Knowledge of Al-Kindy medical students regarding Substance Dependence

A research project submitted to the Family & Community Medicine department, Al-Kindy College of Medicine as a partial fulfillment of Research Module * Year III

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Abstract :

Background :

Substance dependence is an adaptive state that develops after repeated substance-administration occursand is unmasked during withdrawal, which occurs when drug taking stops. There are two types of dependence (physical & psychological) that could becaused by some factors including biologicalfactors (suchasgenetic predisposition) and behavioral factors (such as poor school performance, delinquency, peer pressure…etc.). Substance dependence could lead to addiction which is a compulsive, out of control drug use despite negative consequences.

Objective :

This study was conducted to estimate the prevalence of dependence among students of Al-kindy college of medicine(2nd, 3rdand 4th stages),andto analyze their dependence in terms of causes, frequency, effect and side effect and withdrawal symptoms.

Methods :

An online Google form questionnaire was distributed among Al-Kindy college medical students (2nd,3rdand 4thstages) that contained questions about the type of substance the students take, how often they take it, are they taking the same dose every time and whether they experienced withdrawal symptoms or not.Chi-squaretest was used to determine significant association between categorical variables, also bar charts and tables were used to summarize the results.

Results :

A total of 105 students participated in this study with 53 (50.5%) male and 52 (49.5%) female, there were (14.3%) from the 2nd stage, (83.8%) from the 3rd stage and (1.9%) from the 4th stage.Among consumers both genders were almost equal in consuming the substance (20% females & 19% males). Most cause of dependence among males was poor concentration at work (13%), in femalesheadache plus anxiety (22%). The most used substance was nicotine in (16%) of males and caffeine in (16%) of females.(24%) of the two genders think that the substance they take is useful in increasing their performance. Most substances that cause withdrawal symptoms were [caffeine (17% of the students), nicotine (6% of the students) & sedatives (3%of the students)].The majority of students who use caffeine (15%of the students) increase the dose during exams,(7%)of the students who take nicotine also increase the dose during exams.

Conclusion :

This study concludes thatthe majority of students either do not consume any substance or they are consumers and change the dose every time they consume the substance. Nicotine and caffeine are the most used substances byAl-Kindy medical students. The most common cause of dependence was poor concentration at work in males, headache and anxiety in females. The majority of students did not seek a medical advice despite their substance use. Main substance that was increased in dose was caffeine and nicotine and most situation that required increasing the dose was exams.

The dependence profile in our college students reflects the culprit causes which are mostly attributed to study stress. This entails promoting student's awareness about study stress, management and follow-up.

Keywords: Substance , dependence , medical college students.

Introduction

Dependence

is defined as an adaptive state that develops in response to repeated drug administration, and is unmasked during withdrawal, which occurs when drug taking stops. Dependence from long-term drug use may have both a somatic component, manifested by physical symptoms, and an emotional–motivation component, manifested by dysphoria.[1]

Types of Dependence

- **Physical dependence** addresses the physiological ways that the body adapts to the presence of a drug.[2]
- **Psychological dependence** is when a person relies on a substance to perform certain tasks or to make them feel a certain way; there are strong emotion-driven cravings; and likely, an excessive amount of thought towards the substance. The thought of going without that substance is likely to cause anxiety or some other type of negative emotion and might make a person feel as if they are unable to perform a certain task without it.[2]

Withdrawal Symptoms

- Withdrawal from substance abuse is a common medical problem. The body aims to maintain homeostasis, and when a chemical that was once overused is removed, counter-regulatory mechanisms may produce unopposed effects, and withdrawal symptoms may ensue.[3]
- Presentation may vary based on the frequency, duration, and quantity that was typically used. For instance, caffeine will typically cause mild withdrawal symptoms such as headaches and irritability, while opioids can cause more serious withdrawal symptoms like rapid heartbeat, hallucinations, and seizures.[4]
- While physical dependence and withdrawal occur with some drugs of abuse (opiates, ethanol), these phenomena are not useful in the diagnosis of addiction because they do not occur with other drugs of abuse (cocaine, amphetamine) and can occur with many drugs that are not abused (propranolol, clonidine).[5]

Addiction

- is compulsive, out-of-control drug use, despite negative consequences.[6]
- Addictive drugs are both rewarding and reinforcing.[6]
- Familiar pharmacologic terms such as tolerance, dependence, and sensitization are useful in describing some of the time-dependent processes that underlie addiction.[6]
- From a contemporary neuroscience perspective, pre-existing vulnerabilities and persistent drug use lead to a vicious circle of substantive disruptions in the brain that impair and undermine choice capacities for adaptive behavior, but do not annihilate them. Evidence of generally intact decision making does not fundamentally contradict addiction as a brain disease.[7]

Dependence vs Addiction

The main characteristic that distinguishes addiction from dependence is the combination of mental and physical dependence with uncontrollable behavior in obtaining and using a substance. While a dependence may be present without addiction, substance dependencies frequently lead to addiction.[8]

- **Addiction can occur without dependence**; consider cocaine or methamphetamine both have little outwardly apparent withdrawal syndrome but addiction to either can devastate lives.
Non-substance addictions such as gambling, sex or internet also have no physical dependence. What is common to all these addictions is the unnatural cravings that prompt the compulsive behaviors.[9]
- **Dependence can occur without addiction**; this is the common experience of most chronic pain patients who are able to take their opioid medication as prescribed for pain but don't develop the uncontrollable compulsion and loss of control. A desire to avoid withdrawal is not addiction.[10]

Abandoning The Terms

In 2013, the American Psychological Association (APA) ditched both "abuse" and "dependence" in favor of "**substance use disorder**."

Substance use disorder is now the medical term for addiction. Previously, abuse was a mild form of addiction, and dependence was a moderate or severe form of addiction. Today, the APA classifies substance use disorders as mild, moderate, or severe. It doesn't use the terms abuse and dependence to categorize the severity of an addiction. Part of the reason for the change was the confusion surrounding the word 'dependence.' The hope is that defining an addiction as a substance use disorder was a more inclusive way to identify people who need help, but may not have a debilitating addiction.[11]

Causes of Substance Dependence (Etiology)

The exact cause of substance use disorder is not known but Substance abuse has multifactorial origins.[38]

- **Biologic factors**, including genetic predisposition, are established contributors.[38]
- **Behaviors** such as rebelliousness, poor school performance, delinquency, peer pressure, and criminal activity and personality traits such as low selfesteem, anxiety, and lack of self-control are frequently associated with or predate the onset of drug use.[12]
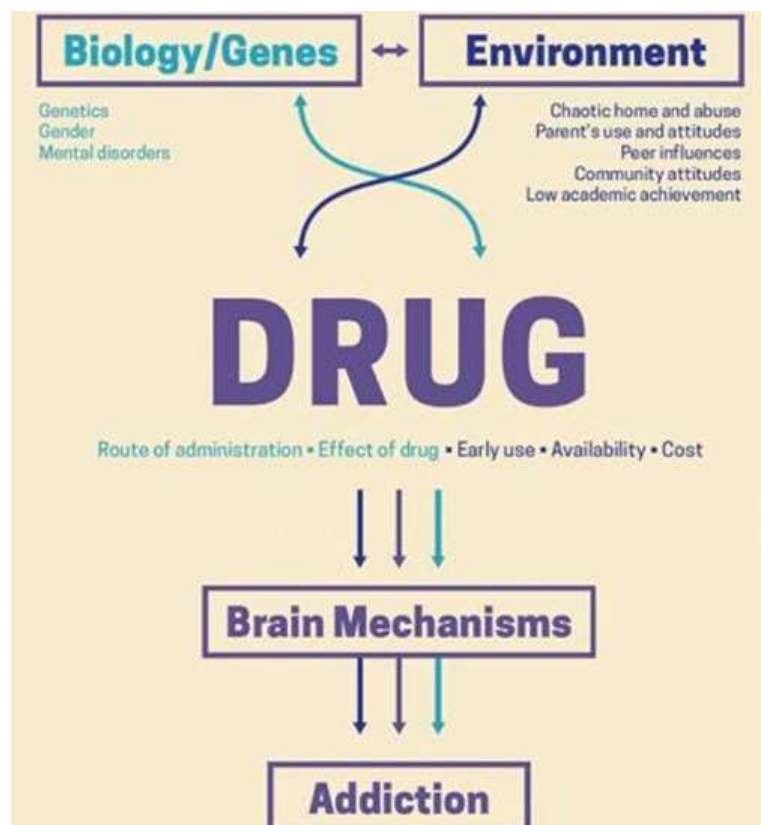
Types of Substance Use Disorder

1. **Alcohol use disorder**: the most abused drug in the world.[13]
2. **Drug use disorder**: can include everyday products such as cigarettes and coffee, also illegal drugs, prescription medications, or a combination. Cocaine, heroin, methamphetamines, benzodiazepines, steroids, and inhalants are all highly addictive and can lead to a substance use disorder very quickly.[14]

Commonly Abused Prescription Drugs[15][16]:

Commonly Abused Prescription Drugs
Visit NIDA at www.drugabuse.gov

NIDA — NATIONAL INSTITUTE ON DRUG ABUSE

National Institutes of Health
U.S. Department of Health and Human Services

Substances: Category and Name	Examples of Commercial and Street Names	DEA Schedule*/How Administered	Intoxication Effects/Health Risks
Depressants			
Barbiturates	*Amytal, Nembutal, Seconal, Phenobarbital;* barbs, reds, red birds, phennies, tooies, yellows, yellow jackets	II, III, IV/injected, swallowed	Sedation/drowsiness, reduced anxiety, feelings of well-being, lowered inhibitions, slurred speech, poor concentration, confusion, dizziness, impaired coordination and memory/slowed pulse, lowered blood pressure, slowed breathing, tolerance, withdrawal, addiction, increased risk of respiratory distress and death when combined with alcohol
Benzodiazepines	*Ativan, Halcion, Librium, Valium, Xanax, Klonopin;* candy, downers, sleeping pills, tranks	IV/swallowed	
Sleep Medications	*Ambien (zolpidem), Sonata (zaleplon), Lunesta (eszopiclone)*	IV/swallowed	for barbiturates—euphoria, unusual excitement, fever, irritability/life-threatening withdrawal in chronic users
Opioids and Morphine Derivatives**			
Codeine	*Empirin with Codeine, Fiorinal with Codeine, Robitussin A-C, Tylenol with Codeine;* Captain Cody, Cody, schoolboy; (with glutethimide: doors & fours, loads, pancakes and syrup)	II, III, IV/injected, swallowed	Pain relief, euphoria, drowsiness, sedation, weakness, dizziness, nausea, impaired coordination, confusion, dry mouth, itching, sweating, clammy skin, constipation/slowed or arrested breathing, lowered pulse and blood pressure, tolerance, addiction, unconsciousness, coma, death; risk of death increased when combined with alcohol or other CNS depressants
Morphine	*Roxanol, Duramorph;* M, Miss Emma, monkey, white stuff	II, III/injected, swallowed, smoked	for fentanyl—80-100 times more potent analgesic than morphine
Methadone	*Methadose, Dolophine;* fizzies, amidone, (with MDMA: chocolate chip cookies)	II/swallowed, injected	
Fentanyl and analogs	*Actiq, Duragesic, Sublimaze;* Apache, China girl, dance fever, friend, goodfella, jackpot, murder 8, TNT, Tango and Cash	II/injected, smoked, snorted	for oxycodone—muscle relaxation/twice as potent analgesic as morphine; high abuse potential
Other Opioid Pain Relievers: Oxycodone HCL, Hydrocodone Bitartrate, Hydromorphone, Oxymorphone, Meperidine, Propoxyphene	*Tylox, Oxycontin, Percodan, Percocet;* Oxy, O.C., oxycotton, oxycet, hillbilly heroin, percs; *Vicodin, Lortab, Lorcet;* vike, Watson-387; *Dilaudid;* juice, smack, D, footballs, dillies; *Opana, Numorphan, Numorphone;* biscuits, blue heaven, blues, Mrs. O, octagons, stop signs, O Bomb; *Demerol, meperidine hydrochloride;* demmies, pain killer; *Darvon, Darvocet*	II, III, IV/chewed, swallowed, snorted, injected, suppositories	for codeine—less analgesia, sedation, and respiratory depression than morphine for methadone—used to treat opioid addiction and pain; significant overdose risk when used improperly
Stimulants			
Amphetamines	*Biphetamine, Dexedrine, Adderall;* bennies, black beauties, crosses, hearts, LA turnaround, speed, truck drivers, uppers	II/injected, swallowed, smoked, snorted	Feelings of exhilaration, increased energy, mental alertness/increased heart rate, blood pressure, and metabolism, reduced appetite, weight loss, nervousness, insomnia, seizures, heart attack, stroke
Methylphenidate	*Concerta, Ritalin;* JIF, MPH, R-ball, Skippy, the smart drug, vitamin R	II/injected, swallowed, snorted	for amphetamines—rapid breathing, tremor, loss of coordination, irritability, anxiousness, restlessness/delirium, panic, paranoia, hallucinations, impulsive behavior, aggressiveness, tolerance, addiction for methylphenidate—increase or decrease in blood pressure, digestive problems, loss of appetite, weight loss
Other Compounds			
Dextromethorphan (DXM)	*Found in some cough and cold medications;* Robotripping, Robo, Triple C	not scheduled/swallowed	Euphoria, slurred speech/increased heart rate and blood pressure, dizziness, nausea, vomiting, confusion, paranoia, distorted visual perceptions, impaired motor function

* Schedule I and II drugs have a high potential for abuse. They require greater storage security and have a quota on manufacturing, among other restrictions. Schedule I drugs are available for research only and have no approved medical use. Schedule II drugs are available only by prescription and require a new prescription for each refill. Schedule III and IV drugs are available by prescription, may have five refills in 6 months, and may be ordered orally. Most Schedule V drugs are available over the counter.
** Taking drugs by injection can increase the risk of infection through needle contamination with staphylococci, HIV, hepatitis, and other organisms. Injection is a more common practice for opioids, but risks apply to any medication taken by injection.

Stages of Substance Abuse

- There are several stages of drug use that may lead to addiction.[17]
- Young people seem to move more quickly through the stages than do adults.[18]
    1. Experimental use
    2. Regular use
    3. Risky use (Dependence)
    4. Addiction

Stages of Adolescent Substance Abuse

STAGE	DESCRIPTION
1	Potential for abuse • Decreased impulse control • Need for immediate gratification • Available drugs, alcohol, inhalants • Need for peer acceptance
2	Experimentation: learning the euphoria • Use of inhalants, tobacco, marijuana, and alcohol with friends • Few, if any, consequences • Use may increase to weekends regularly • Little change in behavior
3	Regular use: seeking the euphoria • Use of other drugs, e.g., stimulants, LSD, sedatives • Behavioral changes and some consequences • Increased frequency of use; use alone • Buying or stealing drugs
4	Regular use: preoccupation with the "high" • Daily use of drugs • Loss of control • Multiple consequences and risk taking • Estrangement from family and "straight" friends
5	Burnout: use of drugs to feel normal • Polysubstance use/cross-addiction • Guilt, withdrawal, shame, remorse, depression • Physical and mental deterioration • Increased risk taking, self-destructive, suicidal

<u>*Importance of this study*</u>

It is assumed that students, particularly of medicine, have a good understanding of Substance Dependence and its health issues. As students in the medical field, it's crucial to be aware of the drugs that are mostly abused among patients and recognize the earliest phases of dependence that start with abuse first before this dependence turns into an addiction that might cause a lot of health and social issues in the long run. The results of this study should provide us with an overview of what medical students know about dependence and try to utilize this information to raise awareness and educate the public and students about substance dependencies and the side effects that come along with them.

The importance of this cross-sectional study is to analyze the knowledge of undergraduates in Al-Kindy medical college towards substance abuse and dependence and their disadvantages that might ruin a patient's life.

Results of this study should give us an overview of the students' knowledge and use this information to spread awareness and educate the students and the public as well about the dark side of substance dependence that starts with abuse first.

Objectives:

1. Assess the knowledge of medical students on the subject of substance use and dependence.
2. Find the most common drugs abused by medical students.
3. Find the issues that drive them to take substances.
4. Mark the time when these students increase there use of drugs.
5. Identify the withdrawal symptoms associated with these drugs.

Methodology :

A descriptive cross-sectional study was conducted on Al-Kindymedical students. The data was collected by using a self-completedonline questionnaire through Google Forms. The link to the questionnaire isshared with the students through social media groups inthe second, third, and fourthstages. A total of 105 students fromthe second, third, and fourth stages participatedfromthe 30th of November 2022 to the 13th of February 2023.
The sampling method used is a stratified sample, which means dividing Al-Kindy medical studentsaccording to their gender then random sampling willbe applied to each stratum. Meanwhile, tools used for statistical analysis are SPSS and Microsoft Office Excel. Chi-squared test, common charts, tables, and figures are also being used for statistical results that illustrate p value < 0.05 as a significance level.

Students from the second, third, and fourth stages of the AL-Kindy College of Medicine, whose ages ranged from 18 to 25, participated in the study. Cigarettes, electronic cigarettes, alcohol, sedatives like Valium, caffeine like coffee and energy drinks, opioids, and tricyclic antidepressants like amitriptyline are some of the substances that were studied.

Only the Al-Kindy College of Medicine was included in our study; all other medical colleges in Iraq were omitted, as were students in the first, fifth, and sixth stages, as well as those who were over 25 and under 18 years old. and we excludedany individual with a disease that requires treatment with the mentioned drugs.

The survey is presented as a Google form questionnaire involving a group of multiple-choice items focusing on:

1. The type of substance they are administrated.
2. The reason why they take the substance.
3. The dose of substance they are administrated.
4. The same dose every time or increase it.
5. What is the case in which the dose is increased.
6.the withdrawal symptoms that may occur if stop taking the substance

Ethical approval and permission:

This research was done after approval from the community medicine scientific department. The purpose and nature of the study were fully explained to thestudents. The potential participants were clearly assured that their participation in this study is voluntary and that any data obtained would be treated confidentially and for the purpose of the research only.

Results :

Table (1) : Distribution of the students according to their demographic characteristics

Variable		Frequency	Percentage
Age	19	13	12.4%
	20	64	61.0%
	21	19	18.1%
	22	7	6.7%
	23	2	1.9%
	Total	105	100.0%
Gender	female	52	49.5%
	male	53	50.5%
	Total	105	100.0%
Stage	2nd	15	14.3%
	3rd	88	83.8%
	4th	2	1.9%
	Total	105	100.0%

Table (1)shows that the most recorded age was (20) years (61%) of the total sample followed by (21) years (18.1%) and the rest (19 , 22 , 23) years account for a total of (21%).Regarding the gender , males were slightly more (50.5%) than females (49.5%).In addition,the majority of the students were from the third stage accounting for (83.8%) more than the second and fourth stages together (16.2%).
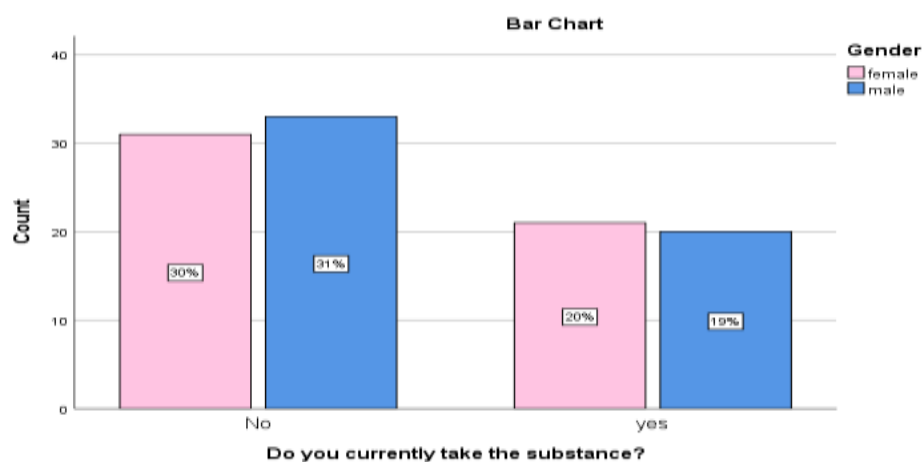

Figure (1) Percentage of students taking the substance at the time of sample collection.

Figure(1) shows a cross-tabulation that reveals the relation between whether the students were taking the substance and the gender at the time of sample collection . 61% of bothmales (31%) and females (30%) answered negatively to the question "Do you currently take the substance?" . While only (19%) of the males and (20%) of the females responded positively to the same question.

Table (2) :The causes of dependence among males and females

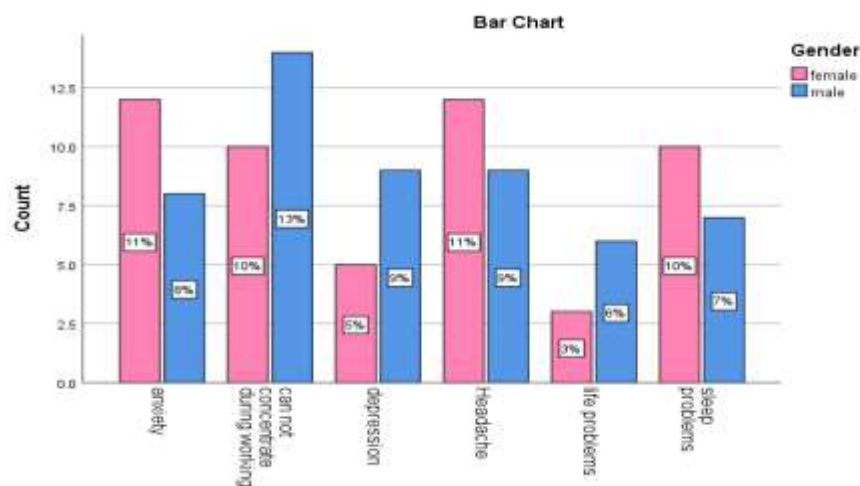| Questions and answers		Gender		P Value
		female	male	
Why do you take the substance?	anxiety	12	8	0.742
	Poor concentration at work	10	14	
	depression	5	9	
	Headache	12	9	
	life problems	3	6	
	sleep problems	10	7	

Figure (2) : the percentageof dependence causes among males and females.

Table (2) & Figure (2) show some common causes of dependence among males and females. It appeared that among the males , the most common cause of dependence is "poor concentration at work (13%)" followed by "depression(9%), headache(9%) ,anxiety(8%) &sleep problems(7%) " respectively and "life problems(6%)" accounts for the least common cause .While in females "headache(11%) and anxiety(11%) " are the major causes followed by "poor concentration at work(10%) ,sleep problems(10%) &depression(5%)" respectively and "life problems(3%)" was the least common cause .The table also shows that there is no statistically significant difference between the cause of dependence and the gender with a p-value of 0.7 (p> 0.05).

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Table(3) :Types of substances among the students .

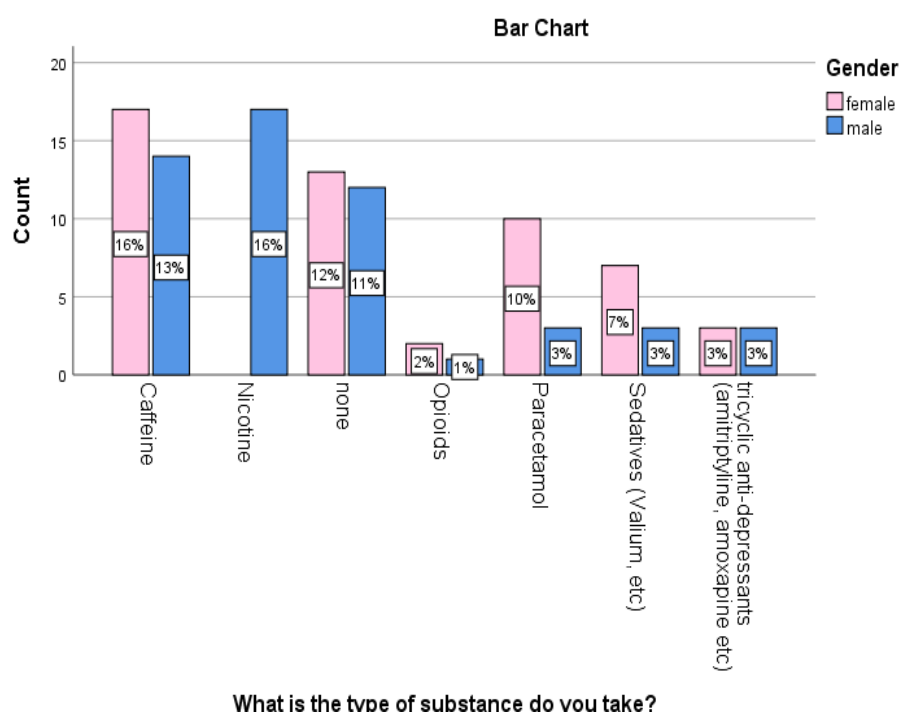| Questions and answers		Gender		P Value
		female	male	
What is the type of substance do you take?	Caffeine	17	14	
	Nicotine	0	17	0.001
	none	13	12	
	Opioids	2	1	
	Paracetamol	10	3	
	Sedatives (Valium, etc)	7	3	
	tricyclic anti-depressants (amitriptyline, amoxapineetc)	3	3	

Figure (3) : percentage of substance taking among the students .

Table (3) & Figure (3) reveal the kinds of substances that are used by the students . The most used substance in (16%) of males was "Nicotine" & in (16%) of females was "caffeine" and the other substances were as follows , caffeine (13%) ,[paracetamol ,sedatives , tricyclic anti-depressants & opioids all account for (10%)] regarding males . Regarding females the percentages were as follows ,paracetamol (10%) , sedatives (7%) & both tricyclic anti-depressants & opioids (5%) . Some of the students were not taking any substances and these were (11%) of the males and (12%) of the females .According to the p-value 0.001 (<0.05) there is astatistically significant difference between gender and type of substance .

Table (4) : Number of students who tried to quit taking the substance in the past 12 months .

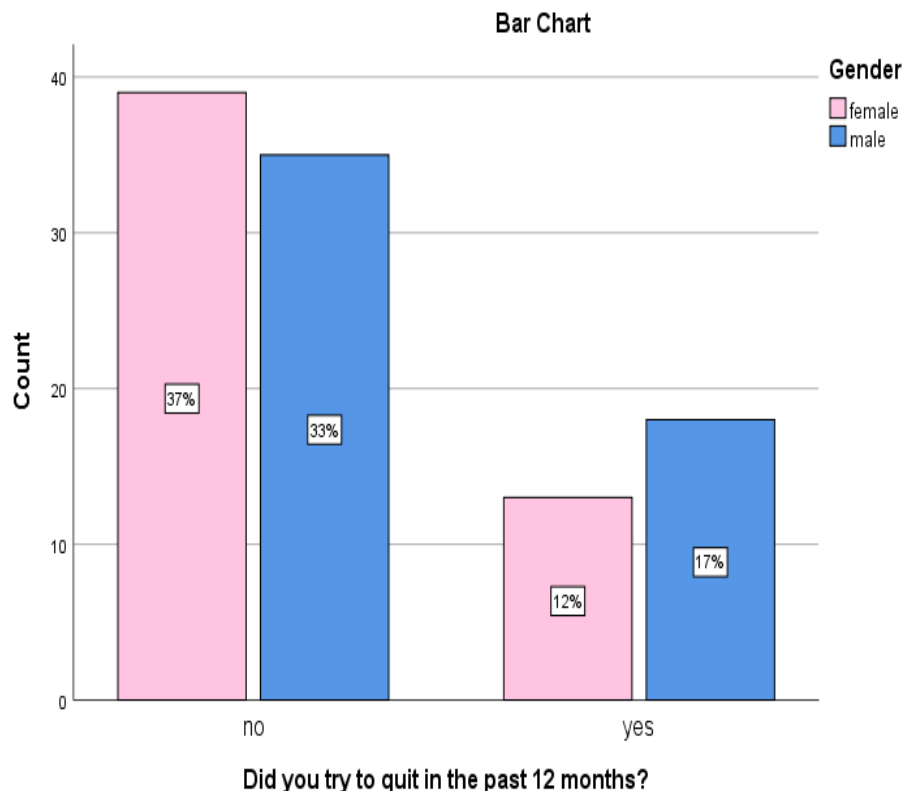| Questions and answers		Gender		P Value
		female	male	
Did you try to quit in the past	no	39	35	0.314
12 months?	yes	13	18	

Figure (4) : Bar chart reveals the association between quitting taking the substance over the last 12 months and gender.

Table (4) & Figure (4) : cross-tabulation was conducted to examine how many students of both genders tried to quit consuming the substance during the last 12 months . It reveals that the majority of students (37%) females (n=39)& (33%) of males (n=35) responded negatively to the question "Did you try to quit in the last 12 months? " while the minority of students (12%) of females (n=13) & (17%) of males (n=18) responded positively to the same question. There is no statistically significant difference between gender and quitting with a p-value of 0.3 (p >0.05) .

Table(5) : Average Duration to return to consuming the substance after quitting .

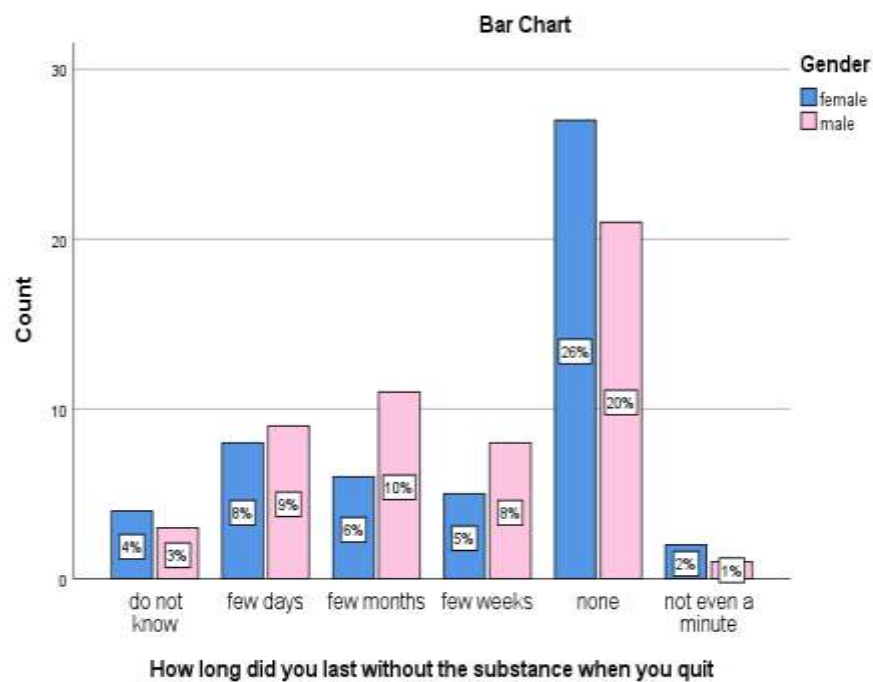| Questions and answers		Gender		P Value
		female	male	
	do not know	4	3	
How long did you last without the substance when you quit	few days	6	11	0.663
	few months	8	9	
	few weeks	5	8	
	none	29	22	

**Figure (5) : Bar chart of the relation between gender and time of return .**

Table (5) & Figure (5) show the amount of time the students took to return to consuming the substance after quitting (if they quitted) . The majority of students (56%) of both genders(n=51) were either non consumers or did not try to quit . Of females (10%) took few months(n=8) , (9%) took few days(n=6) , (8%) took few weeks(n=5) and (3%) didn't know how much time they took (n=4). Of males (8%) took few days(n=11) , (6%) took few months(n=9) , (5%) took few weeks(n=8) and (4%) didn't know(n=3).

Table (6) : Awareness of students of health warnings about substance dependence

		Gender		P Value
		female	male	
Are you aware of health warnings about the substance you take?	No	23	21	0.781
	Yes	29	32	

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Table (6) shows that the majority of students of both genders (n=61) answered positively to the question "Are you aware of health warnings about the substance you take ?" . The other students (n=44) answered negatively.

Figure (6) :Amount consistency of the taken substance.

Do you take the same dose every time?
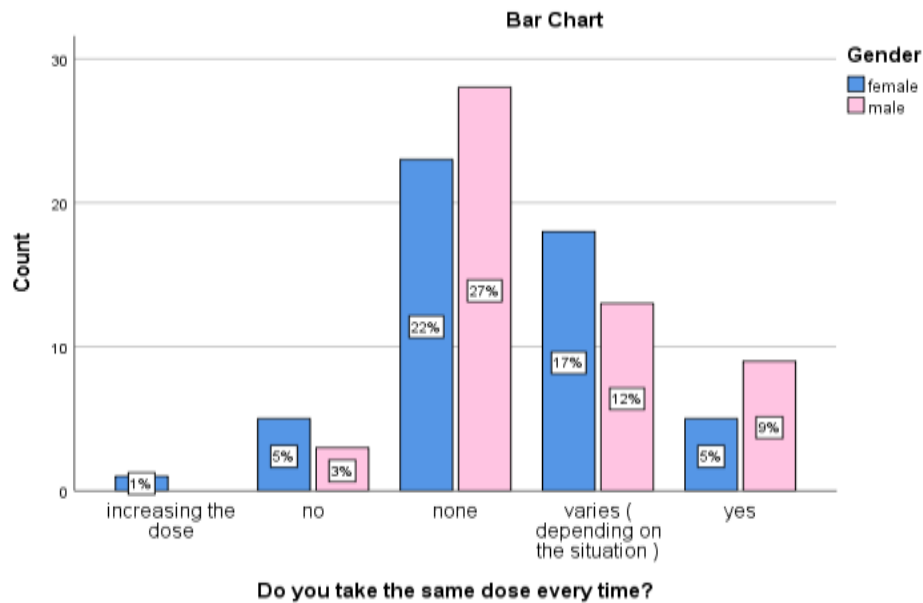
Figure(6) shows whether the students take the same amount of substance every time they consume it or not . most of the students (57%) answered (none + no) which means they are either non consumers or do change the amount . Of males (17%) &females(12%) change the dose depending on the situation they get through . (14%) of both genders do not change the dose at all .

Table (7) : Opinion of students about the substance they take regarding their health and daily performance .

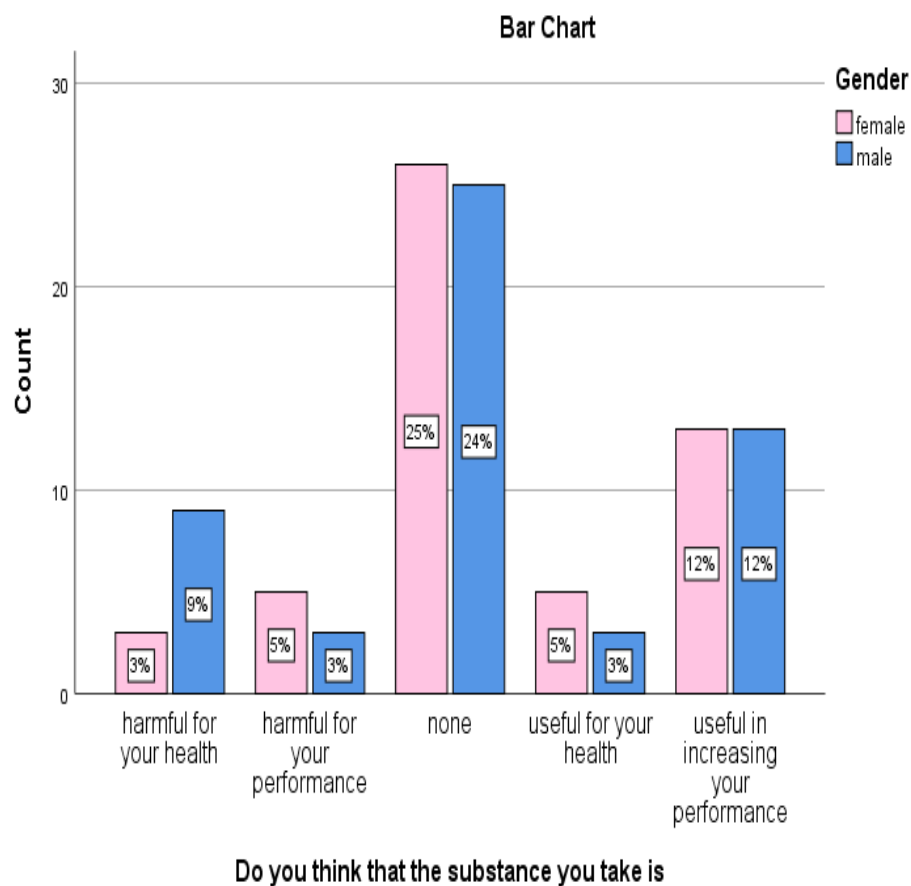|		Gender		P Value
		female	male	
Do you think that the substance you take is	harmful for your health	3	9	.405
	harmful for your performance	5	3	
	none	26	25	
	useful for your health	5	3	
	useful in increasing your performance	13	13	

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Figure (7) : Percentage of the opinion .

Table(7)&Figure(7) show the students knowledge about substances they take whether it is harmful for health about (3%)female(n=3) and (9%) male (n=9), harmful for performance (5%) female(n=5) &(3%) male (n=3) ,(49%) of both genders answered none to the question which means they are either none consumers or don't agree to the other choices , useful for health (5%) female (n=5)&(3%) male (n=3) ,useful in increasing performance (12%) female(n=13) & (12%) male (n=13) . P-value 0.4 (>0.05) and there is no association between gender and opinion .

Table (8) : Seeing a doctor or receiving a medical advice over the last 12 months .

		Gender		P Value
		female	male	
Over the last 12 months did you see a doctor or receive a medical advice?	No	39	41	0.777
	Yes	13	12	

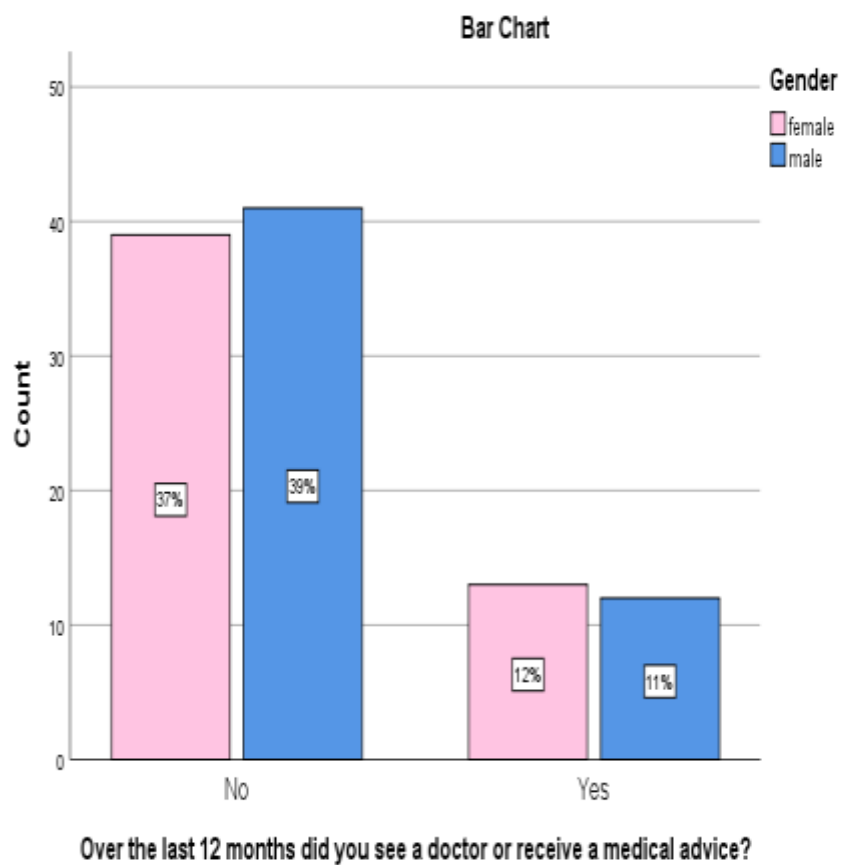Over the last 12 months did you see a doctor or receive a medical advice?

Figure (8) : answers in percentage .

Table(8)& Figure (8) ; cross tabulation was conducted to examine how many students of both genders tried to see a doctor or receive a medical advice over the last 12 months of consuming the substance. They reveal that the majority of students(39%) males (n=41) & (37%) females (n=39) responded negatively to the question "Over the last 12 months did you see a doctor or receive a medical advice ?" .While the minority of students (12%)of females (n=13)& (11%) of males (n=12) responded positively to the same question . There is no statistically significant difference between gender and answers with a p-value of 0.77 (p<0.05) .

Table(9) : Relation between type of substance and if it caused withdrawal symptoms when the students quit it .

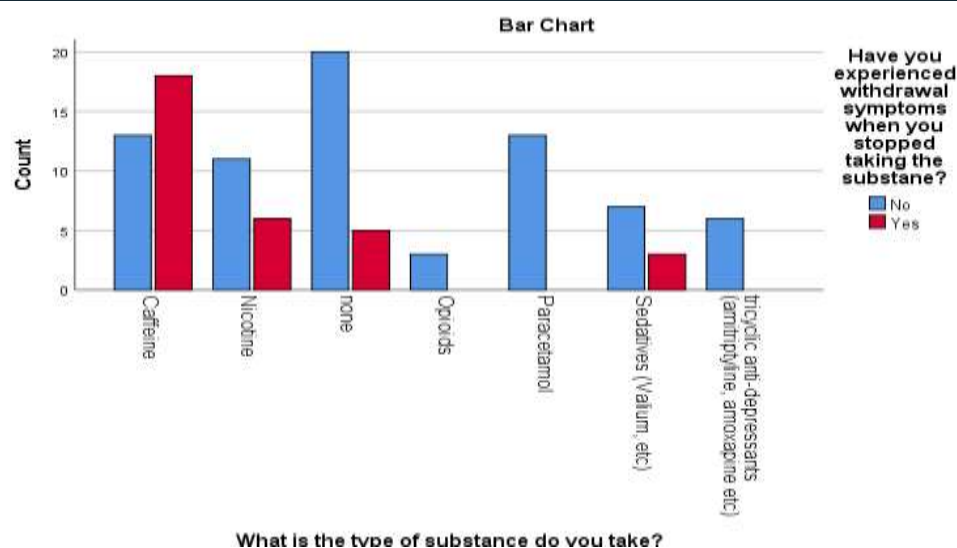| What is the type of substance do you take? * Have you experienced withdrawal symptoms when you stopped taking the substance?					
			Have you experienced withdrawal symptoms when you stopped taking the substance?		
			No	Yes	P Value
What is the type of substance do you take?		Caffeine	13	18	0.001
		Nicotine	11	6	
		none	25	0	
		Opioids	3	0	
		Paracetamol	13	0	
		Sedatives (Valium, etc)	7	3	
		tricyclic anti-depressants (amitriptyline, amoxapineetc)	6	0	
Total			78	27	

Figure (9); Bar chart explains the association between the type of substances and whether they cause withdrawal symptoms .

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Table(9) Figure(9) show that the majority of students((n=78) responded negatively to the question ,caffeine and paracetamol (n= 13) & opioids (n=3) , nicotine (n=11),sedatives (n=7), tricyclic anti-depressants (n=6) & none consumers (n=25).While the minority of students (n=27) responded positively only to caffeine (n=18) , nicotine (n=6) & sedatives (n=3). There is statistically significant association between type of substances and withdrawal symptoms with p-value of 0.001 (p<0.05) .

Table(10) : Relation between type of substance & the associated withdrawal symptom .

What are the withdrawal symptoms? * What is the type of substance do you take?								
		What is the type of substance do you take?						P Value
		Caffeine	Nicotine	none	Opioids	Paracetamol	Sedatives (Valium, etc)	tricyclic anti-depressants (amitriptyline, amoxapineetc)	
What are the withdrawal symptoms?	anxiety	0	2	0	0	3	3	2	0.001
	headache	13	4	0	1	5	0	0	
	inability to concentrate	0	1	0	0	0	0	0	
	mood changes	4	2	0	0	0	1	3	
	nausea	0	0	0	1	0	0	0	
	none	7	7	25	0	5	3	1	
	reduced daily activity	6	0	0	0	0	0	0	
	sleeping problems	1	1	0	1	0	3	0	
Total		31	17	25	3	13	10	6	

Table (10); showing the withdrawal symptoms when students stopped taking the substance .Anxietywith : nicotine and tricyclic anti-depressants (n=2) , paracetamol and sedatives (n=3) ,Headache with caffeine (n=13) , nicotine (n=4), opioids (n=1) ,&paracetamol (n=5), inability to concentrate with nicotine only (n=1) .Mood changes with caffeine (n=4) ,nicotine (n=2) , sedatives (n=1) & tricyclic anti-depressants (n=3) .Nausea with opioids only (n=1) . Reduced daily activity with caffeine only (n=6) . Sleeping problems with caffeine , nicotine & opioids (n=1) and sedatives (n=3) . There is statistically significant association between type of substances and withdrawal symptoms with a p-value of 0.001 (p<0.05) .

Table (11): when the students increase the dose .

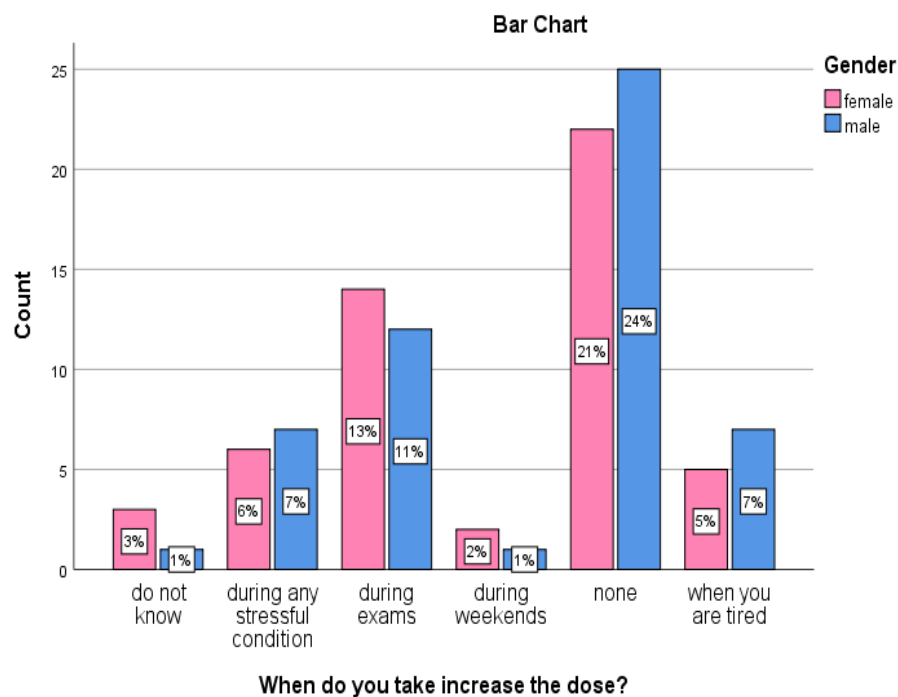| When do you increase the dose?				
		Gender		
		female	male	P Value
When do you increase the dose?	do not know	3	1	0.838
	during any stressful condition	6	7	
	during exams	14	12	
	during weekends	2	1	
	none	22	25	
	when you are tired	5	7	

Figure (11): Bar chart about the relationship between gender and increasing the dose.

Table & Figure (11) ; explain when students increase the dose of substances in male and female .During any stressful condition the (7%) of males (n=7) and (6%) of females (n=6) ,during exams (13%) of females (n=14) and (11%) of males (n=12) , during weekends (2%) of females (n=2) and (1%) of males (n=1) ,when they are tired (7%) of males (n=7) and (5%) of females (n=5) , do not know (3%) of females (n=3) and (1%) of males (n=1) & none (45%) (n=47) of both genders . There is no statistically significant association between gender and increasing the dose with a p-value of 0.8 (p<0.05).

Table(12) : Relation between type of substance and increasing the dose period .

		When do you increase the dose?						P Value
		do not know	during any stressful condition	during exams	during weekends	none	when you are tired	
What is the type of substance do you take?	Caffeine	2	7	15	1	3	3	0.02
	Nicotine	0	1	7	0	6	3	
	none	0	0	0	0	23	2	
	Opioids	0	0	0	0	2	1	
	Paracetamol	2	1	2	0	5	3	
	Sedatives (Valium, etc)	0	3	1	2	4	0	
	tricyclic anti-depressants (amitriptyline, amoxapineetc)	0	1	1	0	4	0	
Total		4	13	26	3	47	12	105

Table (12) : Showing the relation between type of substance and situations when students increase the dose. Where is caffeine dose increases during exams (n=15) & during any stress (n=7) & when tired (n=3) &during weekend (n=1) and nicotine also increase during exams (n=7) rather than other conditions ,during any stress (n=1) & when tired (n=3) and opioids when tired only (n=1) and paracetamol(n=3) during tired & (n=2) during exams , (n=1) during any stress and sedatives increase during stress (n=3) , during weekends (n=2) ,during exams (n=1) and tricyclic anti-depressants increase during any stress and exams (n=1) . Note that the total students increase doses of substances during exams rather than other conditions . There is statistically significant with p-value 0.02 (p<0.05) .

Discussion

Our study found that the majority of students were 20 years old (61%), followed by 21 years old (18.1%), with the remaining age groups (19, 22, 23) accounting for a total of 21%. In terms of gender distribution, slightly more students were male (50.5%) than female (49.5%). Furthermore, the majority of students were in the third stage (83.8%), while the second and fourth stages combined made up 16.2% of the sample.

These findings align with recent studies, which have also reported similar patterns regarding the age distribution, gender composition, and distribution across different stages of education.

Recent studies have shown similar results. A study conducted in Saudi Arabia among medical students revealed that the majority of the students were aged 20-21 years (59.6%), and males accounted for a slightly higher percentage (55.1%) than females (44.9%) [41]. Another study conducted in Pakistan among medical students reported that the majority of the students were aged 20 years (42.6%) followed by 21 years (24.6%.[٤٢]

Furthermore, a study conducted in Egypt among medical students found that the majority of the students were aged 20-21 years (60.5%), and there were more male students (56.6%) than female students (43.4%.[٤٣]

The causes of substance dependence among male and female medical students were explored in our study. The majority of both male and female students reported taking the substance due to anxiety (48.5%), followed by poor concentration at work (35.2%) and headache (28.5%). There were no significant differences in the reported reasons for substance use between males and females (p=0.742). However, females reported depression as a cause of substance use more frequently than males (23.1% vs. 16.2%, respectively) while males reported life problems as a cause more frequently than females (11.3% vs. 5.8%, respectively). These findings are consistent with previous research which has reported anxiety and stress as common reasons for substance use among medical students.[٤٤,٤٥,٤٦]

A study conducted by Bakhla et al. [47]found that medical students who reported high levels of stress and anxiety were more likely to engage in substance use. Similarly, a study by Ibrahim et al[48].found that medical students who reported high levels of perceived stress and burnout were more likely to use substances. These findings suggest that addressing the underlying causes of stress and anxiety among medical students may be an effective strategy for preventing substance use.

The study of Bakhla found that among the students, nicotine was the most commonly used substance, with 17 students reporting use (16.2%). This was followed by paracetamol, which was used by 10 students (9.5%), and sedatives, such as Valium, which were used by 7 students (6.7%). Opioids were used by only 3 students (2.9%), while tricyclic antidepressants were used by 3 students as well (2.9%). No students reported using no substances (0%.[٤٩]

These findings are consistent with previous studies that have found nicotine to be the most commonly used substance among medical students [٥0, ٥1]. Another study reported that sedatives were the second most commonly used substance, after nicotine, among medical students in Saudi Arabia [٥2]. However, the prevalence of substance use varies across different countries and cultures, and different studies may use different methods and definitions of substance use, making direct comparisons difficult [٥3].

The significant proportion of medical students (57%) reported either not consuming any substances or not altering the amount they consume. This finding suggests that these students either do not engage in substance use or maintain a consistent dosage. Interestingly, a higher percentage of males (17%) compared to females (12%) reported adjusting the dosage depending on the situation they were facing. This indicates that some students, regardless of gender, modify their substance consumption based on contextual factors. On the other hand, 14% of both genders reported not altering the dose at all, indicating a consistent pattern of substance use regardless of circumstances.

Comparative studies have shown similar patterns of substance use among university students. For instance, a study by Smith et al. [°4]examining substance use patterns among college students found that a substantial proportion of participants reported no substance use or consistent dosing. Additionally, their findings align with research conducted by Johnson and colleagues [°5], who reported variations in substance use behavior based on gender and contextual factors.

These results highlight the complexity of substance use patterns among medical students and emphasize the need for further research to explore the underlying factors influencing their decisions regarding substance consumption and dosing.

The findings of the study indicate that the majority of the medical students either do not consume substances or they change the amount every time they consume it. This is in line with the results of a recent study conducted among university students in Lebanon, which found that 49.4% of the participants did not use any substances [°6]. However, the results also reveal that a significant proportion of students (17% of males and 12% of females) change the dose of the substance they consume depending on the situation they are in. This may indicate a lack of self-control and an increased risk of substance dependence.

It is worth noting that the findings regarding the changing of the dose are consistent with previous studies. A study conducted among young adults in the United States found that 25.6% of the participants reported that they adjusted the amount of alcohol they drank depending on the situation [°7]. Another study conducted among university students in Jordan found that 23.6% of the participants reported changing the amount of smoking depending on the situation.[°^]

The majority of the medical students did not seek medical advice despite their substance use is a cause for concern, as it indicates a lack of awareness or reluctance to seek help for substance dependence. This is consistent with previous studies that have found low rates of help-seeking

behavior among individuals with substance use disorders, particularly among young adults. [٥9,٦0]

Studies have also shown that stigma associated with substance use and mental health issues can act as a barrier to help-seeking behavior[٦1,٦2]. It is therefore important to address the stigma associated with substance use and improve awareness about the availability of resources for individuals struggling with substance dependence.

The findings of our study provide insights into the patterns of substance use and withdrawal symptoms among medical students. The majority of students (n=78) reported a negative response to substance use, indicating that they did not engage in the use of caffeine, paracetamol, opioids, nicotine, sedatives, or tricyclic antidepressants. This is an encouraging finding, as it suggests that a significant proportion of medical students are not involved in substance use.

Among the students who reported substance use, the majority mentioned caffeine (n=18) as the substance of choice, followed by nicotine (n=6), and sedatives (n=3). This suggests that these substances may be more commonly used among the students who engage in substance use.

Furthermore, a statistically significant association was found between the type of substances used and the presence of withdrawal symptoms, with a p-value of 0.001 (p<0.05). This indicates that the choice of substance is related to the experience of withdrawal symptoms among the students. It is important to note that withdrawal symptoms can have significant implications for individuals, as they can contribute to the development of dependence and addiction.

These findings are consistent with previous research that has highlighted the prevalence of caffeine use among college students [٦3] and the potential risks associated with nicotine and sedative use [٦4,65]. Understanding the patterns of substance use and withdrawal symptoms among medical students can inform interventions and educational programs aimed at promoting healthy behaviors and preventing substance dependence.

Withdrawal symptoms were reported by students when they stopped taking certain substances. The most commonly reported symptom was headache, associated with caffeine (n=13), nicotine (n=4), opioids (n=1), paracetamol (n=5), and sedatives (n=0). Anxiety was also reported, with nicotine and tricyclic antidepressants (n=2), paracetamol and sedatives (n=3) being the most common culprits. Other symptoms included reduced daily activity with caffeine only (n=6), sleeping problems with caffeine, nicotine, and opioids (n=1) and sedatives (n=3), nausea with opioids only (n=1), inability to concentrate with nicotine only (n=1), and mood changes with caffeine (n=4), nicotine (n=2), sedatives (n=1), and tricyclic antidepressants (n=3).

The findings indicated a statistically significant association between the type of substance and withdrawal symptoms, with a p-value of 0.001 (p<0.05). These results emphasize the diverse range of withdrawal symptoms experienced by students and highlight the need for interventions and support to address these challenges. Understanding the specific symptoms associated with different substances can guide targeted interventions for managing withdrawal and promoting overall student well-being. [66]

we found that students increase their dose of substances during certain situations. Caffeine dose increased during exams (n=15), any stress (n=7), when tired (n=3), and during weekends (n=1) [67,68]. Nicotine also increased during exams (n=7) compared to other conditions, during any stress (n=1) and when tired (n=3) [28]. Opioids increased only when tired (n=1) [28]. Paracetamol increased during tired (n=3), during exams (n=2), and during any stress (n=1) [28]. Sedatives increased during stress (n=3), during weekends (n=2), and during exams (n=1) [28]. Tricyclic antidepressants increased during any stress and exams (n=1) [68]. It is noteworthy that students increased their substance doses during exams more than other conditions, which was statistically significant (p-value 0.02, p<0.05) [67]. However, there was no statistically significant association between gender and increasing the dose (p-value 0.8, p<0.05). [67]

Conclusion :

- Drug use and addiction cause a lot of harm and disability in the world. Recent advances in neuroscience may help improve policies to reduce the harm that the use of tobacco, alcohol, and other psychoactive drugs impose on society.

- Disorder, not a lack of willpower or strength of character. Drug dependence and mental illnesses often affect the same individuals. Therefore, it would be useful to integrate research, assessments, and treatments for both types of disorders.

- Use of psychoactive substances is to be expected because of their pleasurable effects as well as social influences. The greater the frequency and amount of drug used, the higher the risk of becoming dependent.

- The risk of becoming dependent on drugs is determined by a combination of biological, genetic, psychological, social, cultural, and environmental factors. Currently, it is impossible to predict who will become drug dependent.

- Drug dependence is a medical disorder, not a lack of willpower or strength of character.

- Drug dependence and mental illnesses often affect the same individuals. Therefore, it would be useful to integrate research, assessments, and treatments for both types of disorders.

Recommendations:

1-Since the effects of drugs on health vary greatly depending on the type of drug and on the way it is used, the public health response to drug use should be proportional to the health-related harm it causes.

2-Effective public health policies and programs that address not only drug dependence but also other forms of harmful drug use could lead to a significant reduction in the overall health burden of drug use.

3-The cost-effective treatment and management of drug dependence can save lives, improve health, and reduce costs to society. Beyond stopping drug use, effective treatment requires changes in the behavior of users and often the use of substitute drugs.

4-Treatment must be accessible to all in need and the health care sector should provide the most cost-effective treatments.

5-Prejudice and discrimination against drug dependent people is one of the main barriers to their treatment. Everyone has the same rights to health care, education, work opportunities and integration into society.

6-Investment in brain research on drug dependence must continue and expand to cover social science, prevention, treatment and policy research.

7-The results of research should be used to devise evidence-based policies to reducing the burden from drug use.

Appendix :

QUESTIONNAIRE:

1-Age:

- o 18
- o 19
- o 20
- o 21
- o 22
- o 23
- o 24
- o 25

2-Gender:

- o male
- o female

3-Stage:

- o 1st
- o 2nd
- o 3rd
- o 4th
- o 5th
- o 6th

4-Why do you take the substance:

- o depression
- o life problems
- o anxiety
- o can not concentrate during working
- o sleep problems
- o none
- o others:………..

5-What type of substance do you take:

- o Nicotine (Cigarettes, Electrical-Cigarettes, etc)
- o alcohol
- o Sedatives (Valium, etc)
- o Caffeine (Coffee, Energy drinks, etc)
- o Opioids
- o tricyclic anti-depressants (amitriptyline, amoxapine, etc)
- o none
- o others:………..

6-Do you currently take the substance:

- o yes
- o No

7-How often do you take these substances:

- o daily
- o weekly
- o monthly
- o never
- o do not know
- o others:………..

8-Did you try to quit in the past 12 months:

- o Yes
- o No

9-How long did you last without the substance when you quit:

- few days
- few weeks
- few months
- not even a minute
- do not know
- none

10-Over the last 12 months did you see a doctor or receive medical advice:

- Yes
- No

11-Are you aware of health warnings about the substance you take:

- Yes
- No

12-In the last 30 days have health warnings led you to think about quitting:

- Yes
- No
- do not know

13-Would you take substance if you were insisted by a friend:

- yes
- No
- maybe

14-Do you take the same dose every time:

- yes
- no, increasing the dose
- no, decreasing the dose
- varies (depending on the situation)
- none

15-When do you increase the dose:

- o during exams
- o during weekends
- o during any stressful condition
- o when you are tired
- o do not know
- o none
- o others:………..

16-Have you experienced withdrawal symptoms when you stopped taking the substance:

- o Yes
- o No

17-What are the withdrawal symptoms:

- o headache
- o anxiety
- o inability to concentrate
- o sleeping problems
- o reduced daily activity
- o general weakness
- o mood changes
- o none
- o others:………..

18-Do you think that the substance you take is:

- o useful in increasing your performance
- o harmful to your performance
- o useful for your health
- o harmful to your health
- o none

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