficient to communicate health risks, unlike pictorial health warning which increased the likelihood of thinking about the outcome of smoking by 83%, and increased the fear of smoking by 77%.[13] Additionally, graphic warnings negatively affect the intention to smoke and discourage future smokers, but the strategy is more effective among occasional smokers compared to regular smokers.[14]

While smoking rates have decreased in some developed countries, cigarette smoking is increasing rapidly in both genders and different age groups in Saudi Arabia. According to the World Health Organization 2017 report on the global tobacco epidemic, around 12% of adults (>15 years) and 15% of youth (13-15 years) in the Kingdome of Saudi Arabia (KSA) are tobacco smokers.[15] Moreover, KSA is a member country of the Gulf Cooperation Council (GCC) and FCTC, and agreed to enhance public awareness regarding consumption of tobacco.

Medical students are the future physicians and their role in patient and community education is highly important. The current study was planned to assess the medical students' knowledge, attitude and practice (KAP) towards pictorial warnings on cigarette packs and its effectiveness regarding smoking cessation.

## Subjects and Methods

The cross-sectional, questionnaire-based study was conducted from October 2017 to December 2018 at the King Saud bin Abdulaziz University of Health Sciences (KSAU-HS), Riyadh, KSA, which comprises five colleges; the College of Medicine, the College of Science and Health Professions, the College of Dentistry, the College of Pharmacy, and the College of Applied Medical Science, with separate male and female campuses.

After approval from the ethics committee of the King Abdullah International Medical Research Centre, Riyadh, the sample size was calculated using Raosoft online calculator[16] with a 5% margin of error and 95% confidence level.[17]

Using quota sampling, both male and female students from the third to the sixth year of studies at the two campuses of the College of Medicine were approached after lectures and discussion sessions. Pre-medical students and interns were excluded. After taking written informed consent from the subjects, the study questionnaire was distributed among them.

The questionnaire was developed in the English language and content validity was done by two Public Health experts. This was followed by a pilot-testing with 80 students from pre-professional, pharmacy and applied medical sciences who were not included in the main study.[18] A few items were re-worded and re-arranged until the overall Cronbach's alpha reliability coefficient of 0.74 was achieved, indicating an acceptable internal consistency. The Cronbach alpha for knowledge items was 0.78, for attitude 0.69 and for practice 0.77. The final version of the questionnaire consisted of four parts. The first part was the demographics or independent variables, followed by items on knowledge and awareness about pictorial warnings. The third part consisted of five questions about the attitudes of the students towards pictorial warnings. And, lastly, there it had two questions about the perceptions of the students about pictorial warnings. A five-point Likert scale was used, with 1 = strongly disagree and 5 = strongly agree. Three items were reverse-worded and before the analysis were reverse-coded. The overall score ranged from 11 to 55.

Data was entered in Microsoft Excel 2016, and analysed using SPSS 22. For each individual KAP domain, median and interquartile ranges (IQR) were calculated and compared by gender, mode of entry in college, year of study, smoking status, and friends' smoking status. Categorical variables, such as the year of study, gender, and smoking status, were reported as percentages and frequencies. All respondents who answered with agree or strongly agree (4 or 5 in the Likert scale) were added together to check for the percentage of agreement for each item. To assess the association between demographic characteristics with KAP score, Kruskal Wallis and Mann Whitney U tests were used. Spearman's Rho correlation was used to assess association among KAP scores. The level of significance was set at p=0.05 for all the tests.

## Results

Of the 335 subjects, 181(54%) were males. The overall mean age was 23±2.2 years, 307(92%) were non-smokers and 172(51%) had at least one friend who was a smoker (Table-1).

**Table-1:** Profile of the participants (N=335).

| Variables | Frequency N | Percentage % |
|---|---|---|
| Age in years (mean ±SD) | 22.56 ± 2.2 | |
| **Gender** | | |
| Male | 181 | 54% |
| Female | 154 | 46% |
| **Batch** | | |
| Final year | 55 | 16% |
| 5th year | 82 | 25% |
| 4th year | 112 | 33% |
| 3rd year | 86 | 26% |
| **Mode of entry to medical school** | | |
| School entrants | 267 | 80% |
| Graduate entrants | 67 | 20% |
| **Smoker** | | |
| No | 307 | 92% |
| Yes | 26 | 8% |
| **Family member smoking** | | |
| No | 191 | 57% |
| Yes | 144 | 43% |
| **Friend smoking** | | |
| No | 161 | 48% |
| Yes | 172 | 51% |

SD: Standard deviation.

When asked about the knowledge related to pictorial warnings on cigarette packs, 124(37%) did not know that the decision about these warnings were approved and taken by governments, and 251(75%) had the knowledge that the warnings printed in picture and text forms is mandatory. Although 162(49%) participants agreed that these warnings can be helpful in discouraging future smokers, 293(70%) did not agree that these warnings can persuade the current smokers to give up smoking. Also, 272(81%) participants agreed that pictorial warnings should be printed on cigarette packs (Figure).

The overall median score was 3.36(IQR: 3.1-3.6) with the knowledge scores being the highest at 4(IQR: 3.7-4.7) followed by attitude 3(IQR: 2.6-3.4) and perception 3(IQR: 2.5-3). Males had significant more knowledge about the pictorial health warnings compared to females (p<0.001), but there was no significance difference between the genders regarding attitude (p=0.34) or practice (p=0.37). Those who had joined medicine as school entrants had significantly more knowledge towards pictorial warnings compared to graduate entrants (p=0.03). Having a smoker friend had significantly better effect on overall knowledge (p<0.002) and attitude (p=0.05). Smokers showed no significant difference in knowledge, attitude and practice

**Table-2:** Association of KAP with profile of participants.

| Variables | Knowledge Median(Q1-Q3) | Attitude Median(Q1-Q3) | Practice Median(Q1-Q3) | Total Median(Q1-Q3) |
|---|---|---|---|---|
| Gender | | | | |
| Male | 4.2(3.7-5) | 3(2.6-3.4) | 3(2.5-3) | 3.3(3.2-3.7) |
| Female | 4(3.5-4.5) | 3(2.6-3.5) | 3(2.5-3) | 3.3(3.1-3.6) |
| p-value† | <0.00* | 0.39 | 0.36 | 0.19 |
| Mode of entry | | | | |
| School entrants | 4.2(3.7-5) | 3(2.6-3.4) | 3(2.5-3) | 3.3(3.1-3.7) |
| Graduate entrants | 4(3.5-4.5) | 3.2(2.8-3.4) | 3(2.5-3) | 3.2(3.2-3.6) |
| p-value† | 0.03* | 0.29 | 0.73 | 0.59 |
| Year of study | | | | |
| Final year | 4(3.7-4.5) | 3(2.6-3.6) | 3(2.5-3) | 3.3(3.2 -3.7) |
| 5th year | 4.2(3.7-5) | 3.2(2.6-3.6) | 3(2.5-3) | 3.4(3.2 -3.7) |
| 4th year | 4(3.7-4.7) | 3(2.6-3.4) | 3(2.5-3) | 3.3(3.1-3.6) |
| 3rd year | 4(3.5-4.7) | 3.1(2.6-3.4) | 3(2.5-3) | 3.3(3.1 -3.6) |
| p-value†† | 0.56 | 0.34 | 0.26 | 0.86 |
| Friends' Smoker | | | | |
| Yes | 4.2(3.7-5) | 3(2.6-3.4) | 3(2.5-3) | 3.3(3.2 -3.6) |
| p-value† | <0.00* | 0.05* | 0.18 | 0.79 |
| Smoker | | | | |
| Yes | 4.5(3.7-5) | 2.8(2.4-3.2) | 3(2.5-3) | 3.5(3.2 -3.6) |
| p-value † | 0.22 | 0.11 | 0.85 | 0.88 |

*Statistically significant (p < 0.050); † Mann-Whitney U test; †† Kruskal-Wallis H test.

**KAP: Knowledge, Attitude, Practice.

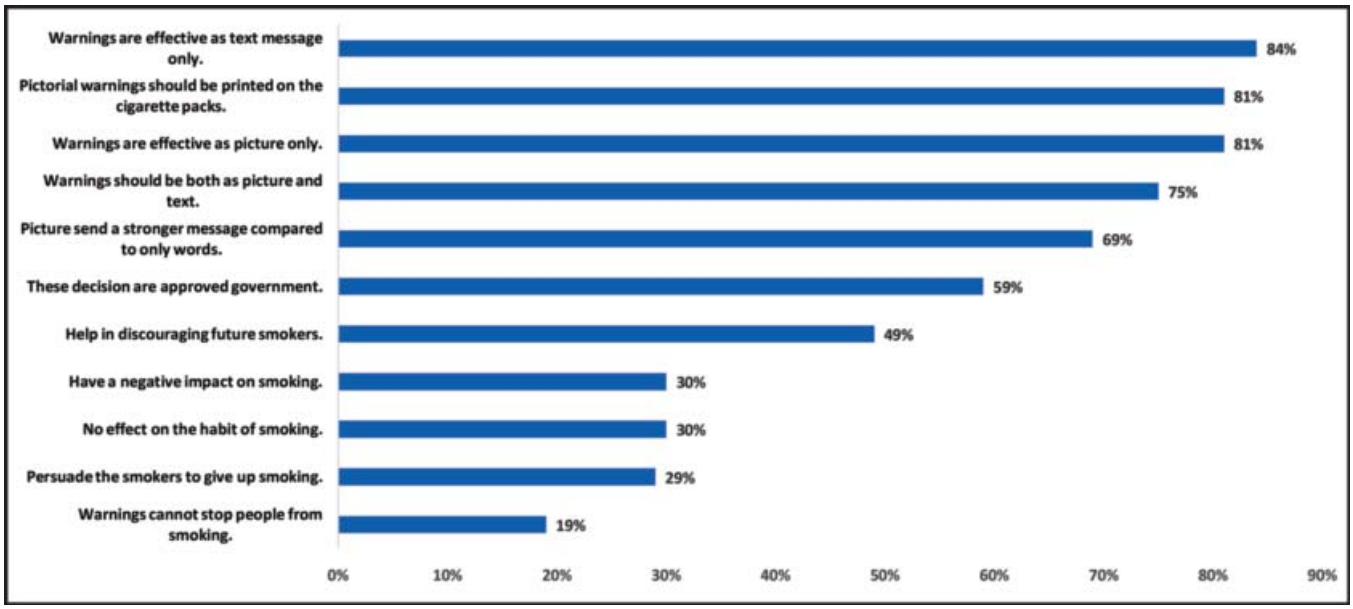


**Figure:** Percentage agreement about printing of pictorial warnings on cigarette packs.

compared to non-smokers (p>0.05). There was no significant correlation between knowledge and attitude (p=0.26). However, attitude and practice showed a weak positive correlation (Table-2).

## Discussion

The overall KAP score of the participants was low, with attitude being the lowest and knowledge being relatively better. The important finding in the study is that those having a smoker friend had better knowledge and attitude about pictorial health warning compared to the others. This highlights the importance of the peer influence which is reported by other studies as well.[19,20] Although the main idea of introducing these warnings was to make the users aware of the health hazards of tobacco smoking, it is maybe time to take into account the non-smokers more than the smokers. This finding could be used for planning future health education programmes. Additionally, the efficacy and quality of the pictorial warning is a big question mark. As highlighted by Jradi H et al., the graphical warnings were somewhat vague and poorly designed that did not implement the full standards to enhance smoking cessation, and that study suggested the use of stronger and more clear graphics.[21] This could be the reason why in the present study, smokers did not show significant results for any of the items. Moreover, most of the participates agreed that these warnings should be printed on the packs; a finding consistent with an earlier study which reported that about 90% participants agreed that pictorial warning should be printed on cigarettes packs.[22]

Our study also found that 41% participants did not know that cigarette pack pictorial warning and regulation decisions were taken by the governments as they were mandated to take these actions as part of their obligations to international rules and guidelines.[9] One would expect medical students to have better level of awareness compared to the other social segments. Thus, this highlights that awareness of the general population will be even lesser, and the government needs to invest in mass awareness programmes to increase population knowledge and to advocate increased transparency about the actions taken for the health of the population at large. Although most of the participants believed that pictorial warning should be printed on cigarettes packs (81%), only 30% believed that pictorial warnings had negative impact on smoking which is the logical purpose of the implementation of pictorial health warnings. This finding is different from earlier findings that reported that most participants thought that pictorial health warning would discourage the future smokers to take up smoking.[17]

There are a few possible explanations for the low efficacy of smoking pictorial health warnings. First, the sub-optimal graphics of the pictorial warning, and, secondly, people get conditioned to pictorial health warnings with repeated viewing of the same pack so they get less attentive to it over time.[23] Furthermore, Kumar A et al., reported that that smokers avoid looking at the pictorial

health warning of cigarette packs, thus the main purpose for which they are placed is disregarded to some extent.[22] As the main target of all WHO FCEC efforts are the smokers, thus this finding is of an important significance. If pictorial warning does not result in a better knowledge or does not translate into better attitude, it is maybe time to find another method to deliver a stronger educational message to the smokers.[24]

In the current study, 69% participants believed that having printed health warnings on cigarette packs sends a strong message compared to only words, and the majority (81%) still thought it should be printed on the cigarette packs. This was consistent with a study in Lebanon which studied the effectiveness of pictorial health warning among targeted school and university students.[25] In another study, pictorial health warnings were rated as more effective than text-only warnings among Mexican youth and adults.[10] Contrarily, one study demonstrated that pictorial warning does not convey any stronger message compared to a text-only warning.[26]

The limitations of the current study include non-probability sampling technique and the possible under- or over-reporting on a few of the items by the participants which is a common phenomenon in KAP studies. Moreover, the number of smokers in the study was very less thus the analysis in terms of smoker and non-smoker groups could not be performed. Furthermore, the factors related to quality of pictures and the brands of cigarettes were not considered since pictorial health warning standards are not fully implanted by some packs and sellers.

Further studies are recommended with larger sample sizes with quota sampling by smoking status including other colleges, universities and schools \to ensure generalisability of results.

## Conclusion

The overall knowledge score was considerably better, while the score for attitude was low, implying relatively negative attitude toward these warnings. Although the majority agreed these warnings cannot help the current smokers quit smoking, they agreed that the warning should be printed. Those who had a smoker friend showed better knowledge and attitude, suggesting that peers learn from each other.

**Disclaimer:** The text was presented as Poster at the 4th Health Professions Education Conference held at the KSAU-HS, and was part of an undergraduate students' project.

**Conflict of Interest:** None.

**Source of Funding:** None.

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