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Prevalence and Psychosocial Correlates of Traditional and Electronic Cigarette Use among Iraqi Secondary School Students

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ABSTRACT

Objective: Tobacco use in adolescence increases the risk of lifelong nicotine dependence and chronic disease. This study aimed to estimate the prevalence of traditional and electronic cigarette use among Iraqi secondary school students and to identify key psychosocial and social correlates of smoking behavior.

Methods and Materials: A descriptive cross-sectional survey was conducted in Babylon province using stratified random sampling. Data were collected from 1005 students aged 12–19 years in six public and three private secondary schools between December 2023 and January 2024 (response rate: 89.6%). A structured, self-administered questionnaire assessed sociodemographic characteristics, smoking status, type of tobacco product used, and social and cultural reasons for smoking. Data were analyzed in SPSS version 26, using descriptive statistics and logistic regression to examine associations between potential psychosocial factors and current smoking.

Findings: The mean age of participants was 16.5 years; 19.7% were current smokers. Among smokers, 56.6% used traditional cigarettes only, 23.2% used e-cigarettes only, and 20.2% reported mixed use. The mean age at smoking initiation was 14.2 years, and the average daily consumption was 13 cigarettes. Significant correlates of current smoking included peer influence, using smoking for stress relief, self-image–related beliefs, and parental smoking. In multivariable analysis, peer influence (OR=1.8, p<0.01), stress relief (OR=1.5, p<0.05), and parental smoking (OR=2.1, p<0.001) remained significant predictors.

Conclusion: Nearly one in five Iraqi secondary school students reports current use of traditional cigarettes and/or e-cigarettes. Peer and parental smoking, along with psychological stress, play central roles in adolescent smoking behavior. School-based prevention programs, family-focused interventions, and stricter control of flavored e-cigarettes and tobacco advertising are recommended to reduce smoking initiation in this age group.

Keywords: Adolescents, traditional cigarettes, e-cigarettes, psychosocial correlates, prevalence, Iraq.

Introduction

With more than 8 million fatalities each year Organization, (2018) tobacco use remains among the most important public health issues worldwide. Though smoking rates have dropped in many affluent countries, young people in low- and middle-income areas such as Iraq are increasingly exposed to both conventional cigarettes and e-cigarettes (Jirjees et al., 2023). Recent statistics indicate that 22% of secondary school pupils in Iraq have experimented with smoking; e-cigarette use has soared since 2020 (Sreeramareddy et al., 2024). Considering the long-term health effects—from lung cancer to cardiovascular disease—that disproportionately affect those who start smoking early (Huang & elahi Noor; Münzel et al., 2020), this trend is concerning.

Usually, no single factor drives adolescent smoking. Rather, it results from a network of psychosocial, social, and environmental factors. This complexity is explained by Social Learning Theory (Koutroubas & Galanakis, 2022), which posits that young people sometimes mimic behaviors exhibited by parents or friends, while societal norms (e.g., media glamorization of vaping) reinforce apparent rewards. For instance, a 2023 survey of Arab teenagers discovered that those with smoking parents were three times more likely to smoke themselves (Al-Binali et al., 2024). Likewise, common in Iraq's post-conflict setting, peer pressure and stress also exacerbate hazards (al-Uzri & Dyer, 2020). Nonetheless, most studies on Iraqi youth either ignore e-cigarettes (Mohammed & Neamah, 2021) or rely on antiquated data.

By 1) revising prevalence estimates for both conventional and e-cigarette use, 2) recognizing context-specific risk factors (e.g., parental influence, school environment), and 3) offering evidence for targeted interventions, this study fills important gaps, including school-based prevention programs. Grounding results in Social Learning Theory helps us to go beyond descriptive statistics and find practical ideas for lowering smoking initiation among Iraqi teenagers.

Methods and Materials

A cross-sectional survey conducted in Babylon province using stratified random sampling (6 public, 3 private schools. Sample size (n=1005) was calculated to detect a 10% prevalence with 95% CI (power=80%).

Stratified random sampling used. This sampling technique employed through dividing the students population to six strata from first to sixth grade. Random sample selected from each stratum to guarantee fair representation through all educational stages. Collect data from (6) government and (3) non-governmental schools from December 2023 to January 2024. The sample size was 1005 Iraqi adolescents, and the overall response rate was 89.6%.

Ethical approval for the current study obtained from the Ethical Committee of the College of Nursing, University of Babylon (Ref. NO. 4334 in 19 November 2023). Written informed consent obtained from all participants.

The Study instrument was a structured questionnaire developed after extensive literature reviews and employed for the purpose of the current study. The questionnaire showed good internal consistency (Cronbach's α=0.78).The questionnaire is consists of three parts: socio-demographic. The second part included smoking habits. The third Part included smoking and associated factors, including students' social and cultural causes of smoking. Data were analyzed using the "Statistical Package for Social Sciences (SPSS) version 26.

Findings and Results

Table 1 indicates that the mean age of participants from public schools (16.5 years) was higher than that of participants from private schools (15.5 years). The student's pocket money ranged from 250 to 20,000. (38.3%) of students' fathers had a secondary level of education, while (43.7%) of mothers had a primary level of education. Fathers worked (88.1%), while (71.9%) of mothers were not working. Smoking status of school-age students is presented in Figure 1.

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Table 1

Sociodemographic features of adolescents (No.1005)

Variables	Minimum	Maximum	Mean (SD)
Age (years)	12	19	16.5 (1.6)
School Grade	1	6	4 (1.4)
Order	1	14	3 (1.6)
Sibling No.	0	15	5 (1.9)
pocket Money	250	10000	2505 (2081)
Variables	Category	**Freq.**	**%**
School	Public	695	69.2
	Private	310	30.8
Fathers Education level	Illiterate	64	6.4
	Primary Edu.	259	25.8
	Secondary Edu.	**385**	**38.3**
	Diploma and above	297	29.6
Mothers Education level	Illiterate	113	11.2
	Primary Edu.	**439**	**43.7**
	Secondary Edu.	282	28.1
	Diploma and above	171	17.0
Occupation of Fathers	Not working	120	11.9
	Working	**885**	**88.1**
Occupation of Mothers	**Not working**	**723**	**71.9**
	Working	282	28.1

Freq. = frequency, %= percentage, SD = Standard deviation

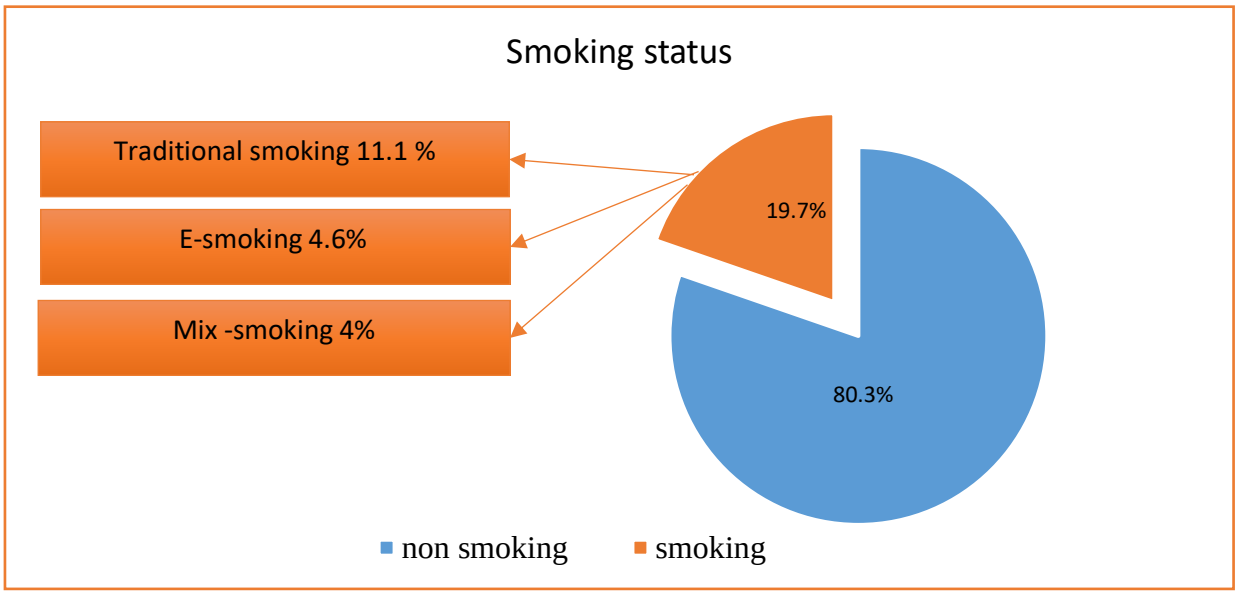

Figure 1

Smoking status of school-age students

Table 2

Smoking Habits Among Iraqi Secondary School Students (N=1005)

Variable	Category	Frequency	% of Subgroup	% of Total Sample
Overall Smoking Status				
	Non-smokers	807	-	80.3%
	Current Smokers	198	100%	19.7%
Type of Tobacco Use (among smokers)				
	Traditional cigarettes only	112	56.6%	11.1%

	E-cigarettes only	46	23.2%	4.6%
	Mixed use	40	20.2%	4.0%
Smoking Initiation				
	Mean age (years)	14.24	-	-
	Standard deviation	±2.0	-	-
	Range (years)	10-19	-	-
Daily Consumption				
	Mean cigarettes/day	13.04	-	-
	Standard deviation	±12.78	-	-
	Range (cigarettes/day)	1-60	-	-

Table 2 indicates that 19.7% of Iraqi secondary school students (198 out of 1005) reported current tobacco use. Among these smokers, more than half (56.6%) used traditional cigarettes exclusively, while 23.2% used e-cigarettes only, and 20.2% engaged in mixed use of both products. The average student began smoking at age 14, with daily consumption ranging from 1 to 60 cigarettes (mean=13 cigarettes/day). These findings highlight the substantial prevalence of both traditional and emerging tobacco products among Iraqi adolescents, with traditional cigarettes remaining dominant but e-cigarette use representing nearly one-quarter of smoking behaviors.

Table 3

An association between smokers and non-smokers regarding the Social and cultural causes of smoking.

	Causes of smoking	Non smoker Freq. (%)	Smoker Freq. (%)	X^2	P
1.	Father's smoking	434 (43.2%)	113 (11.2%)	.694	0.2
2.	Mother's smoking	208 (20.7%)	56 (5.6%)	.516	0.2
3.	Peer pressure	515 (51.2%)	135 (13.4%)	1.326	0.1
4.	Smoking makes me look more attractive	298 (29.7%)	96 (9.6%)	8.911	**.002***
5.	Students who smoke have more friends	298 (29.7%)	86 (8.6%)	2.810	**0.05***
6.	To increase self-satisfaction	283 (28.2%)	82 (8.2%)	2.768	**0.05***
7.	financial problems	321 (32 %)	77 (7.7%)	.052	0.4
8.	Psychological problems	474 (47.2%)	146 (14.6%)	15.139	**.001***
9.	due to its distinctive taste and flavor	338 (33.6%)	119 (11.8%)	21.281	**.001***
10.	Advertisements seen frequently in the media	269 (26.8%)	62 (6.2%)	.294	0.3

Freq. = frequency, %= percentage

Table 3 shows that many factors influence smokers' decisions regarding smoking, such as parental smoking, peer pressure, and Psychological stress.

Discussion and Conclusion

The present study reported a mean age of 16.5 years, consistent with findings from a study on tobacco-related behaviors (Tam & Brouwer, 2021). In addition, a study on the prevalence of smoking among participants aged 15–19 years has been conducted (Montreuil et al., 2017). However, the current results are inconsistent with the study, which reported that most smokers were older than 16 years (Esmaeil et al., 2020).

Regarding students' grades, the results of Gorukanti et al. (2017) differ from those of the current study, which found that 9th- and 12th-grade students had more favorable attitudes toward smoking and perceived less risk from e-cigarettes than from traditional cigarette smoking. Regarding parents' education, the present study found that the largest proportion of parents had a primary-level education, consistent with findings that parental education was lower among students who smoked (Goniewicz et al., 2013).

As shown in the results, traditional cigarettes dominated smoking behaviors (56.6% of smokers), while e-cigarette-only users represented 23.2%, suggesting slower adoption of vaping compared to global trends (Jirjees et al., 2023).

There are several factors associated with the onset of smoking among school-age students, such as parent smoking, and a similar result was stated that there is a strong association between adolescent smoking and parents' smoking behaviors (Jeong et al., 2021; Mao et al., 2015). Moreover, Kim et al. (2014) concluded that students who lived with smokers were more susceptible to smoking than those who lived with non-smokers.

Peer pressure was the most frequently cited motivator, with significant associations to smoking initiation. While media exposure showed weaker effects than peers, flavored e-cigarette marketing was associated with use, mirroring regional patterns (Vogel et al., 2021).

Several studies demonstrated that the media, TV, radio, and other ways were the primary sources of information related to smoking marketing and promotion, particularly associated with E-smoking. Most of this advertisement influences students' awareness regarding smoking initiation (Bold et al., 2016; Jirjees et al., 2023; Marynak, 2018; Kim et al., 2014).

Additional strategies to reduce smoking, such as educational campaigns about the impact of tobacco, warn adolescents about the dangers of using tobacco products, including e-cigarettes (Singh et al., 2016), (U S Department of Health and Human Services, 2024). Some scholars have marketed E-cigarettes as healthy alternatives to traditional cigarettes or as smoking cessation aids. However, most e-cigarette users do not stop smoking and instead use both e-cigarettes and conventional cigarettes or hookahs (dual users) (Jirjees et al., 2023).

In addition to the previously mentioned causes of smoking initiation. The psychological pressure, students financial condition, distinctive taste of cigarette and e-cigarette, and attractive image of smoker students as the present result revealed, this finding is similar to several published studies that reported same finding declared that students feel more sociable and positive when they start smoking (Angeli et al., 2024; Jirjees et al., 2023, and Greaves et al., 2010).

Other studies have demonstrated the cost-effectiveness of smoking initiation among adolescents (Bold et al., 2016; Gorukanti et al., 2017). Further studies have shown that e-cigarettes are marketed with different e-liquid flavors and varied nicotine contents, which might be more desirable for adolescent smokers (Jirjees et al., 2023; Mao et al., 2015).

This study identifies three actionable drivers of adolescent smoking in Iraq: peer networks, parental modeling, and flavored e-cigarette accessibility. An extended survey of a large sample to determine the consequences of tobacco, mainly smoking, on adolescent health. Prioritize school-based peer resistance programs for grades 9–10, parental smoking cessation clinics, and stricter enforcement of Iraq's 2019 tobacco advertising bans.

Training on data through October 2023 is limited. Although this research offers valuable information on smoking patterns among Iraqi teenagers, several constraints should be noted. First, the reliance on self-reported data may introduce social desirability bias; especially in a cultural setting where smoking carries stigma, the absence of biochemical validation (e.g., cotinine testing) implies actual prevalence may be underreported. Second, the cross-sectional design precludes causal interpretations of the observed associations between risk factors and smoking initiation. Third, in stratified sampling, the underrepresentation of rural residents and out-of-school youth limits the generalizability of findings to all Iraqi youth. Fourth, essential factors such as psychological stress, when assessed without validated scales, may oversimplify complex psychosocial interactions. At last, the research did not look at gender disparities in mixed-gender data gathering cultural contexts, notwithstanding data indicating that smoking patterns could vary substantially by gender in the region. These constraints emphasize the need for future investigations to be longitudinal and to employ robust methodological approaches.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Declaration of Helsinki, which provides guidelines for ethical research involving human participants. Ethical considerations in this study included the fact that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contribute to this study.

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