

Knowledge, Attitude and Practice Related to Health Impact of Performance-Enhancing Drugs among the Male Students in Qassim University

Noha Dekhail M. Aldekhail, Abeer Ali Alkredes, Arwa Sulaiman Alkabas, Aseel Ali Al- Saeed ,Mashaal Abdullah Alghaidani ,Renad Ali AL-Sohaibani , Sahar Mohammed Aljomaiah
Faculty of Medicine, Qassim University, Saudi Arabia

ABSTRACT

Background: Performance-Enhancing Drugs (PEDs) are used by young adults to enhance physical performance and appearance. There are many medical problems associated with Performance-Enhancing Drugs .

Aim of the work: this study aimed to estimate knowledge, attitudes and practices about the hazards of PEDs among young adults (18-28 years old) in Qassim University. **Method:** this was a descriptive cross-sectional analytical study carried out among male students at Qassim University, Kingdom of Saudi Arabia during 2014-2015. A self-administered questionnaire was completed from 134 male students in three colleges, one medical and two non-medicals. **Results:** prevalence of use in the medical students were 66.7 who were previously used AS and the half (33.3%) in non-medical students, but the current use among medical student was 16.7%, less than non-medical (83.3%). Regarding the source of using PEDs , the highest percentage in the medical students from friends, and the doctors in non-medical students. The prevalence of knowledge of medical students who know about side effect of using PEDs was 62,1 % more than non-medical (37,9 %). The majority of medical student recognized liver disease (61,9%), infertility (60%), gynecomastia (65%), shrinking testicle (62.5%) and hormonal disturbance (37.1%) compared to non-medical who knew about liver disease (38.1%), infertility (40%), gynecomastia (35%), shrinking testicle (37,5%) and hormonal disturbance(26,9%). Medical students showed positive attitude towards the use of PEDs (31.8%) which showed less than non-medical students (68.2%). As (61.1%) of non-medical believed the PEDs were responsible for improvement their performance conversely, 38.9% of medical students believed in that improvement. **Conclusion,** the non-medical students knew about the benefits of using PEDs for performance enhancement (47%) more than medical students (24%), thus non-medical students believed of enhancing their performance by PEDs more than the medical students. The medical and non-medical students who used PEDs had exposed to their side effects therefore, we should pay more attention to educate those about them more.

Keywords: PEDs , Al-Qassim University, knowledge, attitude, practice, KSA.

INTRODUCTION

Drug use and abuse is a serious problem that affects the health of adolescents and young adults. There is tendency of this group to improve and promote their performance in a harmful way by consuming a lot of Performance-Enhancing Drugs (PEDs). PEDs have serious side effects by influencing all over the body systems in a direct and indirect manner. Other substances as vitamin and protein supplements are considered as good enhancing medications, they could be extracted from diet before decide to take medications. The PEDs could be given by some cases of health diminution to improve the health quality. The abuse of PEDs by healthy adults is not acceptable regarding its harmful effects on body, which include the heart, liver, growth retardation, and hormonal disturbances by competing the normal hormonal steroids, virilisation, hirsutism and other men-like characters and other important side effects ^[1].

Since this type of drugs become widespread beside it kills the health of our society, estimation the knowledge, attitude and pattern of use regarding health hazards is perfect idea of protection that we will provide ^[2]. The studied group were considered the most important main power in the society and it is important to be protected against this health problem.

Literature Review

Performance-enhancing drugs considered as a wide variety of drugs intended for the aim of promoting the activity, increasing the endurance and alertness, strengthening the muscular power of the users and to perform beyond ability. Many users tend to use them in the hope of correcting their body dissatisfaction and social recognition ^[3].

Since the winning competitions and seeking for good appearance in addition to peer pressure, the incidence of use of Performance-enhancing drugs has increase over the past years regardless of their side effects which might be very serious leading to death

as reported during a marathon race in Lagos, Nigeria [3] or even sudden death. These drugs apply no respect for the game, cheating fellows, athletes, their fans and even them self. Such drugs include anabolic steroids, local analgesic, psychoactive stimulants, diuretics and others. Anabolic steroids are most popular category which are normally hormones that secreted by our body to regulate many important functions however, they are synthetically modified for longer duration and higher concentration [3]. Furthermore, all have anabolic and androgenic functions at the same time. In fact, they could be used and prescribed legally in such medical reasons of muscle wasting or impotence or hypogonadism [4]. Study conducted in Al-Ain, UAE 2008 showed that more than half (59 %) of study population had heard about A.S. But most we're very familiar with anabolic effects of A.S while adverse effects of A.S were largely less well known. Also, the non-users were found to have significantly higher level of knowledge regarding the side effects than users. Also there were high prevalence among users had lower educational level than others and higher prevalence among UAE nationals from gym users. However, only small proportions of the users were aware of the hazards of abuse of performance enhancing drugs and reported that they are satisfied about themselves after using performance enhancing drugs without paying attention about their safety [4].

Noteworthy, the side effects include also high blood pressure, nervousness, and liver tumors, increase level of hepatic enzymes, fluid retention, jaundice, kidney dysfunction, acne, and cardiovascular diseases attributable for the increase total cholesterol. Furthermore, males may suffer from infertility, impotence, baldness, shrinking testicles [5]. Sports all about quality thus sport organizations had banned these substances, and it was the reason of emergence of WADA (World Anti-Doping Agency). WADA is independent foundation located in Montreal, Canada funded by the (IOC) International Olympic Committee that aimed for athlete's protection and education of playing clean. Despite of all life-threatening side effects and health risks, the incidence is increasing and starts to include even non-athletes and approximately from all ages. In Turkey 2005 a study designated among athletes state that 41% of the cases they get the recommendation to take the drugs from their friends and 79% of doping users reported that their competitors we're taking them already [6]. Studies in U.S had reported the use is not restricted to athletes

only. In addition, it's wide spread through fitness enthusiasts and school students not only for elite athletes [7].

The present study is designed to assess the knowledge, attitude and practice of Saudi male athletes and non-athletes adolescence regarding the use of performance-enhancing drugs since it's considered a big issue that our community suffering from. Up to date, this is the first study in Kingdom of Saudi Arabia conducted on performance-enhancing drugs. Many published studies were more constricted to the high specialized group as elite athletes and bodybuilder, that's why our study extended to more heterogeneous group (athletes and non-athletes, gym visitors and non-gym visitors). In Italia, a study among athletes in 2012, showed that athletes believe that doping practice, mainly supplements are wide spread at all competition levels and not decreased over the last few years. The decision to use doping is often a combined decision of athletes and coaches, although most athletes believed there are adverse effects with some forms of doping [8].

In 2011, a study made by Ryan W. Atkinson, presented to Eastern New Mexico University showed there were no statistical significant differences in attitude toward PEDs among the different athletes groups who participated. The athletes in this study didn't show view on PEDs use. Therefore, this may suggest that PEDs use is not a problem in ENMU [9, 10].

RATIONAL

The adolescents misuse PEDs more and more without caring about their health and the chemical substances that they were dealing with. They can get it easily without getting any permission when it related to their body appearance.

The awareness of the university males on the risk of PEDs is a good preventive idea since the results of this research will orient them more the university about the risk of use of PEDs.

Objectives

This work aimed to assess the extent of knowledge attitude and practice of Saudi adult male at Qassim University about health impaction of PEDs abuse.

METHODOLOGY

The study carried out among male students in Qassim University which located in Qassim province in the middle of Saudi Arabia. **Study design:** a descriptive

cross-sectional analytical study to assess the level of knowledge of the studied group about the adverse effect of PEDs, their attitudes towards its use and their practices in the academic year 2014-2015.

Study subjects: the study population consisted of male students aged 18-28 years old attending Qassim University.

Inclusion Criteria

- All the students registered in Qassim University.
- Age 18-28 years old with good health and no history of heart diseases or systemic dysfunction.

Assumptions: all participants answered the survey questions honestly, although some participants have heard about AS.

Sample size

Sample size=

1. Estimate of the expected proportion (p)= 10%
2. Desired level of absolute precision (d)= +5%
3. 95% confidence limites.

The sample size formula is:

$$n = \frac{1.96^2 p(1 - p)(DEFF)}{d^2}$$

$n = 138$ student + 10% non-response, the sample size turned to be 152 students.

Sampling technique

A random cluster sample of university students was selected. Three colleges were chosen, one medical and the others were non-medical (college of science and college of literature). All the students registered in the selected classes were included.

Data collection methods

Questionnaire

Self- administered questionnaire was distributed to students in all target classes during the time of data collection, responses and refusals were recorded. The questionnaire consisted of questions on demographic

characteristics: age group (years), monthly income, type of living and Level of cost of PEDs .

Knowledge items: know of hazards of used drugs, know of the benefits of used drugs, type of drug used for improve sports activity and source of knowledge.

Attitude: attitude to drugs in enhancing performance, goal for PEDs use, attitude of improved performance and possibility of leaving PEDs .

Practice: sports types, time of starts, frequency\week, duration\day and place.

Practice: previously use drug performance, current use, duration, advisor when use, form where they got it ? Exposure to one of the side effects of PEDs , and side effects that have been exposed to it. Only one set of questionnaire was distributed (Arabic version).

Pre-test

Pretested the designed questionnaire regarding the sequence, format of the questions and format design.

Data management and analysis plan

Data collection was completed during the 2014-2015 academic year. We used IPM software SPSS 21 for data entry and Chi-squares test was used to test significance difference between medical and non-medical students in relation to PEDs.

Ethical Considerations

The male students were invited to participate in a study to examine attitudes and perceptions regarding Performance-Enhancing Drugs (PEDs).

The students informed that if they decide to participate, they were asked questions about their attitudes toward PEDs .

The survey was taken approximately 10-15 minutes to complete.

Assure the students that their responses on the survey were both anonymous and confidential and participation was voluntary, under no obligation and they may discontinue participation at any time.

All data were stored in a locked cabinet during the study until it was completed .

The study was done after approval of ethical board of Qassim university.

RESULTS

Table 1: showed the Socio-demographic characteristics of students of Qassim University

Table 1	Socio-demographic characteristics of students of Qassim University			
	Medical (54)		Non-medical(80)	
	Num	%	Num	%
Year of study				
First	6	11.11	16	20
Second	4	7.4	28	35
Third	1	1.8	18	22.5
Fourth	5	9.2	9	11.25
Fifth (last year)	38	70.3	9	11.25
Age group				
18	4	7.4	26	32.5
20	41	75.9	39	48.75
25 or above	9	16.6	15	18.75
Monthly income				
<2000	37	68.5	66	82.5
2000-5000	13	24	5	6.25
>5000	3	5.5	5	6.25
Type of living				
far from family	6	11.11	14	17.5
With family	48	88.8	65	81.25
level of the cost of performance enhancement drug for you				
Appropriate	4	7.4	9	11.25
Expensive	5	9.2	6	7.5

The studied medical students were distributed as follows: 11.11% in the first year, second year 7.4%, third year 1.8%, fourth year 9.2% and fifth year 70.3%, while non-medical students were in the first year 20%, second year 35%, third year 22.5%, fourth year 11.25% and fifth year 11.25%. Their age groups are from 18-20 years old were 4 medical students and 26 nonmedical students, from 21-24 years old were 41 medical students and 39 non-medical students and from 25-above years old were 9 medical students and 15 non-medical students. Majority of the studied medical students were enrolled in the final year and the non-medical were enrolled in the early years. We found medical students who had less than 2000RS as a monthly income were 68.5%, while non-medical

students were 82.5% and who had 2000-5000RS were 24%, while non-medical students were 6.25% and who have more than 5000RS were 5.5%, while non-medical students were 6.25%. In addition, medical students who live with their family were 88.8%, as well non-medical students were 81.52%. Whilst, medical students who live far from their family were 11.11% and for non-medical students 17.5%.

About the level of the cost of performance enhancement drug for medical students showed appropriate cost were (7.4% and non-medical students were 11.25%. However, medical students showed expensive cost 9.2%and for non-medical students were 7.5%.

Table 2 : showed the Knowledge of Qassim University students about performance enhancement drug.

Table 2 Variables	Knowledge of Qassim University students about performance enhancement drug			
	Medical		Non-medical	
	No	%	No	%
knowing about PED	32	59.25	28	35
Know of hazards of used drugs	36	66.6	22	27.5
Enlargement of prostate	3	5.5	8	10
Liver diseases (jaundice , cancers ,etc)	13	24	8	10
Infertility	15	27.7	10	12.5
Gynecomastia	13	24	7	8.75
Baldness	7	12.9	2	2.5
Growth impairment	8	14.8	6	7.5
Cardiovascular disease	7	12.9	6	7.5
Shrinking testicle	10	18.5	6	7.5
Hormonal disturbance (testosterone, oestrogen and cortisone)	19	35.18	7	8.75
Know of the benefits of used drugs	25	46.3	19	23.75
benefits of used drugs Performance enchantement	24	44.4	22	27.5
Treatment of Anemia	0	0	7	8.75
Increase appetite	0	0	3	3.75
Wight gaining	9	16.6	10	12.5
type of the drug used for improve sports activity Deca	0	0	2	2.5
Testosterone	1	1.8	2	2.5
T3	1	1.8	0	0
Growth hormone	1	1.8	1	1.25
Other	4	7.4	4	5
Source of knowledge				
Trainer	4	7.4	1	1.25
Physician	6	11.11	3	3.75
Family	1	1.8	6	7.5
Friends	10	18.5	25	31.25
Relative	3	5.5	4	5
Other	9	16.6	4	5

The knowledge of medical students about the side effect of using PEDs was 59.25% more than non-medical (35%). **Fig. 2** showed medical student who recognized side effect of PEDs to enlargement of prostate (5.5%) and liver disease (24%), infertility (27.7%), gynecomastia (24%), baldness (12.9%), growth impairment (14.8%), cardiovascular diseases (12.9%), shrinking testicle (18.5%) and hormonal disturbance (35.18%) compare to non-medical who recognized the enlargement of prostate (10%), liver disease (12.5%), infertility (8.75%), gynecomastia (8.75%), baldness (2.5%), growth impairment (7.5%), cardiovascular diseases (7.5%), shrinking testicle (7.5%) and hormonal disturbance (8.75%).

Concerning the benefits, medical student know the benefits of using PEDs for performance enhancement (46.3%), treatment of anemia (0%),

increase appetite (0%), weight gaining (16.6%) while the non-medical students used AS for performance enhancement (23.75%), treatment of anemia (8.75%), increase appetite (3.75%) and weight gaining (12.5%).

Regarding the type of drug used for improvement sports activity the medical students: deca (0%), testosterone (1.8%), T3 (1.8%), growth hormone (1.8%), other (7.4%) however, non-medical determined: deca (2.5%), testosterone (2.5%), T3 (0%), growth hormone (1.25%), other (5%). About source of knowledge, medical students got their knowledge from trainer (7.4%), physician (11.11%), family (1.8%), friends (18.5%), relative (5.5%) and others (16.6%) while the non-medical get it from trainer (1.25%), physician (3.75%), family (7.5%), friends (31.25%), relative (5%) and others (5%).

Fig. 1: showing prevalence of knowledge about PEDs among students of QU

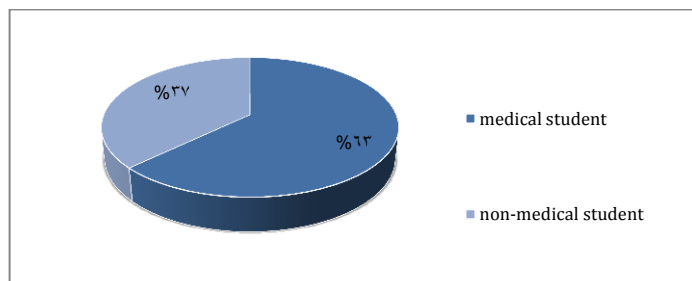


Fig. 2: showing prevalence of knowing of hazards caused by using PEDs

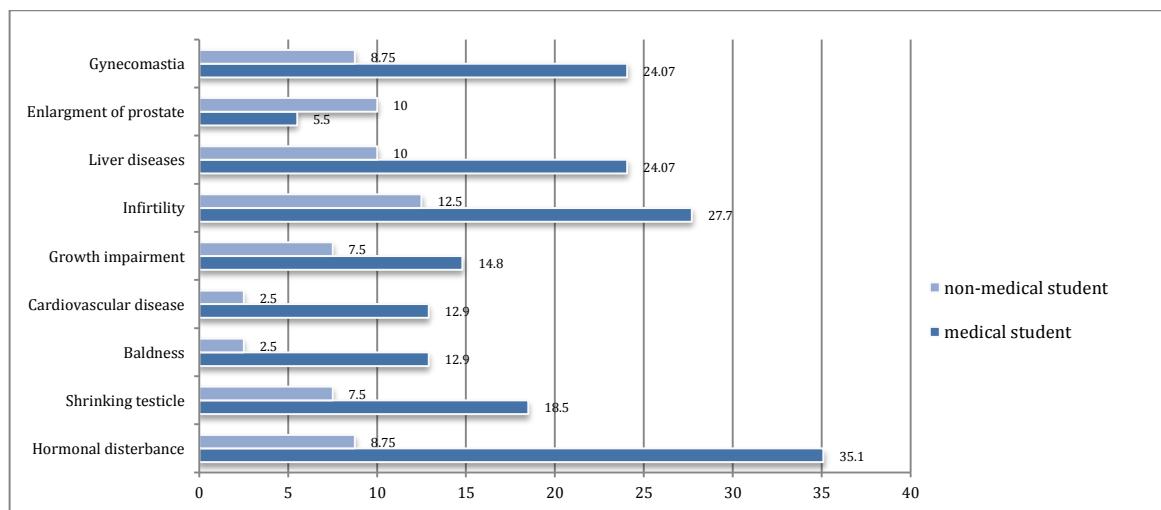


Table 3 : showed the attitude of Qassim University students about anabolic steroid

Table 3	Attitude of Qassim University students about performance enhancement drug			
	Medical		Non -medical	
	Num	%	Num	%
Attitude to drug use in en Anabolic Steroid	7	12.9	15	18.75
Attitude of improved performance	7	12.9	11	13.75
The possibility of leaving AS	7	12.9	17	21.25

Medical students showed positive attitude towards the use of PEDs (12.9) less than non-medical students (18.75%). Also, 12.9% of medical students believed of PEDs responsible for improvement their performance. However, non-medical students (13.75%) were more than medical students. In addition, we asked them about possibility to stop using PEDs ? The results showed 12.9% of medical students who believed to stop using PEDs . Unlike nonmedical students showed a higher percentage (21.25%).

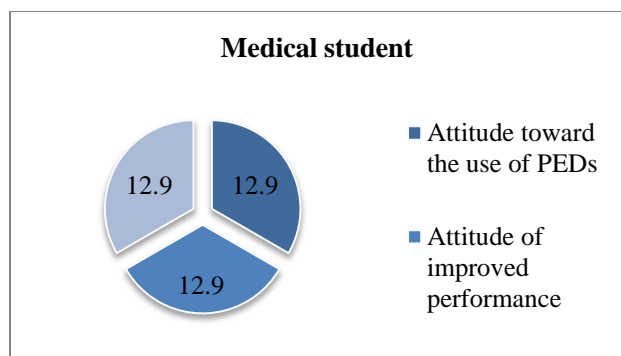
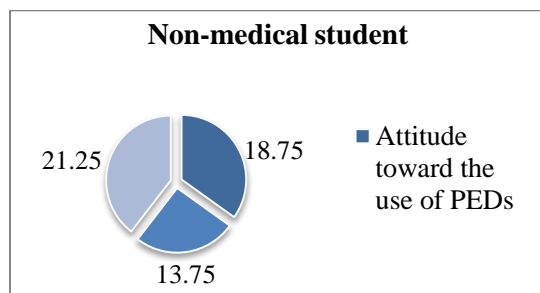


Fig. 3: showing of attitude of Qassim University students about anabolic steroid .

As **fig.4** showed the type of sport doing by medical students were walking (53.7%) more than non-medical (28.75%), medical students were playing football (22.2%) less than non-medical students (32.5%), medical students were swimming (7.4%)

less than non-medical (12.5%), as well as weightlifting (14.8%) of medical students less than non-medical students (17.5%), and medical students going to other exercise equipment were (14.8%) and non-medical students (11.25%).

Regarding the time of start doing the sport, non-medical student starting from months ago was 8.75% more than medical student (7.4%). As well as non-medical students starting from year ago were (15%) less than medical students (29.6%). Also, 46.25% of non-medical student started from more than year also greater than medical student (38.8%).

While, the frequency/week of medical students they were doing sport once per week were (3.7%) less than non-medical students (10%). Medical student's practices twice per week were (22.2%) and the non-medical student (21.25%). Medical students practices 5 times per week were 29.6% more than non-medical student (18.75%). At weekend 22.2% of medical students were less than non-medical students (21.25%).

About the duration of doing sport in one day, medical students practices (less than 30 min) were 20.4% more than non-medical students (6,25%) and from 30 min - 1 hour were 38.8% of medical students they were less than non-medical students (32.5%). 18.5% of medical student were spending time of 1hour- 2 hours were also less than non-medical students (25%), but more than 2 hours were no one of medical students just in non-medical student(3.75%). While, the place of doing sport for medical student practices at home (20.4%) more than non-medical student (8.75%) and at health clubs (27.7%) less than non-medical student (20%) at university no one of medical student spend time to practices and non-medical student were 6.25%. At public playground medical students were 29.6% less than non-medical (22.5%)

Table 4: showed the practice of doing sports for students of Qassim University

Variables	Practice of doing sports for students of Qassim University			
	Medical (N=54)		Non –medical (N=80)	
	Num	%	Num	%
Sport types				
Walking	29	53.7	23	28.75
Football	12	22.2	26	32.5
Swimming	4	7.4	10	12.5
Weight lifting	8	14.8	14	17.5
Exercise equipment	8	14.8	9	11.25
Time of start				
Months	4	7.4	7	8.75
Year	16	29.6	12	15
More than year	21	38.8	37	46.25
Frequency/week				
Once	2	3.7	8	10
Twice	12	22.2	17	21.25
5 times or more	16	29.6	15	18.75
At weekend	12	22.2	17	21.25
Duración/day				
Less than 30 min	11	20.4	5	6.25
30-1 hour	21	38.8	26	32.5
1-2 hours	10	18.5	20	25
More than 2 hours	0	0	3	3.75
Place				
At home	11	20.4	15	18.75
Health clubs	15	27.7	16	20
University club	0	0	5	6.25
Public playgrounds	16	29.6	18	22.5

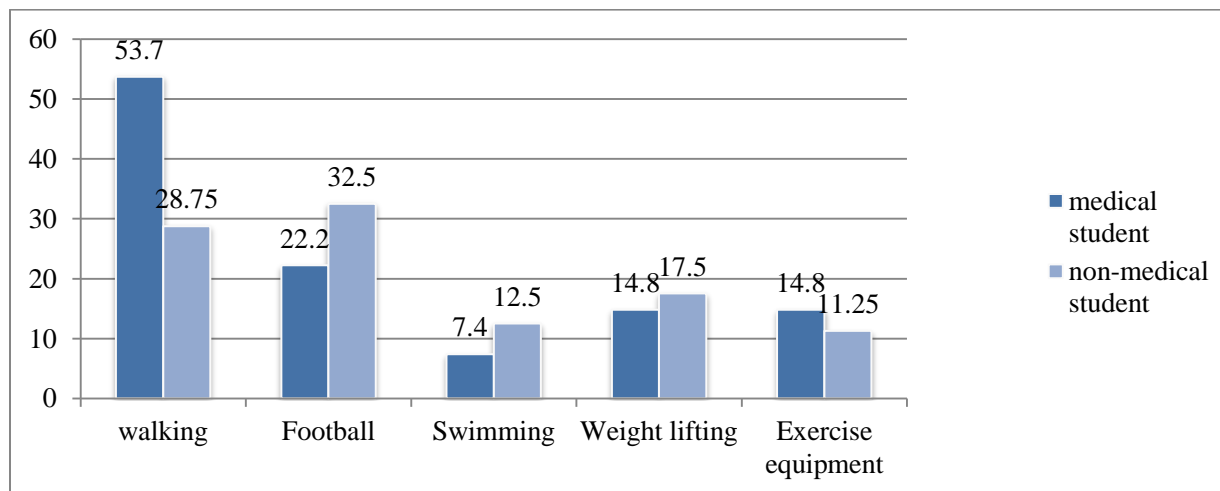


Fig. 4: showing type of sport doing for students of Qassim University AS .

Medical students used PEDs higher than non-medical students as the results illustrated that medical students using PEDs (1.8%). While , non-medical students were 6.25%.

The duration of using among the medical and non-medical students almost were equal as the results showed that medical student who used PEDs for weeks (7.4%) and they who used it less than year were (5.5 %) and for who using it more than year were (1.8%). Conversely, the non-medical student who using it for weeks were 10% and they who using it less than year were 5% and for who using it more than year were 1.25%. The advisor for medical student was the friends (5.5%) and 5.5% who did not ask anyone for using PEDs . In contrast, the advisor for non-medical students were the doctor (8.75 %) and friends (6.25%) also (2.5%) who did not ask anyone for using PEDs. Some of medical students got PEDs from gym trainer (5.5%) and most of them got

it from other sources (9.2%) and little from the pharmacy (1.8%). While, most of nonmedical students got PEDs from the pharmacy (11.25%), from gym trainer (2.5%) and some of them from other (2.5%). Both of medical and non-medical students had no one of them buy from online shopping.

Medical student exposure to the side effects were 3.7% and non-medical students were 2.5% .

The most side effects happened to medical students as the hypertension, elevated liver enzymes, and sexual disorders, temporary infertility, gynecomastia, oily skin lead to acne, hair loss and aggressive (violence) were 3.7%. The lowest one was tachycardia (1.8%), on other hand, the nonmedical students had equal percent (2.5%) for the side effects the hypertension, elevated liver enzymes, sexual disorders and temporary infertility, gynecomastia, oily skin lead to acne, hair loss and aggressive (violence). While, the headache was 1.25% and tachycardia was 1.25%.

Table 5: practice of using PEDs for students of Qassim University

Variables	Medical		Non –medical	
	N=54		N=80	
	No	%	No	%
Previously use drug performance	8	14.8	4	5
Current use	1	1.8	5	6.25
Duration				
More than year	1	1.8	1	1.25
Less than year	3	5.5	4	5
-Weeks	4	7.4	8	10
Advisor when use :				
Trainer	2	3.7	0	0
Doctor	1	1.8	7	8.75
Friends	3	5.5	5	6.25
No one	3	5.5	2	2.5
Others	0	0	0	0
Got it from :				
Pharmacy	1	1.8	9	11.25
club trainer	3	5.5	2	2.5
online shopping	0	0	0	0
Other	5	9.2	2	2.5
Exposure to one of the side effects of performance enhancement drug	2	3.7	2	2.5
Side effects that have been exposed to it				
Hypertension	2	3.7	2	2.5
Tachycardia	1	1.8	1	1.25
Elevated liver enzymes	2	3.7	2	2.5
Sexual disorders an temporary infertility	2	3.7	2	2.5
Headache	2	3.7	1	1.25
Gynecomastia	2	3.7	2	2.5
Oily skin lead to acne	2	3.7	2	2.5
Hair loss	2	3.7	2	2.5
Aggressive(violence)	2	3.7	2	2.5
Other	2	3.7	3	3.75

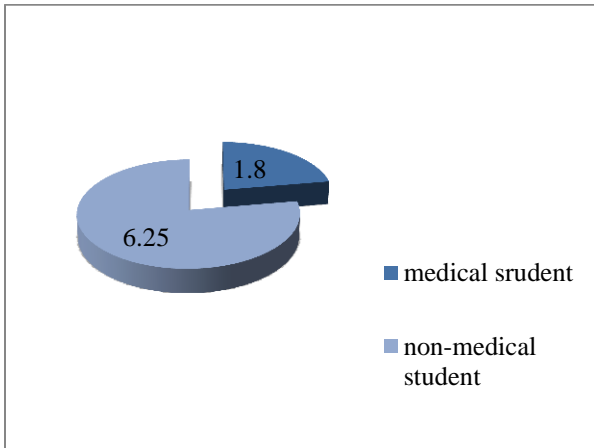


Fig. 5: shows prevalence of current use of PEDs among students of Qassim University.

DISCUSSION

This study showed that more than half (59.25%) of the studied population of the medical students had heard about PEDs. However, the knowledge was inadequate, most of medical student were very familiar with PEDs effects (performance enhancement and wight gain) whilst, the adverse effects of PAS were more aware about it. While, the studied population of non-medical students had less than half (35%) heard about PEDs and had poor knowledge of side effects, this reflect that medical students were found to have significantly higher level of knowledge regarding side-effects than non-medical students ($p < 0.000$).

In details, the majority of medical students had knowledge of hormonal disturbance as side effects of PEDs. While, the infertility, gynecomastia and liver diseases had lower percent than hormonal disturbance. In contrast, non-medical students had more percent about knowledge of enlargement prostate. Whilst, the study about knowledge, attitude and practice of anabolic steroids use among gym users in Al-Ain District, United Arab Emirates reported that the minority of study population were aware of the health hazards of PEDs use such as hepatic dysfunction, gynecomastia, aggression, hypertension, acne, slowing of the growth, hypercholesterolemia, malignancy, heart diseases, sexual dysfunction and infertility^[4].

The major source of knowledge of medical and non-medical were friends. Although non-medical students had higher (31.25%) than medical students (18.5%). Also the study about the KAP of anabolic

steroids use among gyms user in AL-AIN was that : 50% of population study reported that their main source of PEDs knowledge were the friends^[4].

There was a statistically significant positive association between use of PEDs and medical school. In addition, non-medical students had higher rate of using it. Since they were less oriented about the side effects within the medical students. Whilst, there was no particular distributor of PEDs among the medical population. In contrast, most of non-medical population brought it from the pharmacy.

The majority of the target population suffered from hypertension, tachycardia, liver diseases, sexual disorders, gynecomastia, aggressive, acne, hair loss. While, the minority of target population suffered from headache. Also, the study about adverse effects of anabolic steroids in athletes showed that : side effects included high blood pressure, nervousness, and liver tumors, increased level of hepatic enzymes, fluid retention, jaundice, kidney dysfunction, acne and cardiovascular diseases attributable for the increase total cholesterol. Furthermore, males may suffer from infertility, impotence, baldness and shrunked testicles

CONCLUSION

In conclusion, the non-medical students knew about the benefits of using PEDs for performance enhancement (47%) more than the medical students (24%), thus nonmedical students believed of enhancing their performance by PEDs than the medical students. The medical and non-medical students who used PEDs had exposed to side effects therefore, we should pay more attention to educate those about PEDs more.

RECOMMANDATIONS

At the end of this study, the researchers recommended the following to prevent the hazardous effects of misuse of PEDs and also to improve the quality of life of our community and reserve our youth which are considered as the main power of the community.

Such recommendation included educational programs by well orientated professional provided by the Ministry of Health to increase the awareness about the PEDs and their use. According to our sample the best ways to reach them through the use of social media and television and workshops. Furthermore, we should promote the consultation from all society before taking any drugs till they get conformed about

using them by doctors. The role of gym trainers have a great influence so we should inform them about the prohibited drugs and the punish the sellers

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