
**TEACHERS' KNOWLEDGE, ATTITUDES AND PRACTICE TOWARD SMOKING
AT PRIMARY AND SECONDARY SCHOOLS IN DUHOK CITY, KURDISTAN
REGION OF IRAQ**

BLAND BAYAR KHALEEL, MBChB, HDD*
FARSAT SAEED SAADI, MBChB, PhD**
NAZIK ABDULRAHEEM ABDULKARIM, MBChB, FKBMS***
SAAD YOUNIS SAEED, MBChB, MSc, FIBMS****
FARHAD ISMAIL SHAHAB, MBChB, MSc, FKBMS*****
SAGVAN HASAN ALI, MBChB, FKBMS*****
AREEN ISKANDER AHMED, BSc*****
KHALID HUSSEIN HALEEM, MBChB, FICMS*****

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ABSTRACT

Background: Smoking has serious negative effects on health, mental state, and society. It remains a major public health concern, especially among adolescents and young adults, and there is a risk of increased usage among these age groups.

Methods: In this cross-sectional study, 3005 primary and secondary school teachers in Duhok City, Kurdistan Region of Iraq, participated in a survey on smoking attitudes and knowledge between December 2023 and February 2024, via a self-administered Kurdish-language questionnaire, adapted from the Global Health Professional Survey by the World Health Organization.

Results: 16.2% of the surveyed individuals were current smokers, with a significant male predominance (28% compared to 1% of females; $p < 0.001$). The most prevalent form of smoking was cigarettes (80.7%) and the main cause of starting smoking was peer pressure (63.5%). Notably, 44.5% of smokers acknowledged smoking on school premises, although 97.2% are aware of the health hazards associated with smoking, and that it is prohibited in public areas (95.3%).

Conclusions: The high smoking rate among teachers in this study emphasizes the need for public health initiatives and policy enforcement to strengthen tobacco control measures, particularly in schools. Teachers influence pupils, therefore, tailored smoking cessation programs for educators are needed to lower smoking rates and foster a healthy atmosphere in the educational system.

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Smoking is considered a major public health problem^[1], and its harmful effects are clearly visible in the entire population^[2]. In addition to the health effects of smoking, it causes societal and

mental problems^[3]. Studies refer to smoking in the first century BC^[4]. Different types of smoking exist, such as cigarettes, shisha (or waterpipes), and vapes (electronic cigarettes)^[5]. All forms of

* Diabetologist, Azadi Teaching Hospital, Duhok Governorate, Kurdistan Region, Iraq.

** Internal Medicine Specialist, Azadi Teaching Hospital, Duhok Governorate, Kurdistan Region, Iraq.

*** Community Medicine Specialist, Zanin Center for School Health, Duhok Governorate.

**** Community Medicine Specialist, University of Duhok, Duhok Governorate.

***** Community Medicine Specialist, Preventive Health Directorate, Duhok Governorate.

***** Community health, Duhok polytechnic University, Technical college of Health & Medicine- Shekhan

***** Pediatrician, Hevi pediatric Hospital, Duhok Governorate, Kurdistan Region, Iraq.

Corresponding author: Bland Bayar Khaleel. Email: blindbayar856@gmail.com

smoking have ill effects on health^[6]. There are more than 4000 compounds in tobacco smoke, including carcinogenic substances [6]. Smoking is the leading preventable cause of disease and premature death in developed and developing countries^[7].

In Iraq, smoking is an important health problem with a high prevalence among adults and young people, exceeding 30% of population^[8]. According to Global Youth Tobacco Survey published in 2016, about 11% of youth are current smokers in Iraq^[9]. Smoking among any profession, such as teachers, health staff, and industry, needs to be revised and policies strengthened, particularly in specific occupational groups^[10]. Teachers at schools have good access to a large part of the community and a unique opportunity for health education, which includes smoking prevention among students^[11]. Teachers at schools at all levels can be regarded as the key source of health information for students and should always be involved in training to increase their awareness of smoking^[12]. The present study focused on teachers' attitudes toward smoking at primary and secondary schools in Duhok City, Kurdistan Region of Iraq, and evaluated their knowledge of the effects of smoking.

METHODS

This questionnaire-based, cross-sectional study was conducted between December 2023 and February 2024. A total of 3005 teachers from primary and secondary schools were included in the study, in coordination with Zanin Center for School Health. Schools were selected from a list provided by the Directorate of Education in the Duhok Governorate, and 30 schools were selected via simple random sampling from the list of 700 schools. Available teachers at selected schools were asked to complete a self-administered questionnaire, after a session of explanation by the person responsible for questionnaire collection. The questionnaire was composed of four parts:

First Part:

General questions about age, sex, marital status, average salary, number of family members, and number of smokers in the family.

Second Part:

We included questions about smoking attitude (never smoked, quit smoking, or currently smoking), age at which they started smoking, number of cigarettes per day, type of smoking, different points of time starting specific smoking, current smoking habits including occasional smoking and daily smoking, and place of smoking within school premises.

Third Part:

This section assessed the knowledge about health hazards of smoking, such as respiratory and cardiovascular diseases and death, smoking by or close to pregnant teachers and women, if they know that smoking in public places is prohibited by authority, and if they have received any training or awareness session on smoking cessation.

Fourth Part:

This section examined opinions about providing smoking cessation advice by healthcare professionals. If they could not quit, they asked for a smoking-free policy at their schools. The questionnaire also checked the availability of interventions at school to help teachers and/or students stop smoking if the school has ever counselled parents of the students about smoking.

The questionnaire was in the Kurdish language, adapted from the Global Health Professional Survey developed by the WHO to collect data on smoking^[13].

Before conducting this study, the research protocol was revised and approved by the Ethical Committee at the General Directorate of Health and the College of Medicine in University of Duhok. Before the teachers' interviews, they were informed of the aim of the study, and the confidentiality of their data was ensured by the researcher. Their right to refuse or participate in the present study was

confirmed, and oral informed consent was obtained for the interview.

Statistical calculations were performed using Statistical Package for Social Sciences version 27 (SPSS; IBM, USA). The descriptive purpose of this study was to determine the distribution of teachers' characteristics. Categorical descriptive data were expressed as frequencies and percentages, whereas data for continuous variables were expressed as means and standard deviations. Data were analyzed using the chi-squared test to detect significant association between smoking and sex. A p value less than 0.05 was considered statistically significant.

RESULTS

The total number of teachers who responded to the survey was 3005; their ages ranged from 22 to 65 years, with a mean of 35.5 and standard deviation of 8.5 years. Males accounted for 56.4% of the respondents. The highest percentage of participants was from Akre District (27.3%). Approximately three-quarters of respondents were married. Approximately half of the teachers (47%) taught at primary schools, and 45.1% had incomes between 500,000 and 1,000,000 Iraqi dinars. Half of the respondents had a household size of five to eight. Households with at least one smoker at home, were 43.6%, as shown in Table 1.

Table 1 General Characteristic of the study participants

Characteristic	No.	%	
Age (years)	22 - 25	310	10.3
	26 - 35	1319	43.9
	36 - 45	1012	33.7
	46 - 55	280	9.3
	56 - 65	84	2.8
Gender	Male	1694	56.4
	Female	1311	43.6
District	Duhok	527	17.5
	Zakho	529	17.6
	Semel	217	7.2
	Akre	820	27.3
	Shekhan	185	6.2
	Amedy	229	7.6
	Bardarash	498	16.6
Marital status	Married	2227	74.1
	Single	754	25.1
	Divorced	15	0.5
	Widower	9	0.3
School level	Primary	2354	78.3
	Secondary	651	21.7
Monthly income (ID)	< 500000	1313	43.7
	500000 - 1000000	1354	45.1
	> 1000000	338	11.2
No. of persons in the household	1 - 4	1036	34.5
	5 - 8	1505	50.1
	> 8	464	15.4
No. of smokers in the household	None	1693	56.3
	1 - 2	1131	37.6
	3 - 4	150	5.0
	5 - 9	31	1.0
	Total	3005	100.0

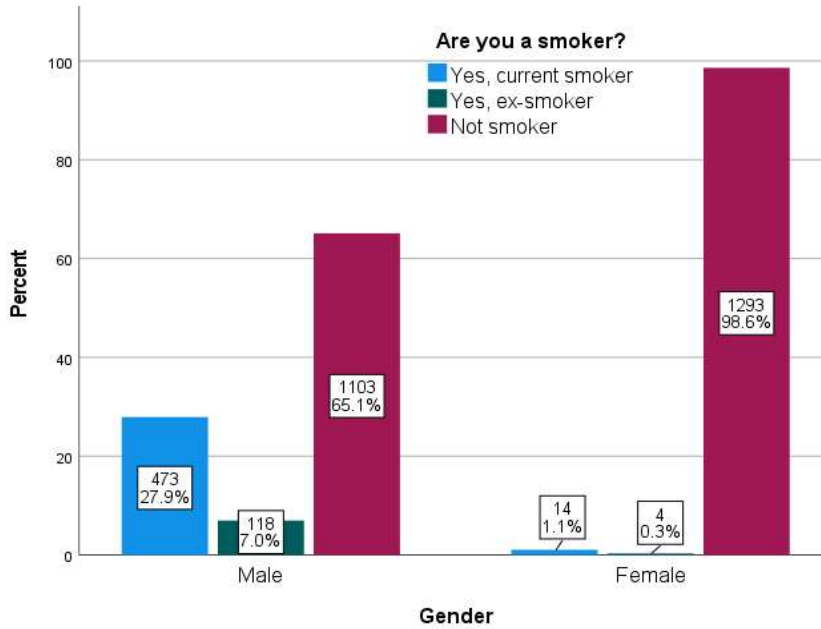


Figure 1. Smoking prevalence by gender (p < 0.001).

A significant association between sex and the prevalence of smoking was found (Figure 1), with the dominance of males as smokers. Table 2 shows that the prevalence of current smoking is 16.2%, and that of ex-smoking is 4.1%. The commonest form of smoking is cigarettes smoking (80.7%) followed by nargila and then teten (hand-

made cigarettes). More than half (59.1%) of them started smoking from 16 to 25 years. The cause of starting smoking in the majority of them was friend effect (63.5%). The commonest numbers of cigarette smoked were 15-19 cigarettes per day (43.3%).

Table 2 Smoking practice characteristics (n = 3005)*

Characteristic	No.	%	
Are you a smoker?	Yes, current smoker	487	16.2
	Yes, ex-smoker	122	4.1
	Not smoker	2396	79.7
Type of cigarette	Cigarette	423	80.7
	Nargila	38	7.3
	Teten	42	8.0
	Vape	2	0.4
	Cigarette+ nargila	7	1.3
	Cigarette+ teten	8	1.5
	Cigarette+ vape+ teten	1	0.2
	Cigarette+ vape+ teten+ nargila	2	0.4
	Nargila+ vape	1	0.2
At which age did you start smoking?	7 – 10	16	2.6
	11 – 15	68	11.2
	16 – 20	192	31.5
	21 – 25	168	27.6
	26 – 30	64	10.5
	31 – 35	30	4.9
	41 – 45	2	0.3
	46 – 50	5	0.8
Why did you start smoking?	I do not remember	64	10.5
	Friends' effect	353	63.5
	Financial problems; low income	83	14.9
	Looking at other people	17	3.1

Characteristic	No.	%	
No. of cigarettes smoked per a day for current and ex-smokers	Family problems	12	2.2
	Psychological problems	6	1.1
	Other problems	85	15.3
	1 – 4	61	10.0
	5 – 9	71	11.7
	10 – 14	98	16.1
	15 – 19	264	43.3
	20 – 29	75	12.3
	30 – 39	22	3.6
40+	18	2.9	

* The total number may not equal 3005 owing to non-applicability or missing responses.

Table 3 shows attitude and knowledge of teachers: 44.5% said they smoke at school; 97.2 % are aware about the harms of smoking, as they know that smoking can cause many health problems such as heart disease, cancer, pneumonia and also air pollution (98.2%), and 95.3% know that the smoking is prohibited in public places. Also, 44.5% know what is first, second and

third-hand smoking and 20.3% were first hand smokers. And 69.9 % had seen and read advertisements about the harms of smoking and received advice from the health team about risks of smoking. Eighty-five percent of the respondents had not received any courses or awareness on the harms of smoking or advice on how to quit smoking.

Table 3 Attitude and knowledge about smoking (n = 3005)*

Attitude and knowledge	No.	%	
If you smoke, do you smoke at school?	Yes	271	44.5
	No	338	55.5
Do you have any information about harms of smoking?	Yes	2921	97.2
	No	84	2.8
Do you know that smoking can cause many health problems such as heart disease, cancer, pneumonia and also air pollution?	Yes	2952	98.2
	No	53	1.8
Do you know that smoking is prohibited in public places?	Yes	2863	95.3
	No	142	4.7
Do you know what is first, second and third-hand smoking?	Yes	2153	91.2
	No	208	8.8
	Firsthand smoker – ex	609	20.3
	Secondhand smoker	288	9.6
What kind of smoker are you?	Third hand smoker	433	14.4
	No any type of smoker	1675	55.7
	Yes	426	69.9
If you are smoker or ex- smoker, have you seen or read advertisements about the harms of smoking? or have you received advice from the health team?	No	183	30.1
	Yes	458	15.2
Have you received courses or awareness on the harms of smoking? or an advice on how to quit smoking?	No	2547	84.8

* The total number may not equal 3005 owing to non-applicability or missing responses.

DISCUSSION

This study, carried out among primary and secondary school teachers in Duhok City, Kurdistan Region of Iraq, revealed important findings regarding smoking prevalence, knowledge, attitudes and practice. A sample of 3,005 teachers offered valuable insights into the factors influencing smoking behaviors and their implications for public health

The study showed that 16.2% of participants were current smokers and 4.1% were ex-smokers, differing from national estimates. A similar study in Saudi Arabia reported a slightly lower smoking rate of 12.7%^[14]. The higher prevalence observed here may be due to sociocultural influences, with 63.5% of smokers citing peer pressure as the main reason for starting smoking. Globally, smoking rates among teachers vary, with a study in Turkey showing a smoking prevalence of 19.4%^[15], closely matching the findings of Duhok.

The study also highlighted that male teachers were significantly more likely to smoke compared to female teachers ($p < 0.001$), a trend reflected in studies from other countries, such as Jordan, where male smoking prevalence reached 35.0%, much higher than among females^[16].

The majority of smokers in this study began smoking between the ages of 16 and 25 and peer influence was the primary driver. This aligns with studies in Egypt, which found that smoking initiation typically occurs between the ages of 15 and 24 years^[17]. These findings emphasize the importance of targeted anti-smoking campaigns aimed at preventing smoking initiation among adolescents and young adults.

Alarmingly, 44.5% of current smokers admitted to smoking at school, despite 95.3% of teachers acknowledging that smoking is banned in public places. This behavior suggests that smoking is normalized in the school environment, providing a poor example for students. Similar patterns were observed in a

Malaysian study, which 42% of teachers reported smoking on school premises^[18].

Almost all teachers were aware of smoking's harmful effects, including its association with heart disease, cancer, and air pollution. This high level of awareness is in line with other studies from the Middle East, such as in Lebanon, where 93.4% of teachers recognized the health risks of smoking^[19]. However, only 15.2% had received formal guidance or support in quitting smoking, highlighting the gap between public health education and cessation efforts.

Conclusions and Recommendations

Despite widespread knowledge of the dangers of smoking, it remains prevalent among teachers in Duhok, especially men. These findings emphasize the need for stronger tobacco control policies in the Kurdistan Region of Iraq, particularly schools. The high smoking prevalence among teachers and the lack of cessation resources call for the immediate implementation of smoking cessation programs.

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الخلاصة

معلومات المعلمين ومواقفهم وممارساتهم تجاه التدخين في المدارس الابتدائية والثانوية بمدينة دهوك، إقليم كردستان العراق

الخلفية والأهداف: للتدخين آثار سلبية خطيرة على الصحة والحالة النفسية والمجتمع. ولا يزال يشكل مصدر قلق كبير للصحة العامة، خاصة بين المراهقين والشباب، وهناك خطر من زيادة الاستخدام بين هذه الفئات العمرية.

الطرق: في هذه الدراسة المستعرضة، شارك 3005 من معلمي المدارس الابتدائية والثانوية في مدينة دهوك، إقليم كردستان العراق، في استبيان حول مواقفهم ومعارفهم المتعلقة بالتدخين في الفترة ما بين كانون الأول 2023 الى شباط 2024. تم جمع البيانات عبر استبيان ذاتي باللغة الكردية، تم استنباطه من المسح العالمي للمهنيين الصحيين لمنظمة الصحة العالمية.

النتائج: كان 16.2% من الأفراد الذين شملتهم الدراسة مدخنين حاليين، مع هيمنة ذكورية كبيرة (28% مقارنة بـ 1% للإناث؛ $p < 0.001$) وكان الشكل الأكثر انتشارًا للتدخين هو السجائر (80.7%)، وكان السبب الرئيسي لبدء التدخين هو ضغط الأقران (63.5%). ومن اللافت للنظر أن 44.5% من المدخنين أقروا بالتدخين في حرم المدرسة، على الرغم من أن 97.2% يدركون المخاطر الصحية المرتبطة بالتدخين، وأنه محظور في الأماكن العامة (95.3%).

الاستنتاجات: يؤكد معدل التدخين المرتفع بين المعلمين في هذه الدراسة على الحاجة إلى مبادرات صحية وتطبيق سياسات لتعزيز تدابير مكافحة التبغ، خاصة في المدارس. يؤثر المعلمون على التلاميذ، لذلك، هناك حاجة لبرامج مخصصة للإقلاع عن التدخين للمعلمين لخفض معدلات التدخين وتعزيز جو صحي في النظام التعليمي