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# Pattern of substance use among schoolchildren in Palestine: a cross-sectional study

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## Abstract

**Background:** Tobacco smoking, alcohol use, and illicit drug use are significant health, psychological, and social problems among youth in Palestine. The aim of this study was to provide insight into the extent and the pattern of psychoactive substance use among schoolchildren in the West Bank in Palestine. A cross-sectional study in 16 schools was conducted in 2016. Eight hundred seventy-seven students of 10th grade were chosen randomly. Modified self-administrated questionnaire from Monitor the Future Study and European school survey project on alcohol and other drugs was used.

**Results:** The most current substance used by schoolchildren was tobacco (40.6%), followed by alcohol (3.2%) and illicit drugs (2.0%). Around 59.7, 7.9, and 2.9% of the schoolchildren had tried, at least once in their lifetime, tobacco, alcohol, and illicit drugs, respectively. Moreover, 11.1% of them who had not yet tried a substance intends to smoke tobacco, 1.4% intends to drink alcohol, and 0.3% intends to try illicit drugs. Curiosity and experience was the most frequent motivation for using these substances. The mean age of initiation was 12 years for smoking and 14 years for drinking alcohol or using illicit drugs. Most of the illicit drug users (78.3%) had tried more than one illicit drug or more than one substance at the same time. Cannabis and synthetic cannabinoids followed by amphetamines were the most commonly used drugs. Around 78.8%, 37.6%, and 27.6% agreed that tobacco, alcohol, and illicit drugs, respectively, were easily accessible in their communities. Work was significantly associated with increased risk for substance use across various substances.

**Conclusion:** Many factors had determined the danger of using psychoactive substances by Palestinian schoolchildren including the initiation age, the availability, the type of the substances used, and the frequency of the use, and using multiple substances at the same time. Curiosity and experience, peer pressure, families, and working were the most important motives. Health care professionals, clinicians, and ministries of education, health, and labor have key responsibilities in preventing substance use among youth and need to develop more effective prevention and cessation strategies. The Palestinian National Authority needs to make more efforts in smoking legislation regulating the age of access and smoking for youths and adults.

**Keywords:** Tobacco smoking, Substance use, Illicit drugs, Cannabinoid, Methamphetamine, West Bank, Palestine

## Background

Substance use and misuse is a major medical, psychological, and social problem (Ljubotina et al. 2004). Important changes in trends and patterns of drug use present new challenges to public health practitioners and program planners (WHO 2000). The use of tobacco, alcohol, and other illegal substances and drugs is a worldwide problem and affects many children and

adolescents (Hanson et al. 2014; NIDA 2014; UNODC 2015). Adolescence is a period of transition involving sensation seeking and experimentation in risky behaviors, and therefore, adolescents are at high risk for the use of substances of addiction (Das et al. 2016; Makanjuola et al. 2007).

Many factors are associated with the increased danger of using addictive substances such as the age the user starts, type of substances, the frequency and the duration of the use, and using multiple substances at the same time. Many studies had discussed the effect of introducing harmful substances early in life (Grant and

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Dawsin 1997; NIDA 2010). The initiation and the use among youth and young adults are of particular concern due to the established increased risk of harm such as other drug use and dependent drug use, a risk of heavy dependence, lung problems, memory impairment, and psychosocial problems (Fergusson et al. 2002; Grant and Dawsin 1997; Ljubotina et al. 2004). Children below 15 years who had exposed to illicit drugs and alcohol are predicted to have substance disorders and addiction in adulthood (Grant and Dawsin 1997). Moreover, the development of those children's brains would be affected. They would suffer from low school performance and are more vulnerable to risky behaviors, sexually transmitted diseases, and crimes (Odgers et al. 2008). According to the Global School-based Student Health Survey, among students who ever used drugs, about 91.6% had used them for the first time before the age of 14 years in the West Bank (CDC 2013). Moreover, there is an increase in trials to produce these drugs locally in the West Bank, and young adults are implicated in the field of drug farming and marketing (Damiri et al. 2018b). There are few studies that have been conducted in the West Bank, East Jerusalem, and Gaza in order to determine the extent, the trend, and the pattern of drug use among Palestinians in different age groups (Damiri et al. 2018a, 2018b; Massad et al. 2016; Stulhofer et al. 2016; Thabet and Dajani 2012). The results of these studies had indicated that drug use among Palestinian is relatively high, and it is increasing despite the religious, legal, and cultural constraints. It has been established that the most used drugs were cannabis and synthetic cannabinoids, and most of the Palestinian users had initiated drugs at an early age (Damiri et al. 2018a; Damiri et al. 2018b). Around 1.9% of persons convicted with drug possession were in the age group < 18 years, and 3% of them were students (Damiri et al. 2018a, 2018b). To the authors' best knowledge, there are no studies that have described the pattern of psychoactive substance use among schoolchildren in Palestine.

## Methods

### Aim

The aim of this study was to provide insight into the extent of substance use and the pattern of use among Palestinian schoolchildren in the West Bank.

### Design and setting

A cross-sectional study was conducted from October 2015 to February 2016 in the north of the West Bank, Palestine. A self-administered questionnaire modified from the questionnaire used in the Monitor the Future Study and the questionnaire used in European school survey project on alcohol and other drugs (Johnston et al. 2015; EMCDDA 2011) was used. The questionnaire

was translated into Arabic language as it is considered the native official language in Palestine and translated back to English. A pilot study was conducted, and the questionnaire was revised in order to achieve high valid and precise results. Alcohol and illicit drug use are stigmatized illegal behaviors in Palestine for both children and adults. The self-report of illicit drug use should be interpreted with caution; it is possible that respondents underreported alcohol and illicit drug use because of reporting bias, recall bias, and social desirability bias. However, an analysis of survey data ("Reliability and validity of adolescent self-reported drug use in a family-based study: A methodological report," 1983) indicated that adolescent self-reports of substance use were generally reliable and valid (Needle et al, 1983). For a better understanding of the students, street names beside scientific names, generic names, and brand names were used in this study to ask about different substances.

### Characteristics of the participants

The total number of male students in the 10th grade was 1864 students in the academic year 2016 in Tulkarm Governorate. This included 620 students distributed in 4 main schools from the city and 2 refugee camps and 1226 students from 27 schools in different villages, each village has 1 school. The schools in the villages were stratified into 4 sides, and clusters of schools (3 schools) were randomly chosen from each side. To choose a representative sample and to avoid stigmatization issues for students and schools, we had chosen all students in the 12 schools from the villages and the 4 schools in the city except those who had participated in the pilot study or their parents refused to sign informed consents. In total, 877 students were chosen (451 from the city including the refugee camps and 426 from the villages).

### Data analysis

Statistical Product and Service Solutions (SPSS) (version 21, IBM Corporation) was used for data entry and analysis. Variables were described using means, standard deviations, and percentages wherever appropriate. The Pearson chi-square was used to compare the categorical variables. A *p* value of less than or equal 0.05 was considered statistically significant.

### Ethical consideration

The Institutional Review Board (IRB) approval was obtained from An-Najah National University, and access to the schools was granted permission. Due to the stigma and legal issues surrounding alcohol and drug use, confidentiality was highlighted in all written and oral communications. Informed consent was obtained. Participation in this study was voluntary, the confidentiality of the students was ensured, and the questionnaire was anonymous

and did not include any questions that will lead to personal identification. All data were available for the researchers only and was kept in a safe place.

**Results**

The response rate was high (94.7%), and a total of 831 had participated; 3 questionnaires were excluded, and a final of 828 students had completed the questionnaire.

**Socio-demographic characteristics**

Schoolchildren ages ranged between 15 and 16 years, 46.4% from villages, 38.0% live in Tulkarm city, and 15.6% of them live in refugee camps. The majority of the students (70.5%) were working or had worked before, 17.8% of them had worked in Israel, and 16.5% had worked in more than one place. The majority (57.5%) of the students had started working at ages 12–14 years old. Around 51.4% of worker students have worked for less than a year (Table 1).

**Substance practice**

The most frequent currently used substances were smoking tobacco (40.6%), drinking alcohol (3.2%), and illicit drug use (2.0%). Around 45.2% of the tobacco smokers, 28% of the alcohol users, and 43.7% of the illicit drug users had used these substances daily. Moreover, 59.7% of respondents had tried smoking, 7.9% had tried drinking alcohol, and 2.9% had tried illicit drugs at least once in their life (Table 2). Around 11.1%, of the respondents who have not yet tried a substance, intends to smoke tobacco, 1.4% intends to drink alcohol, and 0.3% intends to try illicit drug. There is a significant increase in alcohol users ( $p < 0.035$ ) and illicit drug users ( $p < 0.045$ ) in cities compared to villages. The initiation age of substance use was as follows: 10.9% of teenagers had started smoking tobacco at an early age (< 10 years), and 50.8% had started at the age of 10–13 years. None of the substance users had started using alcohol and illicit drugs at an age earlier than 10 years while 17.5% had started using alcohol and 36.5% had started using a narcotic drug at the age of 10–13 years. The majority (82.5% of alcoholic users and 63.2% of illicit drug users) had started at age 14–16. In general, the mean age of

starting smoking was 12 years and drinking alcohol or using illicit drugs was 14 years (Table 2).

**Types of illicit drugs used**

Both natural and synthetic cannabinoids were the most (19.5%) frequently used; 2.2% of total participants had used hashish, 2.7% had used marijuana, and 12.8% had used synthetic cannabinoids (Table 3). Around 8.4% of the participants had used amphetamine stimulant types such as amphetamine, methamphetamine, methylenedioxymethamphetamine (MDMA, ecstasy), or crystal methamphetamine. Around 8.1% had used opioids, 2.1% had used lysergic acid diethylamide (LSD), and 6.5% had used prescribed drugs such as benzodiazepine (Clonex), diazepam (Assival), and tramadol. Most of the students (74.7–97.3%) heard about hashish and marijuana while to less extent (41.1–55.5%) had heard about synthetic cannabinoids.

**The pattern of illicit drug use**

Most of illicit drug users (78.3%) had tried more than one illicit drug at the same time (Table 4). Moreover, the majority of illicit drug users (95.7%) had used energy drinks, and 87.0% were tobacco smokers and alcohol users at the same time. The most used method for illicit drug was smoking (64.7%) followed by eating and drinking (47.1%) and sniffing (41.2%). Around 86.1% of the drug users had used more than one method. The source of illicit drugs was from refugee camps in the first place as 35% of the users get the drugs from refugee camps followed by Israel (14.7%) and from cities in the West Bank (11.8%). Around 23.5% of users are using more than one source while 5.9% did not specify the source. Around 32.4% of users used drugs in streets, 32.4% used drugs in abandoned places, 29.4% used drugs in more than one place, 2.9% did not specify the place where they used drugs, and only 2.9% used drugs in their place of residency. The majority of users (58.8%) had used drugs with a company of a friend, 20.6% of them did not specify with whom was the company, 11.8% used drugs alone, and 8.8% used drugs along with a family member. Around 30.3% of users used their money from a job to buy drugs, 24.2% used their pocket money, 24.2% used drugs for free, 15.2% from a friend, and 6.1% from a

**Table 1** Socio-demographic characteristics of the participants

Residency	No. (%)	Starting age of work year	No. (%)	Duration of work years	No. (%)	Place of work	No. (%)
City	301 (38.0)	6–8	32 (5.9)	< 1	235 (51.4)	City	225 (41.7)
Village	368 (46.4)	9–11	94 (17.3)	1 to ^ 2	59 (12.9)	Village	152 (28.2)
Refugee camps	124 (15.6)	12–14	313 (57.5)	2 to ^ 3	35 (7.7)	Camp	28 (5.2)
		15 to < 17	105 (19.3)	3–11	128 (28.0)	Israel	30 (5.6)
						No fixed place	89 (16.5)
						Others	13 (2.4)

**Table 2** Substance practice, smoking tobacco, alcohol, and narcotic drug use

	Total			City		Village		p value
	No. (%)	N	Missing no.	No. (%)	N	No. (%)	N	
Smoking tobacco								
Current user	318 (40.4)	787	41	170 (40.4)	421	148 (40.4)	366	0.888
Daily smoker	144 (45.2)	318	0					
Ever used	463 (59.7)	776	52	252 (60.9)	414	211 (58.3)	362	
Never used	313 (40.3)	776	52	162 (39.1)	414	151 (41.7)	362	
Drinking alcohol								
Current user	25 (3.2)	787	41	17 (4.1)	421	8 (2.2)	366	0.035
Daily user	7 (28)	23	0					
Ever used	62 (7.9)	780	48	41 (9.8)	414	21 (5.7)	366	
Never used	721 (92.1)	783	45	376 (90.2)	414	345 (94.3)	366	
Narcotic drug use								
Current user	16 (2.0)	782	46	12 (2.9)	417	4 (1.1)	365	0.045
Daily user	7 (43.7)	16	0					
Ever used	23 (2.9)	783	45	17 (4.1)	418	6 (2.6)	365	
Never used	760 (97.1)	783	45	401 (95.9)	418	359 (98.4)	365	

**Table 3** Types of illicit drugs used by participants

N = 771	Type of illicit drug	Used	Heard about
		No. (%)	No. (%)
Cannabis	Hashish	17 (2.2)	750 (97.3)
	Marijuana	19 (2.5)	576 (74.7)
Cannabinoids	Bango	21 (2.7)	428 (55.5)
	Hydro	17 (2.2)	418 (54.2)
	Spice	19 (2.5)	411 (53.3)
	Mastolon	14 (1.8)	365 (47.3)
	Mabsoton	20 (2.6)	343 (44.5)
	Mr. Nice Guy	23 (3)	317 (41.1)
Amphetamine and methamphetamines	Amphetamine	15 (1.9)	308 (39.9)
	methamphetamine (GG)	20 (2.6)	321 (41.6)
	Ecstasy	14 (1.8)	274 (35.5)
	Crystal methamphetamine	16 (2.1)	266 (34.5)
Opioids	Heroin	17 (2.2)	457 (59.3)
	Morphine	17 (2.2)	363 (47.1)
	Codeine	14 (1.8)	310 (40.2)
	Methadone	15 (1.9)	299 (38.8)
Cocaine	Cocaine	17 (2.2)	492 (63.8)
	Crack	16 (2.1)	286 (37.1)
Prescribed drugs	Tramadol	17 (2.2)	325 (42.2)
	Diazepam (Assival or Valium)	19 (2.5)	286 (37.1)
	Benzodiazepine (Clonex)	15 (1.9)	277 (35.9)
Others	Trip (LSD)	16 (2.1)	439 (56.9)
	Others	5 (0.6)	40 (5.2)

**Table 4** Pattern of illicit drug use among users

Use illicit drug with	No. (%)	Methods of use	No. (%)
Alcohol	20 (87.0)	Smoking	22 (64.7)
Smoke tobacco	20 (87.0)	Sniffing	14 (41.2)
Energy drinks	22 (95.7)	Injections	8 (23.5)
Alcohol and energy drink	19 (82.6)	Pills	9 (26.5)
Alcohol and smoke tobacco	18 (78.3)	Chewing	8 (23.5)
Alcohol, smoke tobacco, and energy drinks	18 (78.3)	Patches	7 (20.6)
		Eating and drinking	16 (47.1)
		Others	10 (29.4)
Source of illicit drug	No. (%)	The places at which drug use behavior had occurred	No. (%)
City	4 (11.8)	Place of residence	1 (2.9)
Village	3 (8.8)	Street	11 (32.4)
Camp	12 (35.3)	Abandoned places	11 (32.4)
Israel	5 (14.7)	More than one place	10 (29.4)
More than one source	8 (23.5)	Others	1 (2.9)
Others	2 (5.9)		
Missing	2 (5.9)	Missing	2 (5.9)
Arrest	No. (%)	Users history	No. (%)
Never	21 (67.7)	Treatment center needed	10 (29.4)
Once	5 (16.1)	Hospital admission needed	7 (20.6)
Twice	2 (6.5)	Have been given a medicine	12 (35.3)
3 or more	3 (9.7)	Tried to commit suicide	12 (35.3)
Missing	5	Intention for calling help	13 (38.2)
		Missing	2
Company of a drug	No. (%)	Source of money	No. (%)
Alone	4 (11.8)	Own money	8 (24.2)
With friend	20 (58.8)	From a friend	5 (15.2)
With family	3 (8.8)	From family	2 (6.1)
Others	7 (20.6)	For a job	10 (30.3)
Missing	2	Missing	2

family member. The majority of illicit drug users (67.7%) had never been arrested, and most of the arrested users were arrested once in their lives.

#### User's history

Around 38.2% of illicit drug users had an intention for calling for help, 35.3% had been given a medicine for their substance use, 35.3% tried to commit suicide, 29.4% needed treatment center, and 20.6% needed hospital admission.

#### Motivations behind substance use

Curiosity and experience was the most frequent cause that would motivate the students for substance use as 63.1% of the students would smoke, another 19.8% would use alcohol, and 23.2% of them would use illicit drugs for this cause (Table 5). Most of the students

would smoke in order to harmony with friends, or because of anger, or just for the feeling of pleasure. The most frequent motivations after curiosity to use alcohol were anger, escaping from problems, and some of them would drink just for no reason. This was similar in respect to illicit drug use, but 19% of the students thought that addiction is a frequent cause to use drugs.

#### Risk factors and association with substance use

Work was found to be significantly associated with substance use. Smoking was more prevalent among school-children who work (65.7%) compared to non-workers (45.9%) (OR 2.26; 95% CI 1.64–3.11,  $p$  value = 0.000). Alcohol use was also more likely to be associated with working (9.0%) compared to non-workers (3.6%) (OR 2.67; 95% CI 1.24–5.73,  $p$  value = 0.009). Moreover, those who work were more likely to use illicit drugs (3.9%)

**Table 5** Motivations or reasons behind substance use among students

	Percent		
	Tobacco	Alcohol	Illicit drugs
Easy to get substances	71.2	37.6	27.6
What are the motives for abusing?			
• Curiosity and experience	63.1	19.8	23.1
• Euphoria	24.8	13.9	11.6
• Pleasure	40.5	14.4	13.9
• Harmony with friends	49.2	13.4	14
• Boredom/wasting time	35.7	14.2	12.4
• Relaxation	31.4	13.2	13
• Escaping from problems	35.4	15	15.5
• Anger	41.9	16	15
• Addicting	32.9	14.2	19
• Do not know why	22.6	13	15
• No reason	22.5	15.5	16.7
Most contacts offering substance			
• Close friends	50	4.2	2.6
• Relatives	26.6	2.4	1
• Others, not specified	21.5	3.3	2.6
Most contact use substances			
• Close friends	71.7	7.6	3.9
• Relatives	79.9	4.8	2.3
• Father	62.4	1.1	0.6

than those who did not work before (0.4%) (OR 9.17; 95% CI 1.23–68.59, *p* value = 0.009) (Table 6). Furthermore, working in Israel was also significantly associated with substance use. Smoking was higher in those who work in Israel (79.6%) than those who did not work there (62.8%) (OR 2.39; 95% CI 1.39–4.12, *p* value = 0.002). Alcohol use was also more likely to be associated with working in Israel (24.0%) compared to those who did not work there (5.7%) (OR 4.57; 95% CI 2.41–8.68, *p* value = 0.000). Moreover, those who work in Israel were

**Table 6** Odd ratios for the most associated risk factors with substance use

	Risk factor	<i>p</i> value	Odds ratio (95% confidence interval)
Smoking	Working	0.000	2.26 (1.64–3.22)
	Working in Israel	0.031	2.39 (1.39–4.11)
Alcohol	Working	0.012	2.67 (1.24–5.73)
	Working in Israel	0.000	4.57 (2.41–8.679)
Illicit drugs	Working	0.031	9.17 (1.23–68.59)
	Working in Israel	0.000	7.11 (2.9–17.65)

more likely to use illicit drugs (12.5%) than those who did not work there (2.1%) (OR 7.11; 95% CI 2.87–17.66, *p* value = 0.000). Parents' employment status was not significantly associated with increased rates of substance use among students except for smoking. Students who have unemployed fathers were less likely to smoke than those who have employed fathers (OR 0.37; 95% CI 0.15–0.92, *p* value = 0.031). No significant association was found between substance use and parents' level of education or type of community where students live (city, villages, and refugee camps).

**Discussion**

Students are the most vulnerable to drug use during times of transition. New social and emotional challenges affect teenagers on many levels when they switch to high schools. Since it is a stage of cognitive development, its alteration by the use of drugs and alcohol can have long-term effects on the individual such as cognitive impairment, physical agitation, and fatality (Gould 2010). This work has explored the risk factors of substance use among schoolchildren in two main aspects, mentally and socially.

Many factors had determined the danger of using addictive substances in this age group such as initiation age, type of substances used, the frequency of use, and using multiple substances at the same time. Children who are using licit or illicit substances are sometimes stigmatized and face various difficulties and maltreatment including physical, psychological, and sexual use (Newcomb et al. 1988). Using illicit drugs and alcohol is stigmatized and illegal behaviors for children in Palestine. Therefore, the results of this study could be underreported for these substances. However, the results indicate that substance use is common among 10th-grade schoolchildren. Tobacco use is a critical national health concern and remains number one preventable cause of death worldwide (Harvey et al. 2016). The prevalence of smoking was high as 40.6% of the students were current smokers and 40.3% of them smoke daily. This is higher than the prevalence of smoking among Palestinians live in different other countries and adolescent live in the Mediterranean Eastern region in general (Jawad et al. 2016). Moreover, these numbers are expected to increase, as the Eastern Mediterranean region is one of the regions that continue to experience an escalating tobacco epidemic (Alzyoud et al. 2014; Mzayek et al. 2012). The harmful effects of nicotine and cigarette smoke are significant and long-lasting (Centers for Disease et al. 2010). The initiation age of smoking was 12 years and most of the students smoke daily. In agreement with other studies (Wu et al. 2007), curiosity and experience were the most frequent causes that would motivate students at this age for substance use as 63.1% of students would smoke, 19.8% would drink alcohol, and 23.2%

would use illicit drugs for these motives. Anger and escaping from problems were also frequent causes that would push for substance use. Therefore, the Palestinian National Authority needs to make more efforts in smoking legislation regulating the age of access and smoking for adults in public areas and in schools. Moreover, health care professionals, ministry of education, ministry of health, and clinicians have key responsibilities in preventing tobacco use among youth and need to develop more effective smoking prevention and cessation strategies and promoting tobacco-free environments.

Around 3.2% of the students are current alcohol users, and 2.0% are current illicit drug users. Moreover, 7.9% of the students had used alcohol and 2.9% had used illicit drug at least once in their lifetime. This is a high prevalence for different reasons. Having alcohol and illicit drugs is considered a social stigma, illegal, and has cultural and religion constraint. All students were Muslims, and Islam is generally considered to have strong proscriptive norms against the use of alcohol and any psychoactive substance in comparison with other cultures (Johnston et al. 2015; Spear 2015; WHO 2011).

Many studies had discussed the danger of introducing harmful substances at the same time in early age (Popovici et al. 2012; Benda et al. 2005; Biswas et al. 2006; Chatterji 2006; NIDA 2010). The mean initiation age of smoking was 12 years, and drinking alcohol or using illicit drugs was 14 years. These results demonstrate the need for immediate intervention in order to avoid future negative health consequences from substance use such as cardiovascular disease, stroke, cancer, HIV/AIDS, hepatitis B and C, lung disease, and mental disorders (NIDA 2010). In addition to these health problems, substance use also puts adolescents at high risks of poor academic performance and increased school dropouts (Biswas et al. 2006; Chatterji 2006) and involvement in crime and violent activities (Popovici et al. 2012; Benda 2005). Therefore, early intervention is vital to change a child's life pathway away from risk-taking behaviors.

Many studies had also discussed the danger of introducing multiple harmful substances at the same time in early age (EMCDDA 2009; Belcher and Shinitzky 1998). Around 87.0% of drug users in this study were also tobacco smokers and alcohol users (87.0%). This is consistent with the findings of epidemiological research which indicated that one rarely finds a drug user without a previous or concurrent use of tobacco or alcohol (EMCDDA 2009). In addition to that, around 78.3% of illicit drug users in this study had used tobacco, alcohol, and energy drinks. A child who smokes tobacco or drinks alcohol will be 65 times more likely to use marijuana than a child who never smoked or drank, and children who used marijuana were 104 times as likely to use cocaine compared with their peers who never used

marijuana (Belcher and Shinitzky 1998). The results in this study agree also with the gateway theory which states that the earlier use of one of several licit substances such as tobacco or illicit substances such as alcohol as well as cannabis can lead to future use of more dangerous hard drugs via a sequence of stages (Nguyen 2015; Vanyukov et al. 2012).

Both natural and synthetic cannabinoids were the most frequently used illicit drugs (19.5% of respondents and all illicit drug users). This agrees with local and international studies as cannabis continues to be the most seized drug worldwide and locally, both in terms of the number of cases and actual quantities intercepted (CDC 2013; Damiri et al. 2018a; Damiri et al. 2018b; UNODC 2015). An average of 5.0% of students aged 13–15 years in the West Bank and 3.6% in Gaza in 2010 had used marijuana one or more times during their life (CDC 2013). Methamphetamine has become more potent in recent years as techniques for its manufacture have evolved (Damiri et al. 2018b). A new liquid homemade form of this drug called GG had been introduced to the West Bank in 2013 (Damiri et al. 2018b). In this study, 87.0% of illicit drug users had used amphetamines and methamphetamine. Moreover, 43.7% of illicit drug users use drugs daily. Among the factors acting in favor of the use of cannabis, synthetic cannabinoids, and methamphetamine by these students are the lower price as they are counterfeited drugs and the availability and accessibility of these drugs in children communities. Emerging evidence suggests that heavy cannabis use by adolescents increases the risk of depression and schizophrenia in later life, especially in individuals who already have a vulnerability to develop a psychiatric syndrome (Chadwick et al. 2013; Radhakrishnan et al. 2014). It is associated also with increased rates of arrangement of adjustment problems in adolescence and young adulthood such as other illicit drug use, crime, and suicidal behaviors (Fergusson et al. 2002). Around 35.2% of users in this study tried to commit suicide, and 35.2% have given medication. Amphetamines have serious short and long-term harms such as brain damage, producing deficits in learning and memory, permanent damage to the blood vessels of the heart and brain leading to heart attacks, strokes and death, multiple organ damage, severe tooth decay, and psychosis (Wu et al. 2007). Moreover, 2.2% of students in this study had used opioids or cocaine. This seems to be a high prevalence especially for this age and in the West Bank. Opioids and cocaine were less captured and used in the West Bank especially in the north of the West Bank (Damiri et al. 2018b). The reported forms were pills such as codeine (Codavis or Rekod) which can be easily accessed from the market or in the form of powder under the names of morphine, heroin, or cocaine. Further investigation was done for

the powder, and the results of the tested powder samples indicated that no opioids or cocaine in the tested samples. Substandard and counterfeited illicit drugs are well known and documented in the West Bank (Damiri et al. 2018b). The tries to commit suicide and the need for hospital admission and medication or treatment center indicate that illicit drug use is a serious problem among Palestinian children, and this calls an urgent need for treatment and rehabilitation centers.

Many factors contributed to substance initiation in teenagers including working and the availability of money, the easy access to the substances, and individual attitudes and beliefs about substance use which often arise from the environment such as the family and friends. The results of this study revealed that most children (71.2%, 37.6%, and 27.6%) have an easy access to cigarettes, alcohol, and illicit drugs, respectively. Refugee camps and Israel were the most common sources of the illicit drugs due to the weak governmental control and surveillance on drugs in these areas. Programs of Anti-Narcotic Drugs Department should make particular efforts in refugee camps due to the perceived fact that they are at greater risk for risky behaviors. Moreover, working in Israel, the availability of money from work in general, and the affordability of these substances by close friends and relatives play a valuable risk factor in adolescent vulnerability to substance use. The majority (67.7%) of users had never been arrested, supporting the idea that there is no adequate supervision on illicit drug use. Since adolescence is a transitional period during which adolescents define their identities, clarify their values and goals, and increase their independence from their families, they are considered relatively sensitive to any environmental influences. Studies revealed that working adolescents are likely to have higher exposure to others (e.g., older coworkers) who use cigarettes, alcohol, or other drugs, and those exposed to others who use substances are at higher risk for early initiation (Kosterman et al. 2000). Therefore, the Ministry of Labor has a significant responsibility to apply the Palestinian Labor Law No.7 of 2000 about the minimum age of working, to strict observation of early working phenomena, and to prevent all children from working near Israeli checkpoints or in Israel. These areas are considered passage points for Palestinian workers who work in Israel, and they have weak governmental control and surveillance on psychoactive substances where producing, trafficking, and smuggling of drugs are notably high (Damiri et al. 2018b).

The results of this study support the idea of peer pressure as the main reason for substance use among adolescents. Friends were the most frequent substance users among close contacts across the various substances in this study. Around 50.0%, 4.2%, and 2.6% of all respondents had been offered cigarettes, alcohol, and illicit drugs by a friend, respectively. Moreover, around 49.2% of students

would smoke, 13.4% would drink alcohol, and 14% would use illicit drugs for the purpose of harmony with friends. In addition, the majority (58.8%) of illicit drug user did this behavior in the company of a friend. Students' families and relatives also may have a fundamental impact on their children's use of substances. Some studies (Blanton et al. 1997) suggest that parents' substance use is one of the main reasons for adolescents substance use. This addresses the importance of parents' influence because of their contribution to molding adolescents' environment. Most of the adolescents' behaviors are learned by imitation to surrounding adults. Since prevention of substance use among adolescents requires awareness of the characteristics that place youth at risk and targeting risk factors that are modifiable, awareness of the adolescents' families should be considered as a part of the prevention program.

## Conclusion

Psychoactive substances use is common among 10th-grade school students. The prevalence of smoking and alcohol use is quite substantial and defies local and international scales. However, illicit drug use is relatively common compared to local studies, but it is within normal ranges compared to international scales. Many factors had determined the danger of using addictive substances among schoolchildren including the initiation age, the type of substances used, the frequency of the use, and using multiple substances at the same time. Many factors contributed to substance initiation in schoolchildren including working, and the availability of money, having easy access to the substances, and individual motivation about substance use which often arise from the environment such as the family and friends. Overall, the results of this study demonstrate an urgent need for the development of intervention and immediate attention from local authorities, policymakers, families, and school system. A multidimensional prevention approach may be effective and impactful in fostering substance use attitudes among school adolescents. Contents of such approach should be culturally appropriate, age-targeted, and family/peer focused. Early intervention is vital to change a child's life pathway away from risk-taking behaviors.

## Abbreviations

CI: Confidence interval; IRB: Institutional Review Board; LSD: Lysergic acid diethylamide; MDMA: Methylenedioxymethamphetamine; OR: Odds ratio; SPSS: Statistical Product and Service Solutions

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**Availability of data and materials**

Most data generated or analyzed during this study are included in this manuscript. Other data that support the findings of this study and/or analyzed during the current study are available from the corresponding author on reasonable request.

**Authors' contributions**

BD wrote the initial draft of the manuscript. All authors contributed to the study design and literature search, carried out the data collection, analyzed the data, and prepared the data tables. All authors were involved in interpreting the data and read and approved the final manuscript.

**Ethics approval and consent to participate**

The study was carried out in accordance with the ethical standards, Declarations of Helsinki. Approval was obtained from the Institutional Review Board (IRB) at An-Najah National University in Palestine prior to the research conduction and the general police department approval was obtained. Confidentiality was assured by keeping the data in a safe place and by using codes instead of names. All the information were available for the research team only. Due to the stigma and legal issues surrounding alcohol and drug use, confidentiality was highlighted in all written and oral communications. Informed consent was obtained. Participation in this study was voluntary, and the confidentiality of the students was ensured, as the questionnaire was anonymous and did not include any questions that will lead to personal identification.

**Consent for publication**

Not applicable.

**Competing of interests**

The authors declare that they have no competing interests.

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