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UNSUPERVISED USE OF PERFORMANCE ENHANCING DRUGS AMONG ATHLETES: AN ICEBERG PHENOMENON

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ABSTRACT

Background:

The trend of unsupervised illicit use of performance enhancing drugs (PEDS) is alarmingly increasing among the athletes and bodybuilders especially among youngsters globally. This is posing a serious threat to the health of the young generation and unfairness in the field of sports especially in the circumstances where this issue has remained unexplored in many of the developing countries.

Objectives:

1. To assess prevalence and determinants for using performance enhancing drugs.
2. To assess the level of awareness among athletes regarding health hazards arising from the use of performance-enhancing drugs.

Material and Methods:

Setting: Gyms and fitness centers of Hyderabad Sindh, Pakistan.

Design: Descriptive cross-sectional study

Duration: March 2019 to August 2019.

Sample size & Sampling Technique: The 270 male athletes visiting the gyms selected through convenience sampling.

Data collection & analysis: Data collected on performed questionnaire &analyzed in SPSS version 22.0 by computing proportions, means ±s.d

Results:

Among 1365 athletes, prevalence of taking PEDs was 34.50%; the prevalence of unsupervised PED use was 68.78%. Social media/internet (29.66%) and television commercials (28.90%) were the most inspiring for taking PEDS. Testosterone products were used by 32.32% of participants. The 44.87% of participants obtained PEDs from local fitness stores. The 49.04% of participants were unaware about health hazards arising from PEDs.

Conclusion:

The high prevalence of unsupervised PEDs intake was observed among athletes in Hyderabad, Pakistan. This warrants an urgent need for public health awareness sessions at gyms.

Keywords: Performance-enhancing drugs, Athletes, Unsupervised, Gyms, Awareness

INTRODUCTION

Performance enhancing drugs (PEDs) are the products which are used to improve physical & mental performance **[1]**. These drugs not only increase the muscular bulk but also boost the cognitive functions and increase the physical performance by the various mechanism of actions **[2]**. Because of serious life-threatening complications, these products are banned by the international agencies but despite the ban, the trend of using these products is still common among athletes **[3]**. The athletes having the pursuance of their dream to secure a position in their country's team as well as winning medals for their country, work hard and take all measures to build, strengthen and shape their body muscles. Use of these PEDs among teenagers as well as pre-teenagers has tremendously increased recently and over the past decade, which is an alarming situation globally **[4]**. Number of performance-enhancing drugs are being sold globally including anabolic androgenic steroids **[5]**, nutrition supplements **[6]**, dopaminergic stimulants **[7]**

and creatinine phosphates **[8]**. The majority of these products are easily accessible in local markets **[9]**. For such reasons, different agencies like; world anti-doping agency (WADA), United States anti-doping agency (USADA), Anti-doping organization of Pakistan (ADOPK), etc. are established at national and international levels to monitor use of these banned drugs **[10]**. Multiple factors are involved in driving people towards this trend including easy access and online availability of these products, promotion of these products in print, electronic as well as social media, increase in competitive participation of youngsters, etc **[11]**. Friends, gymnasium and coaches play a vital role in promoting the use of such PE products **[12]**. Role of society and gatherings are also major influencing factors that promote PEDs **[13]**. All PEDs have the potential to produce immediate effects, short term effects and negative drawbacks on human health. Scientists have found shreds of evidence of premature mortality due to cardiac diseases and cancers among long-term PED users **[14]**. Along with these fatal consequences, these drugs affect the renal functions, memory loss, increased risk of stroke, heart attacks, and pulmonary embolism as well as arthritis, hepatic and eye problems **[15]**. There is dearth of data on this aspect in developing world. The current research was conducted with especial purpose to bring on the surface a much unexplored problem of unsupervised use of PED among a specific segment of the Pakistani atheletes in order to enhance healthy sports environment.

Objectives:

1. To assess prevalence and determinants for using performance enhancing drugs.
2. To assess the level of awareness among athletes regarding health hazards arising from the use of performance-enhancing drugs.

MATERIALS AND METHODS

Study Setting:

The study was conducted in seven gymnasiums and fitness centers because of their large exposure to the youth of Hyderabad city of Sindh, Pakistan.

Study Design:

Descriptive cross-sectional study.

Study Period:

March 2019 to May 2019 (Three months).

Study Participants, Sample Size& Sampling Technique:

Taking the prevalence of PED use as 19 percent **[12]** and 10% more respondents to compensate forn on-responders, the required sample size was computed as 263. Non-probability purposive sampling technique was used to approach the participants. All

competitive/ non-competitive male athletes of age 18 - 45 years who were using steroids (PED) for the previous 6 months without any supervision were registered as study participants.

Data Collection and Analysis:

Data was collected on pre-formed and pre-tested questionnaire after getting permission of athletes. Data analysis was done by using Statistical Package for Social Science (SPSS) version 22.0. Frequency & percentages were computed for study variables. The mean and standard deviations were computed for continuous variables.

RESULTS

Among 1365 athletes approached in study, 471 reported using PEDs; the prevalence of PEDs use was computed as 34.50%. Among them 263 gave consent to be full participants of the study. The overall prevalence of unsupervised use of PED in the present study sample was 68.78%.

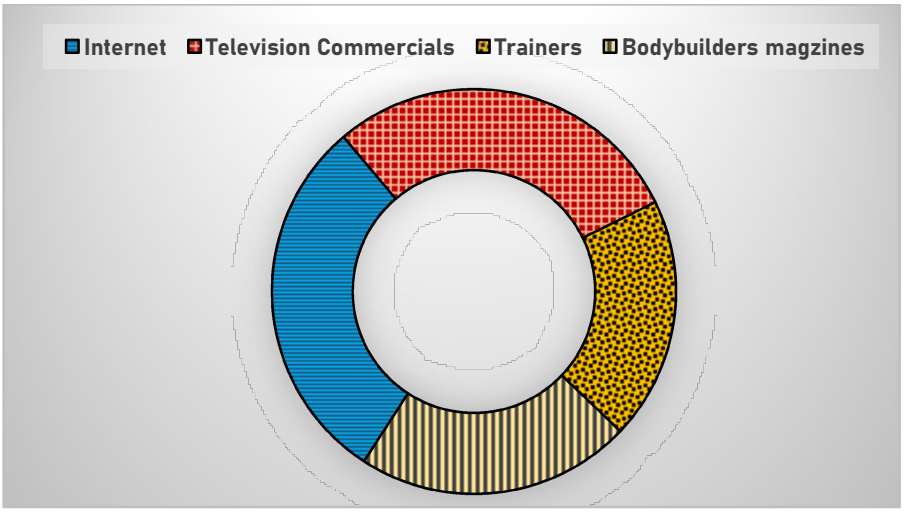

Figure 1: Sources of inspiration for taking Performance Enhancing Drugs (n=263)

Table 1: Information Regarding Types and Duration of PEDs Used by Participants (n=263)

	n	(%)
Since how long you are using PEDs		
• 1-2 years	85	(32.32)
• 3-4 years	102	(38.79)
• > 4 years	76	(28.89)
How often you take PEDs?		
• Twice a week	104	(39.55)
• Weekly	87	(33.07)
• Monthly	72	(27.38)
Which route you are using PEDs?		
• Oral	170	(64.64)
• Intramuscular Injections	64	(24.34)
• Subcutaneous Injections	29	(11.02)

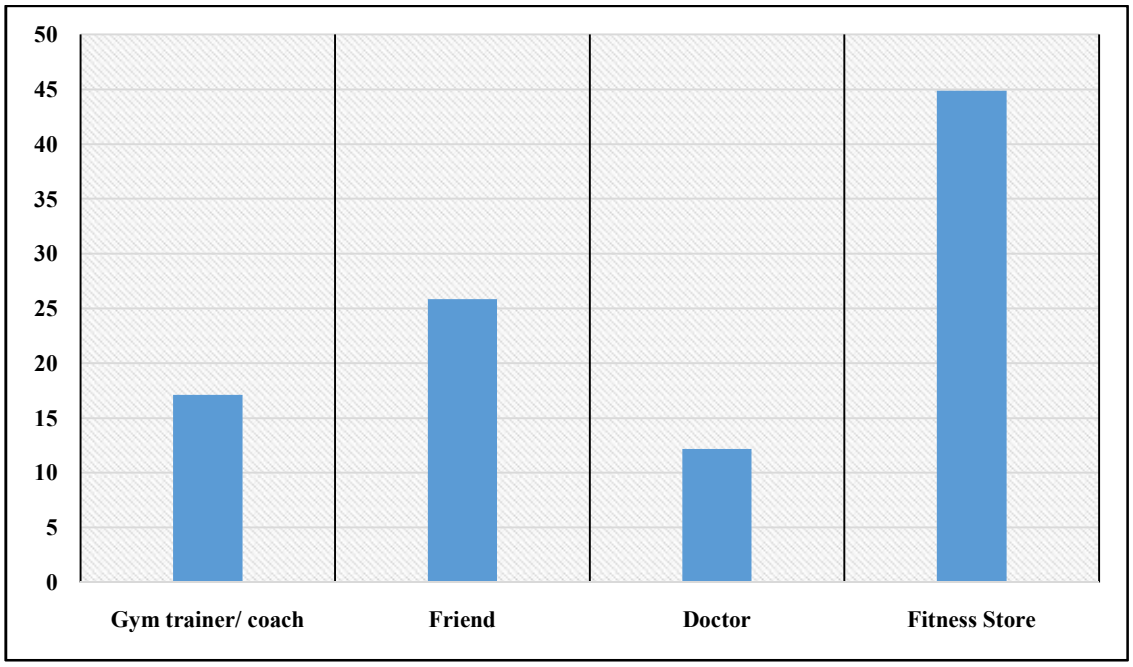

Figure 2: Information Regarding Sources of Obtaining PEDs (n=263)

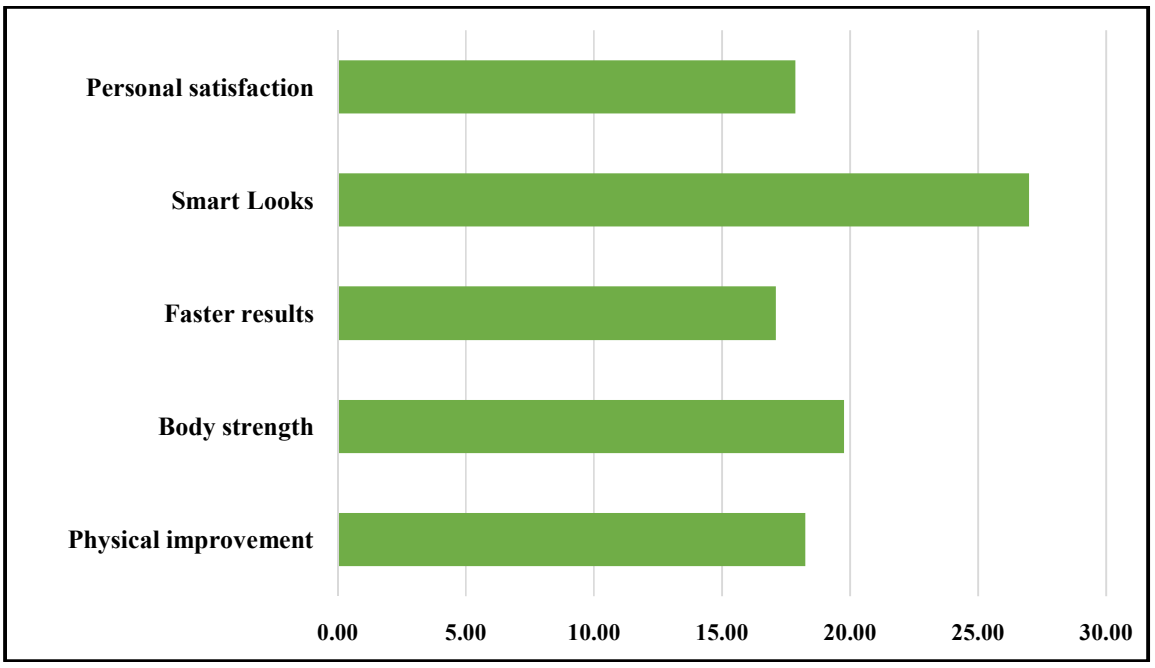

Figure 3: Determinants for Using PEDs (n=263)

Table 2: Awareness of Participants Regarding Health Hazards Arising from using PEDs (n=263)

	n	(%)
Knowledge about the World Anti-Doping Agency (WADA)	**129**	**(49.04)**
Knowledge about the athletic organizations already banned most of PEDs or products	**161**	**(61.21)**
Knowledge of the side effects related to PEDs	**130**	**(49.42)**
Awareness of adverse reaction of PEDs after using them for a longer duration	**102**	**(38.78)**
Knowledge about the negative effects of PEDs on your skin	**123**	**(46.76)**
Knowledge about the negative effects of PEDs on your body organs	**108**	**(41.06)**
Cognizant about the causalities resulted from the use of PEDs	**190**	**(72.24)**
Knowledge the potential of PEDs to affect your life	**174**	**(66.15)**
Anabolic steroid use can affect your body weight		
• **Yes, it can increase body weight**	**129**	**(49.04)**
• **Yes, it can decrease body weight**	**28**	**(10.64)**
• **No, it will have no effect**	**20**	**(7.60)**
• **Don't know**	**86**	**(32.69)**
Anabolic steroid use can cause skin problems like acne		
• **Yes, It can**	**75**	**(28.51)**
• **No, it cannot**	**40**	**(15.20)**
• **Don't know**	**148**	**(56.27)**
Anabolic steroid use can affect behavior		
• **Yes, it can cause aggression**	**63**	**(23.9)**
• **Yes, it can improve my mood**	**31**	**(11.78)**
• **No, it will have no effect**	**24**	**(9.12)**
• **Don't Know**	**145**	**(55.13)**
Anabolic steroid use can affect blood pressure		
• **Yes, it can increase it**	**58**	**(22.05)**
• **No, it can decrease it**	**42**	**(15.97)**
• **No, it doesn't have any effect**	**36**	**(13.68)**
• **Don't Know**	**127**	**(48.28)**
Anabolic steroid use can affect cholesterol levels		
• **Yes, it can increase it**	**71**	**(26.99)**
• **No, it can decrease it**	**31**	**(11.78)**
• **No, it doesn't have any effect**	**18**	**(6.84)**
• **Don't Know**	**143**	**(54.37)**
Anabolic steroid use can cause certain cancers		
• **Yes, it can**	**55**	**(20.91)**
• **No, it cannot**	**83**	**(31.55)**
• **Don't Know**	**125**	**(47.52)**
Anabolic steroid use can affect the liver		
• **Yes, it can cause damage**	**89**	**(33.84)**
• **Yes, it can be beneficial**	**34**	**(12.92)**
• **No, it has no effect**	**21**	**(7.98)**
• **Don't Know**	**119**	**(45.24)**

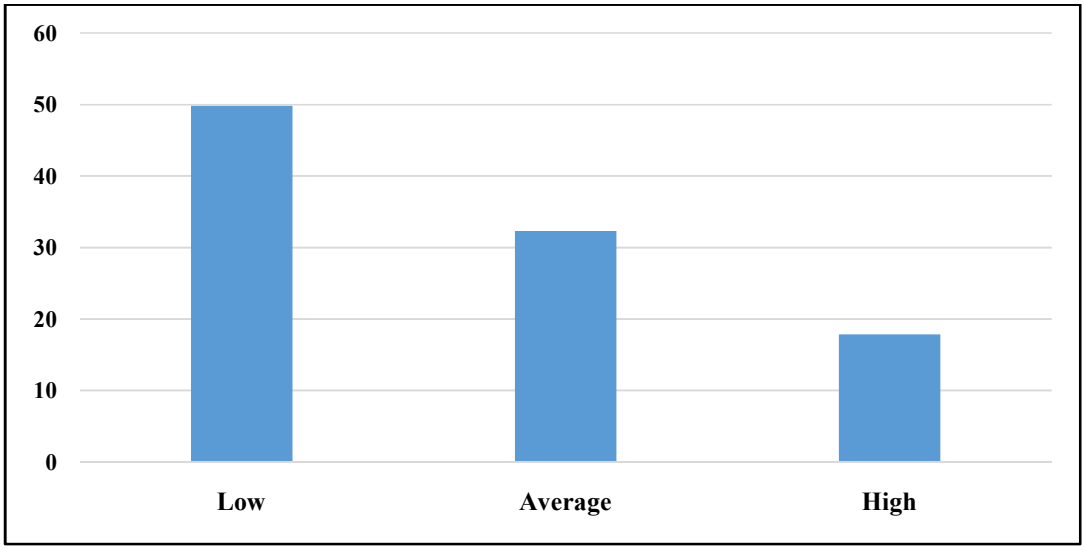

Figure 4: Level of awareness regarding health hazards arising from the use of PEDs among the study participants (n=263)

DISCUSSION

Globally, a large number of athletes are using performance-enhancing drugs **[16]**. The current study revealed its prevalence as 68.78%; this quite a higher proportion is consistent with the findings of other studies conducted in Saudi Arabia **[17]**, Kuwait **[18]** i.e. 24.5%, 22.7% respectively. A study conducted in Pakistan reported a high prevalence i.e. 64% of PEDs consumption **[19]**. Another study reported 46.6% of participants using PEDs **[5]**. The higher prevalence could be due to the fact that studies were large sampled community based studies which had more chances of reaching out higher numbers of the athletes.

The majority of the participants incurrent were inspired by the different promotions in social media/internet (29.66%) and television commercials (28.90%) **(Figure 1)**. The advancing technology and rising influence of the entertainment industry is posing a serious impact on human behaviours by attracting and inspiring young generation. The number of considerable number of youngsters joining gyms and clubs is considerably increasing day-by-day. The present studyrevealed that youngsters have predominantly participated as 29.66% of athletes in this study belong to the age group (29-33 years). These findings are consistent with Bahri *et al* **[20]**, Althobiti *et al* **[21]** in 2018 , Zafar *et al* **[22]** and Khawar, K *et al* **[23]** in 2018 reported the younger age group atheletes participated in their studies and were using PEDs. While the present study findings are contradictory with the study conducted in Sudan in 2018 which reported bit older age group using PEDs **[24]**. The age-wise distribution of athletes consuming PEDs is quite comparable with

those of a reasearch conducted by Usman *et al* **[25]**. The current study revealed 38.79% participants using PEDsfor 3-4 years while 28.89% of them were consuming PEDs for more than four years' duration. Surprisingly, 24.34% of consumers were getting these drugs through intramuscular route **(Table 1)**. Injectable routes of adminitration were also observed by other researchers **[26, 27]**.

Most alarmingly, the online purchasing of PEDS was reported by majority of the participants with the help of fitness centers (44.87%) **(Figure 2)**. A large number of these type of stores are working illegally and without any license. Moreover, it is a serious matter that even PEDs use is banned and illegal in Pakistan. Around 12% of PEDs users reported that they obtain such products from doctors (physicians). Doctors are knowledgeable people and are aware of the health risks of PEDS but still, they are providing or prescribing these products. Similar facts were observed and reported by Al-Bishi et al in their study **[28]** that around 18% of the PEDs users get these products from general practitioners.Usman *et al* **[25]** reported that most of their participants obtained PEDs from their "trainers". While Alharbi *et al* **[29]** reported "friends" as the main source of obtaining AAS by their study participants. Similarly, Habeeb *et al* **[30]** reported findings consistent with current study that in Iraq, PEDs were easily accessible for participants from retail stores or fitness stores as the main source of obtaining PEDs.

The majority of study participants reported that they use PEDs for their smart looks and physical improvement (25% and 19% respectively**) (Figure 3)**. A possible reason for these results could be the fact that male youngesters are more conscious about the physical appearances like muscular physique as was observed by Leifman *et al* **[31]** in his study. Al-Falasi *et al* **[32]** also demonstrate similar findings as in our study that most of the participants i.e. 28% use PEDs for their smarter looks. Around 49.04% of participants were not aware of WADA. Participants were also inquired about the basic information including banned PE products, side effects of such drugs or substances, etc. used by them. The majority (61.21%) of the participants were aware that these PEDs and substances are already banned by athletic organizations. Furthermore, almost half of them were aware of the side effects of these drugs and substances. Nearly two-thirds (72.24%) of them have heard about the causalities resulting from the use of these drugs . The majority (49.04%) of them know that the use of AAS can affect their body weight. In

contrast to this, high proportion of participants selected option that they "don't know" to the answers of the other questions of side effects resulting from PEDs use like skin problems (acne) (56.27%), changes in behavior (55.13%), effect on blood pressure (48.28%), effect on cholesterol level (54.3%), potential to cause cancer (47.5%) and cause damage to liver (45.24%) **(Table 2)**. Despite the availability of numerous sources of information, lack of awareness or misinformation among the athletes is one of the culprits for unrestricted or unsupervised use of these PE substances. Furthermore, marketing of such prohibited products and promotions by celebrities' etc. acting as role model is targeting adolescents as their main consumers. Findings of the present study showed the variable responses related to awareness about PEDs, their effects, athletic agencies, and banned products among the Pakistani bodybuilders. Although almost half of them know about the World Anti-Doping agency (WADA) and more than half (61%) of them know the substances banned by athletic bodies but still level of knowledge was very low. These findings are higher than reported by Kim *et al* **[33]**. That study reported 50% of their participants were aware of anti-doping regulations by their sports agency.

Similarly, awareness related to substances of abuse or banned performance-enhancing substances plays a vital role in preventing athletes from using such substances. Continuous efforts by WADA and national agencies for anti-doping in this regard resulting in increasing the awareness of athletes about the rules of anti-doping **[34]**. Despite these efforts, the current study demonstrated an overall low level of awareness regarding doping and related regulations among athletes. Kim *et al* **[33]** demonstrate similar findings in their study where a majority of participants showed low level of awareness related to anti-doping rules and adverse effects of PE substances. Additionally, Fürhapter *et al* **[35]** claimed that knowledge related to the probable adverse effects of PE substances was poor among athletes especially among adolescents. Therefore, more intelligible, systemically organized, widespread and in-depth education related to anti-doping rules and regulation is needed to improve awareness of athletes. Despite being aware of the positive effects of PEDs on muscle mass and strength, the majority of the study participants were lacking in knowledge concerning their harmful effects on the body and systems in the body. Alsaeed *et al* **[36]** observed similar findings, his study reported

that PEDs users in Kuwait were unaware of the side effects of AAS use. Usman *et al*. **[25]** and Al-Falasi *et al*. **[32]** also reported that PEDs users in Pakistan and UAE offset the harm of PEDs use. A significant difference in the level of awareness was observed between participants using AAS in the present study. Half (50.00%) of participants know very little about the health hazards related to PEDs and AAS specifically while awareness related to WADA and sports agencies rules and regulations for PEDs and AAS as well as other substances of abuse was very low. Only 18.00% were well aware of all the questions asked **(Figure 4)**. The majority (65.01%) of the participants stated that they suffered from some medical emergencies resulting from consuming PEDs. However, we do not find any comparative study from the body of literature on this aspect of research.

CONCLUSIONS

The prevalence of unsupervised performance enhancing drugs among athletes is alarmingly high i.e. 68.78% especially in young age bracket who get inspired by promotional in social media/internet (29.66%) and television commercials (28.90%). Around 50% of PEDs consumers are unaware about the health hazards related to these drugs which warrant an urgent need for public health awareness sessions at gyms.

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