

Pictorial Health Warnings on Cigarette Packs in Iraq: Awareness and Perceptions among One Medical University Staff in Baghdad

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Abstract

Background: Pictorial health warnings (PHWs) on cigarette packs communicate the risks of smoking more effectively than text-only warnings. Although Iraqi legislation has required PHWs since 2012, their recognition by the public has not been evaluated.

Objective: To assess the awareness and perceptions of PHWs among the staff of a medical university in Baghdad and to compare ever-smokers with never-smokers.

Materials and Methods: A cross-sectional survey using a self-administered 28-item Arabic questionnaire was conducted in June 2025 among 28 staff members of Ibn Sina University of Medical and Pharmaceutical Sciences, Baghdad, who were shown example packs bearing PHWs. Groups were compared using Fisher's exact, Monte Carlo chi-square and Mann-Whitney U tests (SPSS version 22), and handwritten opinions on the campus smoking ban were coded thematically.

Results: Six respondents (21.4%) were ever-smokers. One-third (32.1%), all never-smokers, did not know whether warnings are printed on packs sold in Iraq, and 39.3% did not know what a PHW was. Most agreed that PHWs attract more attention (78.6%) and provide more information (82.1%) than text warnings, and 82.1% supported mandating PHWs on all packs. After viewing the warnings, 86.4% of never-smokers were convinced they would never smoke, whereas only 33.3% of ever-smokers agreed that PHWs would make them quit. Nearly all commenters (96.2%) supported the campus smoking ban, but ever-smokers favored a full ban less often than never-smokers (20.0% vs. 85.7%; $P = 0.010$).

Conclusion: Awareness of PHWs remains limited despite legislation, although attitudes toward them are favorable. PHWs should be complemented by awareness campaigns, cessation services and enforced smoke-free policies.

Keywords: Pictorial health warnings; Cigarette packs; Tobacco control; Smoking cessation; Smoke-free campus; Iraq.

Introduction

Tobacco smoking remains one of the leading preventable causes of disease and death worldwide, and health warnings on tobacco packages are among the least costly and most widely reaching tobacco-control measures available to governments [1,2]. Article 11 of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) requires parties to adopt health warnings that are large, clear, visible and rotated, that occupy at least 30% of the principal display areas of the package, and that may be in the form of, or include, pictures or pictograms [1]. In Iraq, the burden of tobacco use is considerable: the national STEPS survey of 2015 reported that 20.7% of Iraqi adults were current smokers, including 38.0% of men and 1.9% of women [3], and a nationwide survey conducted in 2021 across all 19 provinces found an overall smoking rate of 22.4%, reaching 31.7% among men [4]. Smoking has been linked to the high burden of lung cancer in the country, and the prolonged exposure of the population to conflict and psychological stress has been proposed as a contributor to the persistence of the habit [5].

Evidence accumulated over the last two decades consistently indicates that pictorial health warnings (PHWs) are more effective than text-only messages. Compared with text, pictures are more noticeable, are better recalled, elicit stronger emotional reactions and are more likely to prompt thoughts about quitting [2,6]. Longitudinal data from the International Tobacco Control (ITC) Four Country Survey showed that larger and graphic warnings were more likely to be noticed and to be rated as effective in informing smokers about the health risks of smoking [7–9], and a meta-analysis of experimental studies confirmed that pictorial warnings outperform text-only warnings on attention, negative affect, perceived effectiveness and intentions to quit [6]. A randomized clinical trial conducted among adult smokers further showed that adding pictorial warnings to cigarette packs increased quit attempts in comparison with text-only warnings [10]. In addition, PHWs can reach groups that do not read, or do not notice, written messages, including people with low literacy, young people and other vulnerable populations [11,12].

The findings of studies conducted in the Middle East and Asia, however, have been less uniform. A survey of young Jordanian adults found that proposed pictorial labels were perceived as more effective than the text warning in use at the time [13], and a Malaysian study reported that smokers' reactions to pack warnings predicted their quit intentions and stage of change [14]. In contrast, more than half of 500 male smokers surveyed in Iran believed that pictorial labels were ineffective in reducing their own cigarette consumption, and 60.8% reported that the labels had no impact on their quitting behavior [15]. Among medical students in Saudi Arabia, the overall knowledge, attitude and practice regarding PHWs was low, and the authors concluded that pictorial warnings alone are insufficient to persuade active smokers to quit [16]. Studies of current smokers in Nepal [17], of adults in the Gulf countries, where the perceived effectiveness of PHWs varied with individual characteristics [18], and of the general public in Qatar before the introduction of PHWs, where nearly 45% of respondents did not know what a PHW was [19], likewise indicate that the awareness and perceived impact of pictorial warnings cannot be assumed and deserve setting-specific examination.

Iraq enacted comprehensive tobacco-control legislation in March 2012 (Anti-Smoking Act No. 19 of 2012), which banned tobacco advertising, restricted smoking in public places and required written and pictorial health warnings on tobacco packaging [20]. Under the implementing regulations and the Iraqi Standard Specification No. 546, cigarette packs must carry a text warning covering 40% of the front panel and a combined picture-and-text warning covering 40% of the back panel [21]. Nevertheless, enforcement of the legislation has been described as weak [20], and smoking starts early: the Global Youth Tobacco Survey of 2012 showed that 21.8% of Iraqi adolescents used some form of tobacco [22], while studies conducted in Baghdad reported smoking among 21% of medical students (32.6% of male students) [23] and among 19.6% of male paramedical students [24]. Although the knowledge of Iraqi smokers about the health risks of cigarette smoking has been examined [25], to the best of our knowledge no published study has evaluated how Iraqi adults recognize and perceive the PHWs that the law requires, or whether these perceptions differ between smokers and non-smokers. Questionnaire-based cross-sectional designs have been widely used to characterize awareness gaps among Iraqi healthcare professionals and academic staff [26], and medical universities are of particular interest because their staff are expected to act as role models for students and for the public, and because many universities are adopting smoke-free campus policies [27].

The present study addresses this gap by evaluating the awareness, beliefs and perceptions of the staff of a medical university in Baghdad toward PHWs on cigarette packs, by comparing ever-smokers with never-smokers, and by exploring, through an open-ended question, their opinions on the university's decision to ban smoking on its campus.

Materials And Methods

This report presents the findings of a cross-sectional, self-administered questionnaire survey of the awareness and perceptions of university staff regarding health warnings on cigarette packs. A brief description of the study setting, the questionnaire and the analytic approach is given below.

The survey was conducted in June 2025 at Ibn Sina University of Medical and Pharmaceutical Sciences in Baghdad, Iraq, during a period in which the university administration was implementing a decision to ban smoking inside the university campus. The questionnaire was distributed to staff members of the university, and 28 completed questionnaires were included in the analysis. Each questionnaire was assigned a serial code (Q1–Q28) and no names or identity numbers were requested, so that responses remained anonymous. This study was approved by Ibn Sina University of Medical and Pharmaceutical Sciences, College of Medicine Scientific Committee, with an approval number 68 / 1776 in 28/5/2025

The Arabic questionnaire, entitled "A study on pictorial health warnings on cigarette packs in Iraq", was adapted from a previously published instrument on pictorial health warnings [19]. It comprised 28 items arranged in five sections. The first section included nine demographic items (gender, age, nationality, occupation, marital status, educational level, smoking status, exposure to passive smoking and chronic health conditions). The second section included eight items assessing knowledge and awareness of cigarette pack warnings, including who is affected by cigarette smoke, the existence and content of the current warnings in Iraq, the frequency of noticing the warnings (smokers only), knowledge of what a PHW is, previous exposure to PHWs elsewhere, the expected deterrent effect of PHWs and support for a government decision to place PHWs on all packs. The third section included six attitudinal items on the perceived effect of pictorial warnings, each measured on a 5-point Likert scale ranging from strongly agree to strongly disagree. The fourth section contained two items for never-smokers only and two items for smokers only, which asked whether, after seeing a text warning ("Warning: smoking causes cancer") and a pictorial

warning printed on the questionnaire, the respondent was convinced that he or she would never start smoking or would quit smoking, respectively. The questionnaire closed with an open-ended question asking for the respondent's frank opinion on banning smoking at Ibn Sina University, to which participants replied in their own handwriting. In addition to the warnings printed on the questionnaire, five cigarette packs carrying pictorial health warnings that depict cancer of the neck and mouth and fetal loss were shown to the participants as examples of what PHWs look like (Figure 1).

Figure 1. Examples of cigarette packs bearing pictorial health warnings (neck cancer, mouth cancer and fetal loss) that were shown to the participants during the survey.



For the purpose of this analysis, participants who reported being current or former smokers were classified as ever-smokers, and those who reported never smoking were classified as never-smokers; smoking status was treated as the independent variable of interest. Responses to the handwritten open-ended question were transcribed, translated from Arabic into English, and coded by content into main themes (full ban, ban with a designated smoking area, partial ban, personal freedom) and sub-themes (for example, protection of non-smokers, cleanliness, or extension of the ban beyond the university); comments with the same meaning but different wording were merged into one theme. Where a respondent had crossed out one answer and marked another, the remaining mark was recorded. Answers given to group-specific items by respondents outside the intended group (for example, never-smokers answering the smokers-only items) were excluded from the analysis of those items.

Frequencies and percentages were used to describe the responses. Strongly agree and agree responses were combined as agreement for comparison within the text, and mean Likert scores (strongly disagree = 1 to strongly agree = 5) were also calculated. Differences between ever-smokers and never-smokers were examined using Fisher's exact test for 2×2 comparisons, the Pearson chi-square test with Monte Carlo exact significance (20,000 sampled tables) for items with more than two categories, and the Mann-Whitney U test for Likert scores. The internal consistency of the six perception items was acceptable (Cronbach's $\alpha = 0.89$). A P value < 0.05 was considered statistically significant. All analyses were conducted using the Statistical Package for Social Sciences (IBM SPSS Statistics, version 22, IBM Corp., Armonk, NY, USA), including the Exact Tests module. Given the small number of ever-smokers ($n = 6$), the group-based percentages should be interpreted as indicative rather than precise.

Results

This analysis examines the awareness and perceptions of university staff regarding pictorial health warnings on cigarette packs, and whether these differed between ever-smokers and never-smokers.

Characteristics of the Participants

A total of 28 staff members completed the questionnaire, of whom 19 (67.9%) were male. Six respondents (21.4%) were ever-smokers (five current smokers and one former smoker) and 22 (78.6%) were never-smokers. All participants were Iraqi and all worked in the governmental sector (one also reported private-sector work). The largest age group was 41 years and above (39.3%), 71.4% were married, and 82.1% held a university or postgraduate degree. Two-thirds of the respondents (67.9%) reported exposure to passive smoking in public places only, and only

two never-smokers (7.1%) reported no exposure at all. As shown in Table 1, no statistically significant differences in demographic characteristics were found between ever-smokers and never-smokers, although ever-smokers were more often male (83.3% vs. 63.6%) and less often aged 41 years or above (16.7% vs. 45.5%).

Table 1. Demographic characteristics of the participants by smoking status, n (%)

Characteristic	Ever-smokers (n = 6)	Never-smokers (n = 22)	Total (n = 28)	P value
Gender				0.630
Male	5 (83.3)	14 (63.6)	19 (67.9)	
Female	1 (16.7)	8 (36.4)	9 (32.1)	
Age (years)				0.173
18–25	2 (33.3)	3 (13.6)	5 (17.9)	
26–30	2 (33.3)	6 (27.3)	8 (28.6)	
31–35	1 (16.7)	0 (0.0)	1 (3.6)	
36–40	0 (0.0)	3 (13.6)	3 (10.7)	
41 and above	1 (16.7)	10 (45.5)	11 (39.3)	
Marital status				1.000
Single	2 (33.3)	6 (27.3)	8 (28.6)	
Married	4 (66.7)	16 (72.7)	20 (71.4)	
Educational level				0.541
Preparatory school	1 (16.7)	1 (4.5)	2 (7.1)	
Diploma	0 (0.0)	2 (9.1)	2 (7.1)	
Bachelor's degree	3 (50.0)	9 (40.9)	12 (42.9)	
Postgraduate degree	1 (16.7)	10 (45.5)	11 (39.3)	
Not reported	1 (16.7)	0 (0.0)	1 (3.6)	
Exposure to passive smoking				0.424
Public places only	3 (50.0)	16 (72.7)	19 (67.9)	
Home only	0 (0.0)	1 (4.5)	1 (3.6)	
Workplace only	0 (0.0)	1 (4.5)	1 (3.6)	
More than one place	2 (33.3)	2 (9.1)	4 (14.3)	
No exposure	0 (0.0)	2 (9.1)	2 (7.1)	
Not reported	1 (16.7)	0 (0.0)	1 (3.6)	
Chronic health conditions				1.000
None	4 (66.7)	12 (54.5)	16 (57.1)	
Hypertension	1 (16.7)	5 (22.7)	6 (21.4)	
Diabetes	0 (0.0)	1 (4.5)	1 (3.6)	
Other	1 (16.7)	2 (9.1)	3 (10.7)	
More than one condition	0 (0.0)	2 (9.1)	2 (7.1)	

P values: Fisher's exact test (gender) and Pearson chi-square test with Monte Carlo exact significance (other characteristics).

Awareness of Health Warnings on Cigarette Packs

Almost all respondents (96.4%) recognized that exposure to cigarette smoke harms both smokers and non-smokers. However, only 67.9% knew that health warnings are printed on the cigarette packs sold in Iraq, and the remaining 32.1% answered "I don't know"; all of these were never-smokers, so that awareness reached 100% among ever-smokers compared with 59.1% among never-smokers, although this difference did not reach statistical significance ($P = 0.136$; Table 2). The warning most frequently recalled was "smoking causes lung cancer" (75.0%), followed by "smoking is harmful to health" (35.7%), while 14.3% did not know the content of the current warning. Among ever-smokers, one-third reported always noticing the warning and two-thirds noticed it only sometimes.

With respect to pictorial warnings, 39.3% of the respondents did not know what a PHW was, and only 21.4% reported having seen PHWs on cigarette packs elsewhere, with no meaningful difference between ever-smokers and never-smokers. Three in five respondents (60.7%) believed that placing pictorial warnings on cigarette packs would have a deterrent effect on smokers, while one-quarter (25.0%) did not. Notably, 82.1% of the respondents supported a government decision to place PHWs on all cigarette packs, the remaining 17.9% were unsure, and none opposed it.

Table 2. Awareness of health warnings on cigarette packs by smoking status, n (%)

Item and response	Ever-smokers (n = 6)	Never-smokers (n = 22)	Total (n = 28)	P value
Exposure to cigarette smoke negatively affects				–
Both smokers and non-smokers	6 (100.0)	21 (95.5)	27 (96.4)	
Not answered	0 (0.0)	1 (4.5)	1 (3.6)	
Are there health warnings on cigarette packs sold in Iraq?				0.136
Yes	6 (100.0)	13 (59.1)	19 (67.9)	
No	0 (0.0)	0 (0.0)	0 (0.0)	
I don't know	0 (0.0)	9 (40.9)	9 (32.1)	
Current warning on the packs (more than one answer allowed)				0.549
Smoking causes lung cancer	4 (66.7)	17 (77.3)	21 (75.0)	
Smoking is harmful to health	3 (50.0)	7 (31.8)	10 (35.7)	
Both of the above	3 (50.0)	6 (27.3)	9 (32.1)	
Other	1 (16.7)	1 (4.5)	2 (7.1)	
I don't know	1 (16.7)	3 (13.6)	4 (14.3)	
How often do you notice the warning? (smokers only)				–
Always	2 (33.3)	–	–	
Sometimes	4 (66.7)	–	–	
Do you know what a pictorial health warning is?				1.000
Yes	4 (66.7)	13 (59.1)	17 (60.7)	
No	2 (33.3)	9 (40.9)	11 (39.3)	
Have you seen pictorial warnings on cigarette packs elsewhere?				0.467
Yes	1 (16.7)	5 (22.7)	6 (21.4)	
No	5 (83.3)	12 (54.5)	17 (60.7)	
I don't know	0 (0.0)	5 (22.7)	5 (17.9)	
Will pictorial warnings have a deterrent effect on smokers?				0.671
Yes	4 (66.7)	13 (59.1)	17 (60.7)	
No	2 (33.3)	5 (22.7)	7 (25.0)	
I don't know	0 (0.0)	4 (18.2)	4 (14.3)	
Would you support a government decision to place pictorial warnings on all packs?				1.000
Yes	5 (83.3)	18 (81.8)	23 (82.1)	
No	0 (0.0)	0 (0.0)	0 (0.0)	
I don't know	1 (16.7)	4 (18.2)	5 (17.9)	

P values: Fisher's exact test for the existence of warnings (yes vs. other) and Pearson chi-square test with Monte Carlo exact significance for the other items.

Perceptions Towards the Effect of Pictorial Warnings

Perceptions towards health warnings were generally positive, and no respondent selected “strongly disagree” for any of the six perception items (Table 3). Most respondents (82.1%) agreed that text warnings on cigarette packs are useful, and the same proportion agreed that pictorial warnings provide more information about the harms of smoking. Agreement that pictorial warnings attract more attention than text warnings was reported by 78.6% of respondents, while 71.4% and 75.0% agreed that pictorial warnings would have a great influence on the smoking behavior of adolescents and young people and of illiterate people, respectively. The lowest level of agreement (64.3%) concerned the statement that pictorial warnings would multiply knowledge about the health harms of smoking and may lead to quitting, for which 28.6% of the respondents remained neutral.

In contrast to the pattern commonly reported in the literature, ever-smokers in the present sample tended to hold more favorable views of pictorial warnings than never-smokers: all ever-smokers agreed that pictorial warnings provide more information and attract more attention than text warnings, compared with 77.3% and 72.7% of never-smokers, respectively. The mean score of the five items addressing pictorial warnings was 4.43 ± 0.50 among ever-smokers and 4.03 ± 0.87 among never-smokers (overall 4.11 ± 0.82); however, none of the differences between the two groups was statistically significant, the closest being the item on the information provided by pictorial warnings ($P = 0.067$).

Table 3. Perceptions of health warnings on cigarette packs by smoking status, n (%)

Item	Group	Strongly agree	Agree	Neutral	Disagree	Mean score	P value
Text warnings on cigarette packs are useful	Ever-smokers	4 (66.7)	2 (33.3)	0 (0.0)	0 (0.0)	4.67	0.337
	Never-smokers	11 (50.0)	6 (27.3)	5 (22.7)	0 (0.0)	4.27	
	Total	15 (53.6)	8 (28.6)	5 (17.9)	0 (0.0)	4.36 ± 0.78	
Pictorial warnings give more information about the harms of smoking	Ever-smokers	5 (83.3)	1 (16.7)	0 (0.0)	0 (0.0)	4.83	0.067
	Never-smokers	9 (40.9)	8 (36.4)	3 (13.6)	2 (9.1)	4.09	
	Total	14 (50.0)	9 (32.1)	3 (10.7)	2 (7.1)	4.25 ± 0.93	
Pictorial warnings attract more attention than text warnings	Ever-smokers	4 (66.7)	2 (33.3)	0 (0.0)	0 (0.0)	4.67	0.236
	Never-smokers	10 (45.5)	6 (27.3)	5 (22.7)	1 (4.5)	4.14	
	Total	14 (50.0)	8 (28.6)	5 (17.9)	1 (3.6)	4.25 ± 0.89	
Pictorial warnings will greatly influence the smoking behavior of adolescents and youth	Ever-smokers	4 (66.7)	1 (16.7)	1 (16.7)	0 (0.0)	4.50	0.281
	Never-smokers	9 (40.9)	6 (27.3)	5 (22.7)	2 (9.1)	4.00	
	Total	13 (46.4)	7 (25.0)	6 (21.4)	2 (7.1)	4.11 ± 0.99	

Item	Group	Strongly agree	Agree	Neutral	Disagree	Mean score	P value
Pictorial warnings have the greatest effect on the smoking behavior of illiterate people	Ever-smokers	3 (50.0)	2 (33.3)	0 (0.0)	1 (16.7)	4.17	0.721
	Never-smokers	9 (40.9)	7 (31.8)	4 (18.2)	2 (9.1)	4.05	
	Total	12 (42.9)	9 (32.1)	4 (14.3)	3 (10.7)	4.07 ± 1.02	
Pictorial warnings will multiply knowledge of smoking harms and may lead to quitting	Ever-smokers	2 (33.3)	2 (33.3)	2 (33.3)	0 (0.0)	4.00	0.837
	Never-smokers	7 (31.8)	7 (31.8)	6 (27.3)	2 (9.1)	3.86	
	Total	9 (32.1)	9 (32.1)	8 (28.6)	2 (7.1)	3.89 ± 0.96	

No respondent selected “strongly disagree”. Mean score: strongly disagree = 1 to strongly agree = 5 (mean ± SD for the total). P values: Mann–Whitney U test (ever-smokers vs. never-smokers).

Intentions After Viewing the Warnings

The clearest difference between the two groups concerned the behavioral intentions expressed after viewing the warnings (Table 4). Among never-smokers, 86.4% agreed or strongly agreed that, after seeing either the text warning or the pictorial warning, they were convinced that they would never smoke, and none disagreed. Among ever-smokers, by contrast, only one respondent (16.7%) agreed that the text warning would make them quit and two (33.3%) agreed so for the pictorial warning, while half of them remained neutral for both. The pictorial warning was rated equal to or higher than the text warning by every ever-smoker, although this difference was not statistically significant (Wilcoxon signed-rank test, $P = 0.500$).

Table 4. Intention not to start smoking (never-smokers) or to quit smoking (ever-smokers) after viewing the text and pictorial warnings, n (%)

Group and statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Never-smokers (n = 22)					
After seeing the text warning, I am convinced I will never smoke	15 (68.2)	4 (18.2)	3 (13.6)	0 (0.0)	0 (0.0)
After seeing the pictorial warning, I am convinced I will never smoke	15 (68.2)	4 (18.2)	3 (13.6)	0 (0.0)	0 (0.0)
Ever-smokers (n = 6)					
After seeing the text warning, I am convinced I will quit smoking	0 (0.0)	1 (16.7)	3 (50.0)	2 (33.3)	0 (0.0)
After seeing the pictorial warning, I am convinced I will quit smoking	1 (16.7)	1 (16.7)	3 (50.0)	1 (16.7)	0 (0.0)

Opinions on Banning Smoking on the University Campus

Twenty-six of the 28 respondents (92.9%) answered the open-ended question in their own handwriting. After merging comments with similar meaning, nearly all respondents who commented (25 of 26; 96.2%) supported banning smoking on the campus in some form: 73.1% supported a full ban, often in emphatic terms such as “I strongly support” or “a total ban”, 19.2% supported the ban provided that a designated smoking area is allocated for smokers, and 3.8% preferred a partial ban limited to the corridors. Only one respondent (3.8%), a never-smoker, described smoking as a personal freedom provided that it does not harm others. A significant difference was found

between the two groups (Table 5): only one of the five ever-smokers who commented (20.0%) supported a full ban, compared with 85.7% of never-smokers ($P = 0.010$), while 60.0% of ever-smokers requested a designated smoking area, compared with 9.5% of never-smokers ($P = 0.034$).

The reasons given by the respondents were also informative. Nearly half of the comments (46.2%) used emphatic wording, 23.1% mentioned the protection of non-smoking students and staff from passive smoking, 19.2% called for a designated smoking area, and 15.4% referred to respecting smokers' personal freedom. Four respondents (15.4%) described the ban as a correct, wise or necessary decision, two (7.7%) mentioned its benefit for the cleanliness of the campus and the environment, and two (7.7%) called for extending the ban beyond the university; one respondent noted that the ban would prevent new people from starting to smoke.

Table 5. Main themes of the handwritten opinions on banning smoking at the university, by smoking status, n (%)

Theme	Ever-smokers (n = 5)	Never-smokers (n = 21)	Total (n = 26)	P value
Supports a full smoking ban on the campus	1 (20.0)	18 (85.7)	19 (73.1)	0.010
Supports the ban with a designated smoking area	3 (60.0)	2 (9.5)	5 (19.2)	0.034
Supports only a partial ban (corridors)	1 (20.0)	0 (0.0)	1 (3.8)	–
Smoking is a personal freedom provided others are not harmed	0 (0.0)	1 (4.8)	1 (3.8)	–

Two respondents (one ever-smoker and one never-smoker) did not write a comment. P values: Fisher's exact test.

Discussion

Collectively, the results of the present work suggest that a considerable proportion of university staff in Baghdad have limited awareness of the health warnings on cigarette packs, even though their attitudes toward pictorial warnings and toward smoke-free policies are highly favorable. Almost one-third of the respondents did not know whether any health warning is printed on the packs sold in Iraq, nearly two in five did not know what a PHW is, and fewer than one-quarter had seen a pictorial warning elsewhere. This level of unawareness is comparable to that reported in countries where PHWs had not yet been introduced [19], and it is notable because Iraq has required a combined picture-and-text warning on the back panel of cigarette packs since the implementation of the 2012 legislation [20,21]. It suggests that the mere legal requirement for pictorial warnings has not been sufficient to make them visible to non-smokers, possibly because the pictorial warning is confined to the back of the pack, because compliance and enforcement are incomplete [20], or because non-smokers seldom handle cigarette packs. In line with this interpretation, all ever-smokers in the present sample were aware of the existence of pack warnings, which is consistent with multi-country data from the Global Adult Tobacco Survey, where most smokers reported noticing package warnings [12], and with the low awareness of PHWs reported among Saudi medical students, 92% of whom were non-smokers [16].

The recall of warning content was dominated by the message "smoking causes lung cancer" (75.0%), which may reflect the text warnings that have long been printed on packs in Iraq and the prominence of lung cancer as a smoking-related disease in the country [5]. Recall of a single, long-standing message is consistent with evidence that warnings lose their salience over time when they are not rotated or renewed [2,9], and supports the rotation of warning messages required by the WHO FCTC [1] and by the Iraqi standard [21]. Only one-third of ever-smokers reported always noticing the warning, which indicates that the current warnings may not attract sustained attention even among those who hold the packs every day.

Attitudes toward pictorial warnings were positive in both groups. More than three-quarters of the respondents agreed that pictorial warnings attract more attention and give more information than text warnings, and around three-quarters agreed that they would influence adolescents and illiterate people. These findings agree with the perception of young Jordanian adults, who rated proposed pictorial labels as more effective than text warnings [13], and with experimental and longitudinal evidence that pictorial warnings are more noticeable, more emotional stimulus and more effective in communicating health risks than text-only warnings [6–8,11], including among people

with low literacy [11,12]. The perceived influence of PHWs on young people is particularly relevant in Iraq, where tobacco use begins in adolescence [22] and smoking is common among male medical and paramedical students in Baghdad [23,24]. The strong support for a government decision to place PHWs on all packs (82.1%, with no opposition) also indicates that the legal requirement enjoys a broad base of public acceptance among university staff.

In the present sample, ever-smokers tended to rate pictorial warnings as favorably as, or more favorably than, never-smokers. This contrasts with the Iranian survey, in which more than half of the male smokers considered pictorial labels ineffective and 63% preferred to buy packs without warning images [15], and with reports that the perceived effectiveness of PHWs differs according to individual characteristics of smokers [18]. The difference should be interpreted cautiously, because it was not statistically significant and was based on only six ever-smokers. It may also reflect the characteristics of the setting: the ever-smokers were staff of a medical university who were surveyed while a campus smoking ban was being introduced, and they may therefore have been more sensitized to the health consequences of smoking than smokers in the general population.

The most important finding, however, concerns the gap between perception and intention. Although ever-smokers agreed that pictorial warnings are informative and attention-grabbing, only one-third of them agreed that the pictorial warning would make them quit, and half remained neutral; in contrast, 86.4% of never-smokers stated that the warnings convinced them never to smoke. This pattern of favorable attitudes not translating into a readiness to quit mirrors the Iranian finding that 60.8% of smokers reported no effect of pictorial labels on their quitting behavior [15], and the conclusion of the Saudi study that pictorial warnings alone are insufficient to persuade active smokers to quit [16]. It is also consistent with evidence that warnings mainly increase thoughts about quitting and quit attempts rather than directly producing cessation [10,14]. In the present setting, PHWs may therefore play a larger role in reinforcing the decision of non-smokers not to start smoking than in motivating current smokers to stop, which underlines the need to link pack warnings with accessible cessation services, such as a quitline number printed on the pack, as seen on one of the example packs shown to the participants (Figure 1) and as recommended by others [15].

The handwritten opinions provided further insight into how the same pattern extends to smoke-free policies. Almost all respondents who commented supported banning smoking on the university campus, and many did so in emphatic terms, frequently citing the protection of non-smoking students and staff from passive smoking and the cleanliness of the campus. Ever-smokers, however, were significantly less likely than never-smokers to support a full ban and more likely to request a designated smoking area, a position that was also framed by some respondents in terms of the personal freedom of smokers. This is in agreement with reports that campus tobacco policies are associated with reduced exposure to secondhand smoke and with greater support for smoking restrictions [27], and with the recommendation of Iraqi authors that legislative enforcement of smoke-free policies be combined with education and support for smokers [5]. It suggests that the acceptance of smoke-free campus policies by smokers may be improved when such policies are accompanied by cessation support and clear communication of their health rationale.

Implications for Tobacco-Control Policy in Iraq

The present results provide partial support for the view that the existing legal requirement for pictorial warnings in Iraq has not yet achieved its full communicative potential. The finding that one-third of the staff of a medical university were unaware of any pack warning indicates that enforcement of the warning requirements, larger warnings placed on the front of the pack, regular rotation of images and national awareness campaigns explaining the meaning of PHWs are warranted. At the same time, the low quit intentions reported by ever-smokers indicate that pack warnings alone would be insufficient; they should be combined with cessation services and with enforced smoke-free environments, such as the campus ban that was supported by nearly all respondents in the present study.

Limitations

The findings of the present study are subject to some important limitations. The sample was small and was drawn from the staff of a single medical university, so the results cannot be generalized to the Iraqi population, and the small number of ever-smokers ($n = 6$) means that single-respondent shifts may change the percentages in this group by about 17 points and that the statistical comparisons should be regarded as hypothesis-generating rather than

definitive. Smoking status was self-reported without a formal definition based on lifetime cigarette consumption, and some smokers may have denied their smoking status because of social desirability, particularly while a campus smoking ban was being introduced. In addition, some respondents answered items intended for the other smoking group, and these answers had to be excluded, and the example packs shown to the participants did not cover the full set of pictorial warnings authorized in Iraq. Finally, the study did not distinguish between cigarette smoking and other forms of tobacco use, such as waterpipe (narghile) smoking, which is common in Iraq.

Conclusion

From the results obtained in the present work, we conclude that, more than a decade after pictorial health warnings were legislated in Iraq, a substantial proportion of the staff of a medical university in Baghdad remain unaware of the warnings printed on cigarette packs and of what a pictorial warning is, particularly among never-smokers.

At the same time, attitudes toward pictorial warnings were highly favorable in both ever-smokers and never-smokers, and more than four-fifths of the respondents supported a government decision to place pictorial warnings on all cigarette packs, with no respondent opposing it.

Pictorial warnings appeared to strengthen the resolve of never-smokers not to start smoking more than they motivated ever-smokers to quit, and ever-smokers were less supportive of a full campus smoking ban and more likely to request a designated smoking area. These results suggest that pictorial warnings are a necessary but not sufficient tool for tobacco control in Iraq, and that stricter enforcement of the warning requirements, larger and regularly rotated warnings, public awareness campaigns, accessible cessation services and enforced smoke-free environments are needed together.

Larger multicentre studies with a balanced representation of smokers and non-smokers from the general Iraqi population are recommended to confirm these findings.

Conflict Of Interest Statements

The authors have no conflicts of interest to declare.

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