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Prevalence, Knowledge, Attitudes of Doping among Omani Athletes: A Cross Sectional Study

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Abstract

The phenomenon of doping in Oman has received litter research attention. The present study aimed to investigate the prevalence, knowledge, attitude, and willingness on the use of doping among Omani athletes. Adolescent male and female athletes (N=502) completed a multi-section questionnaire assessing the aforementioned variables. The analysis revealed that (34.9%) of the participants believed doping is common in Oman, (22.9%) of them reported personally knew Omani athletes practicing doping. On the other hand, and about (67.7%) did not know any type of doping substances, while (33.3%) acknowledged their knowledge of doping is low. Results showed that the main reasons for the use of doping were to improve performance (37.1%) then to play and train longer (25.4%). The present results reveals that participants has a negative attitude and willingness toward doping. The future anti-doping efforts should focus on raisin athletes' knowledge, awareness, regulation, practice of doping. Researchers aim to expand future investigation into detection and prevention of doping and imbedding moral and ethical values against doping across Omani athletics.

Introduction:

In sport and exercise contexts, there are growing concerns of doping used by all age groups and both sexes of elite and non-elite participants in sport (De Hon et al., 2015: Gleaves et al., 2021;). Doping is defined as the use of illegal Performance-Enhancing Drugs (PEDs) or methods prohibited by World Anti-Doping Agency (WADA) to improve physical or mental performance (Mason, 2015; Petróczi & Haugen, 2012) among athletes. Although, it is well documented that doping has negative short-term and long-term health consequences, and was found as a threat to the integrity and the image not only of sport as well as the whole society (Creado & Reardon, 2016). Thus, Doping is against the spirit of fair-play values and is being regarded as immoral behaviour because doped athletes may have an unfair advantage over their competitors (Johnson, 2012).

The incidents of doping occur not only in elite but also in amateur athletes, bodybuilders, and people practicing fitness classes (Alaranta et al., 2006; Alsaeed & Alabkal 2015). Previous studies revealed that athletes use drugs as an enhancement to increase muscle mass, strength, endurance, improve sport performance, physical appearance, lose or gain weight, prevent injury, gain financial support which all could be classified under achievement and success (Bird et al., 2016; Haerinejad et al., 2016).

Doping in sport has attracted considerable research attention in recent years. Mainly initial research focused on investigating the prevalence of doping and the demographic (e.g., age and sex) and psychological (e.g., knowledge and attitudes) predictors of doping (Ntoumanis et al. 2014). Findings revealed that the prevalence for the use of performance enhancing substances among athletes ranging from 5% to 31% (Momaya, Fawal, & Estes, 2015) and for doping (e.g., anabolic steroid) among adolescents was estimated between 2.8% and 58% and 6.6% and 14% in college and high school students, respectively (Bents et al., 2004; Lorang et al., 2011).

Research Problem:

The lack of knowledge and the risk from consuming the banned (PEDs) and its negative impact over time could be the top reason that may influence athletes to dope. Previous research investigating knowledge about doping highlighted that 98.6% of high school students had a low level of knowledge about doping, which means that they did not receive any anti-doping education (Cetinkaya et al., 2007). Two studies showed that adolescent and adult athletes had moderate to low levels of doping knowledge (Chiang et al.,

2018; Kim & Kim,2017). Also, a study of bodybuilders reported that they used doping substances despite knowing its harmful effects (Yalniz & Gunduz, 2004).

Another predictor of doping behaviour is people's attitudes; attitudes represent one's favourable or unfavourable evaluations that performing a certain behaviour is good or bad, and with respect to doping attitude; its well believed as the lack of more objective information on the use of (PEDs) and doping. It is well known that attitudes are used as a proxy for doping behaviour (Petroczi & Aidman, 2009). Positive attitudes towards doping were found to be the strongest positive correlates of doping behaviour (Ntoumanis et al., 2014). In a study by Kim and Kim (2017), around 39% - 53.4% of adolescents and adults, had permissive attitudes toward doping, respectively. Conversely, a study conducted examining Malaysian student athletes revealed that they have negative attitudes toward doping (Chiang et al., 2018).

Based on the prototype willingness model (PWM, Gibbons et al., 2003), behavioural willingness is considered as another predictor of doping. Doping willingness refers to 'an openness to take a banned substance in certain risk conducive situations or contexts even if there was no prior intention to do so' (Stanger, Whitaker, & Backhouse, 2020). Research utilizing the PWM has found that athletes were most willing to dope for various reasons; (1) continuing compete at their current level; (2) suffering from an injury; (3) experiencing external pressure from coaches and peers; (4) increasing chances for team selection, gaining a contact, or funding, (5); perceiving everyone else is doping; (6) perceiving they are underperforming in practice or competition; (7) being offered by trusted others; and (8) perceiving doping can quickly enhancing physical condition (Stanger et al., 2020; Whitaker et al., 2017). Willing for using androgenic-anabolic steroids was found one of the most important factor in determining the behavioural intention (Manoochehri et al., 2021).

In Oman, it is well evident that a vast proportion of gym users (e.g., bodybuilders and participants in fitness classes) and elite athletes could use (PEDs) and doping substances. So far, top athletes from individual sports have been banned by the Anti-Doping Disciplinary Committee of Oman Olympic Committee for using banned (PEDs). Even though, little is being done to educate, raise awareness of possible harmful health effects of (PEDs) and doping as well as to guard young people from using them in Oman. This could prevent Omani athletes from being banned for doping deliberately or inadvertently alongside the increased present of Omani athletes in international events.

Research objective:

Therefore, the present paper aimed to investigate the doping prevalence, knowledge, attitudes, and willingness among Omani athletes.

Methodology:

Participants were male (n = 460) and female (n = 42) Omani athletes – aged 18 years and above, competing in football (n=275), handball (n = 59), volleyball (n = 46), basketball (n = 45), track and field (n = 42), and field hockey (n = 35). At the time of data collection, their 1-3 (n = 17), 4-9 (n = 128), 10-15 (n = 153), 16-20 (n = 102), 21-25 (n = 45), and 26 or more (n = 59) years their main sports. Finally, participants had played at five different levels of competition: friendly local (n = 61), official local (n = 233), friendly international (n = 9), official international (n = 76), and national team (n = 123).

Procedures:

Once approval from Sultan Qaboos University and Ministry of Culture, Sports and Youth was obtained, team and individual sports were identified and contacted to gain their permission to participate in the study. Then, questionnaires were either distributed by research assistants during training or sent online in Google form to them. All participants were informed about the research purpose, that participation was voluntary; their right to withdraw at any time, and their responses would be used only for research purposes and kept confidential. A consent form was not used, as the responses were anonymous. The data collection was carried out between March and April 2022.

Data Collection tools

Socio-demographic data and doping experiences. Participants were asked to self-report their age, gender, main sport, levels of competition, knowledge, past experience, and current use of doping, list of banned (PES) and methods, reasons to dope, and sources of (PES) and dope. Questions required the participants either to choose from options or answer 'Yes', 'No' or 'Don't Know'.

Doping attitudes. Adapted short version (10-item) of the Performance Enhancement Attitude Scale (PEAS, Petroczi & Aidman, 2009) was used to assess general doping attitudes of participants. The original version of (PEAS) consists 17 items. Seven items were removed for ambiguity in wording, repetitive, and did not measure directly attitudes to dope in sport (Allen, Taylor, Dimeo, Dixon, Robinson, 2015). Participants were asked to read each item and response on a five-point Likert scale with anchors of strongly disagree (1) to strongly agree (6). The short scale demonstrated factorial and discriminant validity and reliability (Allen et al., 2015; Petroczi & Aidman, 2009).

Doping willingness. The 9-item doping willingness in sport scale (Stanger et al., 2020) was used to assess participants' willingness to dope. Participants responded on a 5-point Likert scale, ranging from 1 (*not at all willing*) to 5 (*extremely willing*). Previous study provided evidence for internal consistency and discriminant validity (Stanger et al., 2020).

Translation of Scales. Each of the abovementioned scales was translated into Arabic then checked and compared the original English version by the authors. The final Arabic version of the questionnaire was assessed by eight academic experts in sport sciences and piloted by 24 undergraduate students for clarity and appropriateness of the instructions, items, format, content, and possible responses. Based on their feedback, adjustments and changes in the Arabic version were made. The piloting was continued until no further changes were deemed necessary.

Results:

Preliminary analyses

Initially, preliminary data screening was conducted to check missing values, normality, and outliers for each variable. One hundred sixty seven (167) participants'

responses were removed owing to missing data, under the age of 18 years, and inappropriate date. The assumptions of normal distribution were within the acceptable range (Tabachnick & Fidell, 2001).

Doping prevalence and practice

The results shown in Table (1) illustrated that (34.9%) of the participants reported doping is common, while (22.9%) of them reported they know other Omani athletes using doping. Also, the top sources of doping were; supplements and fitness nutrition stores (29.6%) ,fitness coach (4.5%), physiotherapist (4.4), and teammates and friends (3.7%). Finally, the primary reason for using doping was to improve performance (37.1), followed by to play and train longer (25.4), then to win or fear of failure (16.5).

Doping knowledge.

Almost all of the participants (91.1%) know about doping in general. However, the majority (67.7%) did not know any type of doping substances and (33.3%) admitted their knowledge about doping is low. Regarding receiving information on doping, more than half of the participants (52.2%) replied in the negative, whilst the remaining replied in the affirmative. The main sources of doping information were from workshops on doping (14.7%) and from team members; physiotherapist (6%) teammates (5.2%), nnutritionist, (4.4), team coach (4%), and fitness coach (3.6). finally, (39.1%) and (15.5%) of the participants were not aware or did not know, respectively, that athletes could be punished for an unintentional doping.

Statistical analysis :

All statistical transactions were by using SPSS software version 22 , Descriptive statistics was used mean ± standard deviation (SD), Non - parametric tests Wilcoxon test, A normal allocation was assessed with Kolmogorov - Smirnov test, All Sig p values were calculated assuming two-tailed hypothesis; $p < 0.05$ was considered statistically significant.

Table (1)
Reported Prevalence and Knowledge of Doping (N = 504)

Prevalence and Knowledge of Doping	N=504	Chi-square	Sig(p)
Consume energy drinks	N (%)	719.984*	0.000
No	386 (76)		
Yes, during training	28 (5.5)		
Yes, during competition	59 (11.7)		
Yes, during training and competition	31 (6.2)		
Is doping common among Omani athletes?			
Very common	35 (6.9)	194.143*	0.000
Common	141 (28)		
Not common	244 (48.6)		
None at all	82 (16.3)		
Know Omani athletes using doping			
No	387 (77)	147.378	0.000
Yes	115 (22.9)		
Source of doping substances			
Don't know	234 (46.6)	470.382*	0.000
Supplements and fitness nutrition stores	149 (29.6)		
Fitness coach	23 (4.5)		
Physiotherapist	22 (4.4)		
Teammates and friends	19 (3.7)		
Others	55 (10.9)		
Reasons for using doping			
Improve confidence	14 (2.8)	352.667*	0.000
Achieve fame and fortune	31 (6.2)		
Improve performance	187 (37.1)		
Recover from injury	16 (3.2)		
Win and fear of failure	83 (16.5)		
Play and train longer	128 (25.4)		

Prevalence and Knowledge of Doping	N=504	Chi-square	Sig(p)
Others (e.g., everyone use doping, prevent injury, boost financial status)	45 (9)		
Level of doping knowledge			
Very weak	64 (12.7)	207.960*	0.000
Weak	104 (20.6)		
Moderate	216 (42.7)		
High	100 (19.8)		
Very high	21 (4.2)		
Knowledge on definition of doping			
No	43 (8.5)	346.675*	0.000
Yes	461 (91.5)		
Knowledge on types of doping			
No	341 (67.7)	296.393*	0.000
Yes	32 (6.3)		
Some	131 (26)		
Are athletes punished for unintentional doping			
No	78 (15.5)	75.369*	0.000
Yes	229 (45.5)		
Not know	197 (39.1)		
Received information on doping			
No	263 (52.2)	0.960	0.327
Yes, from…	241 (47.8)		
Workshop or course on doping	74 (14.7)	74.465*	0.000
Team coach	20 (4)		
Fitness coach	18 (3.6)		
Physiotherapist	30 (6)		
Nutritionist	22 (4.4)		
Teammates	26 (5.2)		
Others (e.g., pharmacist, friends, internet, family members etc…)	51 (10.1)		

***p<0.05 ** p<0.01 *** p<0.001**

Data illustrated in Table (1) Reported Prevalence and Knowledge of Doping the value of the chi-square ranged between (74.465: 719.984). These values are greater than the chi-square tabular value at the level of 0.05 and the level of significance less than 0.05

Doping Attitudes:

Table (2) showed the overall and mean score of participants' attitudes toward doping, respectively, 20.65 ± 12.6; 2.06 ± 0.88. The majority of the participants displayed negative attitudes toward doping. The highest score was for the statement "Doping is not cheating since everyone does it" with 2.14 ± 1.27 and the lowest for" Doping is necessary to be competitive" with 1.82 ± 1.11. It is clear from Table (2) on the statistical significance of frequency, percentage, chi-square, and the percentage of agreement with the statements of Athletes' attitudes towards doping. The presence of statistically significant differences in all statements, where the calculated value of (chi-square) was greater than the tabular chi-square value at the level of 0.05 (at the degree of freedom 5) = 11.0. The approval rates for all statements ranged between (30.33% to 40.00 %) are shown in figure 1a and 1b.

Table (2)
Mean and Standard Deviation (SD) of Athletes' Attitudes (N = 504)

Attitudes	Mean	SD	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree	Chi-square	Approval Percentage %	Arrangement
Doping is necessary to be competitive.	1.82	1.11	268 53.4%	135 26.8%	40 8.0%	44 8.8%	14 2.8%	2 0.4%	615.708***	30.33%	10
Doping is not cheating since everyone does it	2.14	1.27	206 41.0%	148 29.5%	57 11.4%	61 12.2%	23 4.6%	7 1.4%	357.219***	35.67%	3
Athletes often lose time due to injuries and drugs can help to make up the lost time.	2.2	1.30	207 41.2%	124 24.7%	67 13.3%	80 15.9%	15 3.0%	9 1.8%	327.721***	36.67%	2
Only the quality of performance should matter, not the way athletes achieve it.	2.11	1.31	225 44.8%	127 25.3%	63 12.5%	55 11.0%	23 4.6%	9 1.8%	386.741***	35.17%	5
Athletes in my sport are pressured to take performance enhancing drugs.	1.88	1.08	243 48.4%	144 28.7%	60 12.0%	44 8.8%	9 1.8%	2 0.4%	518.789***	31.33%	9
Athletes should not feel guilty about breaking the rules and taking performance-enhancing drugs.	1.9	1.19	254 50.6%	135 26.9%	51 10.2%	40 8.0%	13 2.6%	9 1.8%	540.135***	31.67%	8
The risks related to doping are exaggerated.	2.13	1.30	215 42.8%	135 26.9%	65 12.9%	56 11.2%	19 3.8%	12 2.4%	362.335***	35.50%	4
Doping is an unavoidable part of the competitive sport.	1.98	1.22	244 48.6%	125 24.9%	64 12.7%	43 8.6%	20 4.0%	6 1.2%	472.606***	33.00%	7
Health problems related to rigorous training and injuries are just as bad as from doping.	2.4	1.48	191 37.9%	124 24.7%	63 12.5%	72 14.3%	28 5.6%	25 5.0%	241.561***	40.00%	1
Legalizing performance enhancements would be beneficial for sports.	2.09	1.34	240 47.8%	115 22.9%	53 10.6%	60 12.0%	24 4.8%	10 2.0%	429.195***	34.83%	6
Mean score	2.06	.88								34.33%	
Overall score	20.65	12.6									

***Chi-square>11.07**

***p<0.05** **** p<0.01** ***** p<0.001**

Figure (1a; Qs 1-6) for Approval Percentage of the phrases in question

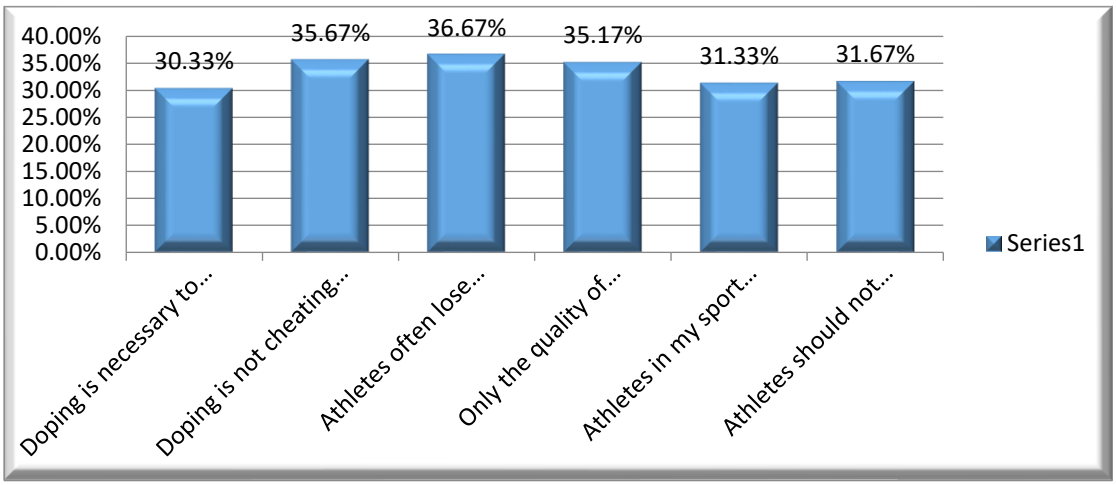
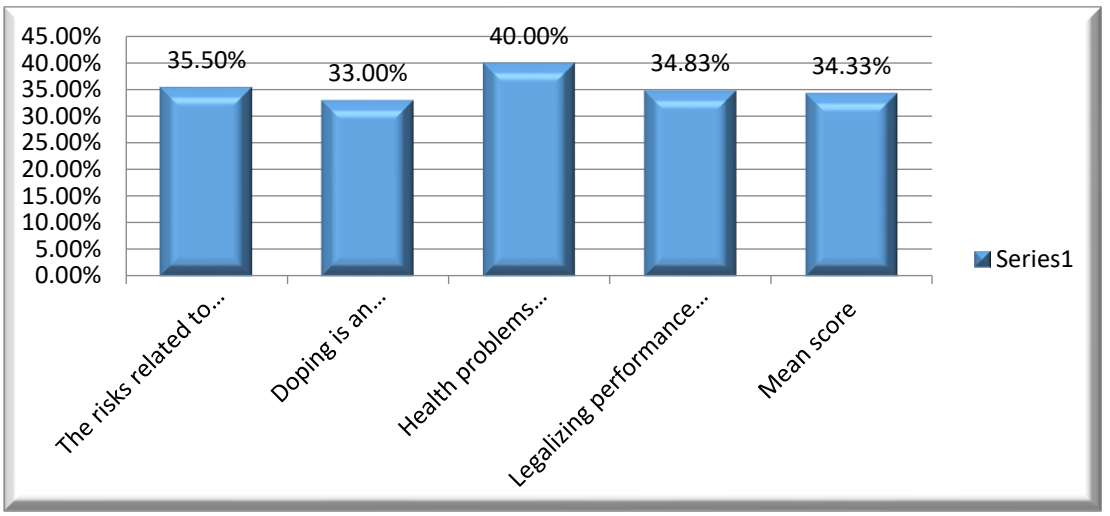


Figure (1b; Qs7-10, M= 34.33) for Approval Percentage of the phrases in question



Doping willingness :

Data illustrated in table (3) revealed the overall and mean score of participants' willingness to engage in doping were, respectively, 17.41 ± 10.81; 1.93 ± 0.88. A significant number of participants had a negative willingness to dope under different risk-conducive circumstance such as if they "were told that you need to bulk up because all the other players/ athletes were much bigger and stronger than you", had the highest score with 2.07 ± 1.06. However, if they "became more attractive to others" revealed the lowest score 1.79 ± 1.13.

In addition to previous, it is clear from Table (3) that the statistical significance of frequency, percentage, chi-square, and the percentage of agreement with the statements of Athletes' Willingness was present in all statements, where the calculated value of (chi-square) was greater than the tabular chi-square value at the level of 0.05 (at the degree of freedom 4) = 9.49. .The approval rates for all statements ranged between (35.80% to 41.40 %) are shown in figure 2a and 2b.

Table (3)
Mean and Standard Deviation (SD) of Athletes' Willingness (N = 504)

Willingness	Mean	SD	Not at all willing	Not willing	Neutral	Willing	Extremely willing	Chi-square	Approval Percentage %	Arrangement
It increased your chances to gain a professional contract or funding.	1.92	1.98	250 49.8%	115 22.9%	79 15.7%	42 8.4%	16 3.2%	334.514***	38.40%	4
You have been heavily underperforming.	1.92	1.08	232 46.2%	136 27.1%	82 16.3%	43 8.6%	9 1.8%	304.514***	38.40%	5
You suffered an injury and needed to recover quickly.	2.06	1.07	220 43.8%	124 24.7%	81 16.1%	66 13.1%	11 2.2%	243.159***	41.20%	2
You thought everyone you were competing against was using a banned substance and getting away with it.	1.94	1.19	229 45.6%	131 26.1%	95 18.9%	36 7.2%	11 2.2%	295.251***	38.80%	3
You were struggling to keep up in training/competition with those around you.	1.91	1.09	242 48.2%	130 25.9%	72 14.3%	47 9.4%	11 2.2%	324.474***	38.20%	6
You were told that you needed to bulk up because all the other players/ athletes were much bigger and stronger than you.	2.07	1.06	225 44.8%	120 23.9%	72 14.3%	69 13.7%	16 3.2%	247.263***	41.40%	1
You were offered them by someone you trusted (e.g., coach, friend, team mate, family member).	1.90	1.15	241 48.0%	135 26.9%	71 14.1%	46 9.2%	9 1.8%	330.112***	38.00%	7
It increased your chances of getting selected (for the team).	1.90	1.06	242 48.2%	131 26.1%	80 15.9%	36 7.2%	13 2.6%	330.570***	38.00%	8
You became more attractive to others.	1.79	1.13	260 51.8%	127 25.3%	81 16.1%	29 5.8%	5 1.0%	405.928***	35.80%	9
Mean score	1.93	.88							38.60%	
Overall score	17.41	10.81								

***Chi-square>9.49**

***p<0.05** ***** p<0.001** **** p<0.01**

Figure (2a; Qs1-5) for Approval Percentage of the phrases in question

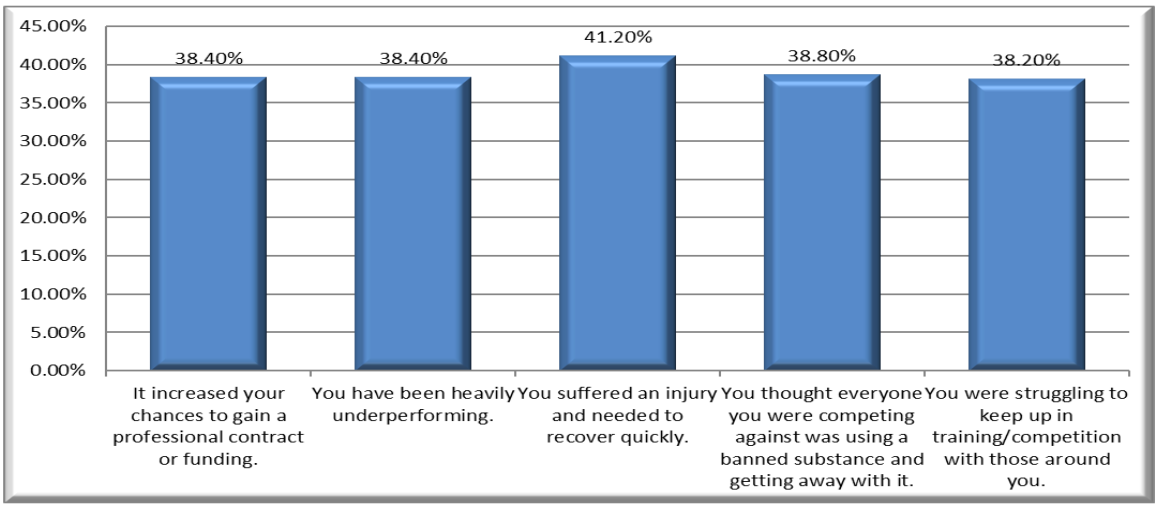
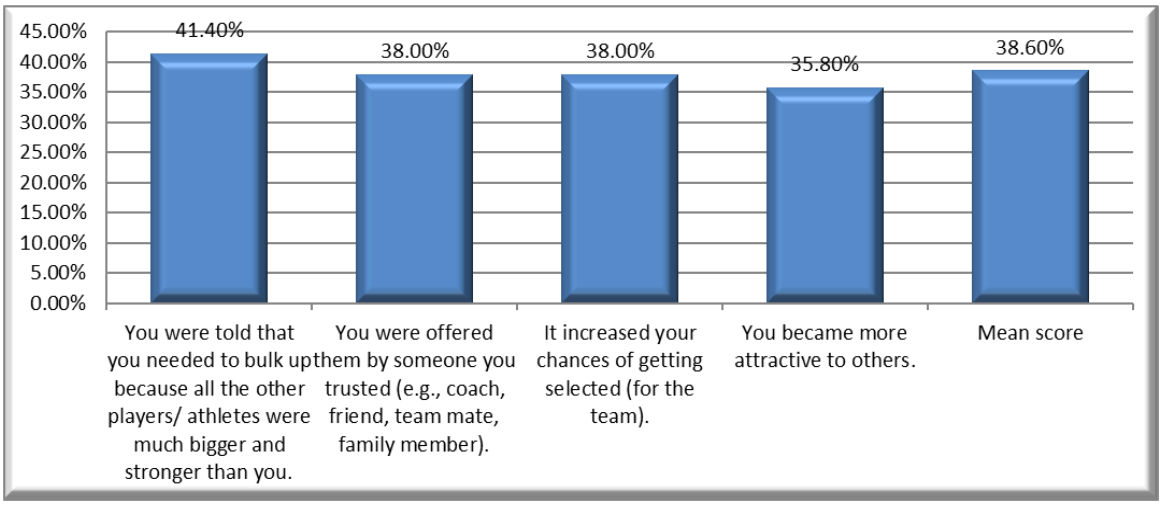


Figure (2a; Qs6-9, M= 38.60) for Approval Percentage of the phrases in question



Discussion:

In Oman, with the continuous development of sport training and competition locally and internationally and its increased physical and psychosocial demands, athletes may be more vulnerable to engage in doping. For this reason, it is very important to provide comprehensive understanding current the status of doping among Omani athletes and evaluate their knowledge, attitudes, and willingness of doping. Therefore, this study endeavored, for the first time, to document the prevalence, knowledge, attitudes and willingness of doping among adults Omani athletes. In accordance with previous results (Al Alabbasi & Almasaodi, 2021; Ghobain et al., 2016) the findings showed that the main reason for using doping was to improve performance. However, it was noteworthy that the second reason was to play and train longer, which is inconsistent with past research (Backhouse et al., 2006) which found that winning, pain reduction, and financial

gain were the top reasons for use of doping substances in sport.

The findings showed that doping is common practice among Omani athletes (34.9%). This was supported by the quarter of the respondents admitted they knew (22.9%) other athletes practicing doping. This finding is in line with previous results showing that the rate of doping prevalence was (17.1%) among elite football players and (40%) among gym users in Saudi Arabia (Alabbasi & Almasaodi, 2021; Al Ghobain, 2019). In addition, the respondents indicated supplements and fitness nutrition stores followed by team members (i.e., team coach, fitness coach, physiotherapist, teammates) were the most frequent providers of doping substances. Previous studies also reported online shopping, friends, and gym-coach were the major providers of doping substances (Alabbasi & Almasaodi, 2021; Wanjek et al., 2007). Interestingly, the top source of doping in this study, Alabbasi, and Almasaodi (2021) study was anonymous (supplements stores and online shopping) which means that athletes are more favorably to deal with unknown sources to get doping substances.

Despite that, the majority of the respondents knew the definition of doping; the majority (76%) of them had moderate-week knowledge about doping. Furthermore, (67.7%) and (54.6), respectively, of the participants were not aware of the types of doping substances and/or being caught for inadvertent intake of doping is punished. Overall, these results are consistent with previous findings, which have also reported moderate-to-poor knowledge in Malaysian and German students' athletes (Chiang et al., 2018; Wanjek et al., 2007).

The findings also revealed that more than half of the participants (52.2%) have never received information of doping that is accordance with previous results (Cetinkaya et al., 2007). The rest of the participants indicated that workshops on doping (14.7), physiotherapists (6%), and teammates (5.2) were the main sources of doping information for them. Previous studied showed that coaches (Chiang et al., 2018; Nolte et al., 2014) and physiotherapist (Ghobain et al., 2016) were the main sources of doping information. Regardless of the inconsistency of information sources for athletes, it is obvious that more effort should be done in the field to educate sport practitioners about doping, particularly coaches, as they are the most influence and critical person in determining of athletes sport-related experiences. Relying on workshops and courses only might not be sufficient and not enough to reach the majority of athletes around Oman.

The majority of the participants displayed negative attitudes toward doping. As presented in Table 3, they strongly disagreed, disagreed, or slightly disagreed with all statements of the questionnaire. It seems that Omani athletes have strong beliefs against doping practices regardless of the sport-related situations. On the other hand, few of the participants have positive attitudes toward doping who may become more susceptible to doping than others. Accordingly, effective anti-doping interventions to change their positive attitudes toward doping is recomemended. Similar findings were reported previously in Chiang et al., 2018 and Kim & Kim, 2017.

Finally, a substantial number of the participants showed their unwillingness to dope under any risk-conducive situations that could make them more vulnerable and open to do so. Although most of the participants had strongly unfavorable attitude toward doping, they were also unwilling to engage in doping. Taken together, the results suggested that the participants may have a strong moral character and perceive doping as unpleasant and wrong, which, in turn, make them less willing to dope (Stanger et al., 2020).

Conclusions

To date, there is no literature to date that details the status of doping among Omani athletes. The findings suggested that not enough has been done to educate athletes with regard to doping awareness and practices and the associated negative health effects in heath and sporting career. In addition, the study draws attention to the prevalence, main motives, and sources of doping in Oman, which could be used for developing an anti-doping evidence-based intervention to protect athletes from doping. Finally, despite the participants had negative attitudes and less willingness to engage in doping, detection and prevention efforts should be continued to embed moral and ethical values against doping.

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