

A Longitudinal Study On Prevalence Of Doping And The Perception Towards Anti-Doping Among Tamil Nadu Youth Football Players

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Abstract

Background: Unintentional use of prohibited substances has led to anti-doping violations among Indian sports players. This study assessed the knowledge, attitude, and practices regarding anti-doping among youth football players.

Methods: A longitudinal study used a pre-validated questionnaire to evaluate attitudes toward performance-enhancing substances and anti-doping rules, followed by a health education session to assess its impact through a post-test.

Results: Only 58.27% were aware of WADA/NADA, and just 28.06% understood doping violations. Discussions with physicians were low at 15%. Post-education, 74% reported improved knowledge, and 62% noted a positive attitude change.

Conclusion: Low awareness of prohibited substances is concerning. Recommendations include awareness campaigns, web-based materials, and integrating anti-doping education into curricula.

Keywords: Prohibited substance, drugs, WADA, NADA, anti-doping rule violation (ADRV)

Introduction

Doping, as defined by World Anti-Doping Agency (WADA), is the occurrence of one of more antidoping rule violations (ADRVs) set forth in article 2.1 through 2.10 of WADA code. It is considered an offence when the sportsperson tests positive for the banned substance (“WADA Update on Compliance Status of the South Africa NADO | World Anti Doping Agency,” n.d.; “Prohibited List | World Anti Doping Agency,” n.d.). India has jumped to second position in number of antidoping rule violations according to the report for 2020 published by WADA in 2023 (“Anti-Doping Rule Violations (ADRVs) Report,” n.d.). Substance use has emerged as a significant social health issue affecting communities, necessitating urgent attention and action. While efforts to control cocaine use have intensified due to its escalating prevalence, the misuse of amphetamines and other substances also requires targeted interventions. They not only affect the health of the consumer, but some time has an effect on the off springs too (Castaldelli-Maia et al. 2023; Venkatesh et al. 2024; A et al. 2024; As et al. 2022; Manzar et al. 2022). With the existing literature it is evident that insufficient knowledge on anti-doping rules is the major causes of this behavior, in addition to over-the-counter medications possessing these prohibited substances, negligence in checking the ingredients, improper labelling or contamination of the supplements. It is observed that doping test has been nowadays put into practice in areas involving simple athletes too, as compared to earlier days, where it was seen only in highly competitive areas (Review 2023; Somerville and Lewis 2005; Green, Catlin, and Starcevic 2001; Kamber et al. 2001). Though several violations of anti-doping rules were reported on Indian sportspersons and some of these were mainly due to unintentional use of prohibited substances. In many cases the hearing panels of National Anti-doping Organization (NADO) have agreed the anti-doping violation to be due to accidental ingestion of prohibited substances (Krishnan et al. 2022; Rivkin and Martens 2002; “Home” 2024). The attitude and mentality of athletes engaging in fair competition is demonstrated in the play and sportsmanship (Serrano-Durá, Molina, and Martínez-Baena 2021). The young athletes using performance-enhancing substances is said to be inclining in recent years and has been a growing concern. In youth sports, where athletes are still developing and are vulnerable to external influences Anti-doping measures play a crucial role in ensuring fair play and maintaining the integrity of athletic competitions. The attempt to put an end to doping has been carried out by The International Olympic Committee

and the International Sports Federation in the last century, but has been in vain (Baron, Reardon, and Baron 2013).

There has been only a handful of research done in India on doping, especially in young athletes. Our study tries to determine the self-reported prevalence of doping in youth academy football players and to assess the awareness, attitude, and preventive measures on doping. As these players tend to be the future face of the country, it is very essential to increase their awareness on the concept of doping to prevent them from swerving into an iniquitous path and thereby defending the value of competitive sports. The study aims to assess the current state of awareness and attitudes toward doping and the effectiveness of educational interventions designed to enhance understanding and promote compliance with anti-doping regulations.

Materials and methods

A longitudinal study was conducted among football players in Chennai, Tamil Nadu, from October to December 2023. The study population consisted of academy football players aged 14-24 years. Inclusion criteria were players within the specified age range, while recreational players, inaccessible individuals, and those who declined consent were excluded. Based on a previous study's 91.3% prevalence of antidoping knowledge in India (Krishnan et al. 2022), with a 95% confidence interval and 5% margin of error, a sample size of 127 was determined using the formula $4pq/12$. Accounting for a 10% non-response rate, the final sample size was 139.

A multistage random sampling method was used to select the sample. Initially a random sampling technique was used to select five academies in Chennai and from the list of players falling under our eligibility criteria a total of 139 participants were selected using.

Interviewer method was employed for data collection. A pre-validated, pre-tested semi-structured questionnaire consisting of basic demographic details along with awareness including Knowledge about doping, WADA, NADA, and prohibited substances, attitude evaluating Perceptions of doping and anti-doping measures and Self-reported behavior regarding doping practices was used (Krishnan et al. 2022). Following the initial data collection, a comprehensive health education session was conducted. The session included topics on definition and types of doping, overview of WADA and NADA, information on prohibited substances and methods, therapeutic drug exceptions, dope testing and antidoping rule violations were provided to all players available in the academies included in the study. The same questionnaire was used after 3 weeks to evaluate the impact of the health education session in the awareness, attitude, and behavior. The data collected were entered in MS excel and SPSS version 23 was used for analysis of the same. The descriptive components will be displayed as frequency and percentage and chi square was done.

The purpose of the study was well explained to all participants and only those who consented were included in the study. The confidentiality of the data collected was maintained. All the players were explained that the data collected will only be used for research purposes and the right to withdraw from the study at any point of time was clearly explained.

Results

A total of 139 football players from five different academies participated in our study. Among our study participants 53(38.13%) were <18 years old and 86(61.87%) were >18 years of age and the mean age was found to be 21.33 ± 3.25 . Only 66(47.48%) of the participants stated previous exposure to anti-doping campaigns.

With pre-test observations, only 81(58.27%) of the study participants knew about NADA and WADA. Out of the 46(33.09%) who stated they were aware regarding anti-doping rule violations only 27(19.42%) athletes were aware of the duration of ban, 36(25.90%) were aware that they might lead to financial penalty and only 30(21.58%) were aware regarding ban on coach. Though the players stated they were aware of the prohibited substance and methods, only 31(22.30%) were able to identify few of the substances, whereas most of the study participants gave a general opinion stating oral and injectable forms as the method of use. Of the total participants only 34(24.46%) were aware regarding the side effects of prohibited substances. Some of the common side effects stated were weight gain and hair fall. A very few also stated kidney damage, liver damage, heart damage as side effects. Diego Maradona was quoted as an example for a World class sports man banned due to doping by 39(28.05%). None of the study participants gave a history of consumption or supplying prohibited substances to the teammates. All the participants stated nil history of substance use among teammates. None of our study participants had ever undergone a doping test. Only 94(67.63%) of the participants valued health over medals and 108(77.70) of them felt doping knowledge is less in sportsmen. It was also observed from the data collected that only 21(15.11%) of the participants had a discussion with the team physician before taking medicine or supplementations.

Table I shows a significant improvement in knowledge on NADA/WADA, anti-doping rule violation and its ban, prohibited substance, methods and its side effects at post test conducted three weeks after the health education session. Table II shows significant improvement in attitude towards antidoping, health and medication practice among the football players three weeks post health education session.

Three weeks after the health education session following pre-test, a post test was done, and the following observations were made. Of total participants more than 90% were aware of WADA/NADA. The awareness on anti-doping rule violation and the ban for doping rule violation improved to more than 80%. More than 60% of the participants were able to identify a few prohibited substances along with the route of intake. More than 80% of the participants became aware regarding the side effects of prohibited substances and gave more specific answers compared to pre-test. Thus, a statistically significant improvement was observed with regards to knowledge on anti-doping following a health education session among the study participants. In regard to attitude and practice, in spite of detailed explanation of the side effects of the prohibited substance and the importance of health and wellbeing, only 100(71.94%) accepted the fact that health is more important than the medal. Table III shows majority of the study participants stating >65% of improvement in knowledge and attitude towards avoiding doping substance after attending health education session. It was observed that with the administration of health education session around 103(74.11%) and 86(61.87%) stated that their knowledge and attitude towards avoiding doping substance has improved in a larger scale.

Discussion

While many studies on doping concentrate on elite or adult athletes, this research targets youth football players in Tamil Nadu. The longitudinal approach allows for the observation of changes in awareness, attitudes, and behaviors over time, particularly before and after a targeted educational intervention. The inclusion of a structured health education session covering a wide range of topics related to doping—such as WADA and NADA regulations, therapeutic drug exceptions, and the implications of doping—adds depth to the study. By assessing participants three weeks after the educational session, this study captures the short-term impact of educational initiatives.

In a study done by Krishnan A et al., in India among elite athletes showed low awareness regarding anti-doping rule violations and agencies and only <40% reported receiving updates on antidoping. More than 80% of the athletes valued health more than medals. It was also seen that those who had exposure with antidoping sessions had higher knowledge and also reported higher percentage of team doctor consultation before taking therapeutic drugs and supplements compared to others (Krishnan et al. 2022). In our study done among regular athletes of the academy almost similar results were found but only 72% of our study valued health more than medals. In a study done by et al in Japan among the elite and regular athletes, those athletes who had learning opportunities in the past had better scores than those who did not and observed the opportunities available for the elite players were higher when compared to regular players. Thus it was suggested that acquiring knowledge was significantly based on the availability of learning opportunities and those exposure to be adequately provided to the regular players too (Inai et al. 2023). A similar observation was seen in our study where the post test showed highly significant improvement in knowledge and attitude towards anti-doping. At Least once in a year revision of International standards of prohibited substances is practiced, thus the players need to check with the revision and be updated with the latest (“Prohibited List | World Anti Doping Agency,” n.d.). It is advisable to have an AD health education session at least once a year with the recent update. There is also an intense need for the players to have adequate knowledge on substance use, because not all supplement manufacturers are legally obliged to indicate all the ingredients on the product label, thus improper labelling of supplements end up leading the player to anti-doping rule violation (Judkins, Teale, and Hall 2010; _ 2018; Outram and Stewart 2015).

The reference online allows them to search for the product and ingredient for prohibited substances which helps them identify the prohibited substances (“Prohibited List | World Anti Doping Agency,” n.d.). It is better to have a consultation with the medical team associated with the academy before consumption of any drug rather than consuming over the counter medications for common ailments like cold, fever and pain; thereby preventing the anti doping rule violation. Internationally there are several surveys on anti-doping conducted among the 14 – 24 year old athletes reporting the need to strengthen AD education (Inai et al. 2023; Imanishi, Kawabata, and Takayama 2017). Taking into consideration that these young athletes may be the future face of India, it is essential to have adequate intervention at this phase. In reference to the comments provided by the majority of the study participants, requesting an awareness campaign at a more frequent interval for refreshment of their knowledge would widely be of great help.

This study highlights the need for ongoing educational initiatives within youth sports programs. Policymakers and sports organizations should prioritize comprehensive anti-doping education to foster a culture of integrity and fairness in sports. While the study provides valuable insights, it is important to acknowledge its limitations. The reliance on self-reported behavior may introduce bias, and the short follow-up period may not capture long-term changes in attitudes and behaviors.

Conclusion

The longitudinal study demonstrates that youth football players in Tamil Nadu have significant gaps in awareness and attitudes regarding doping. It can be suggested to include anti-doping education as a part of

curriculum in school. Providing general athletes with an opportunity to learn about anti-doping is crucial to improve the knowledge through Web-based educational materials. Educating the young players regarding anti-doping will have a great impact when they become professionals representing the country. Thus, regular health education and evaluating the content and understanding of the session provided on a regular basis will help us achieve anti-doping. In addition to all these all players should be encouraged to consult the sports medical team before stating on any supplementation and to be pessimistic regarding self-medication or over the counter medications for common ailments.

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Table 1: Knowledge on anti-doping among study participants

Knowledge on anti-doping		Pretest N(%)	Posttest N(%)	P value
Awareness regarding NADA/WADA	Present	81(58.27)	129(92.81)	<0.0001
	Absent	58(41.73)	10(7.19)	
Awareness on anti-doping rule violation	Present	46(33.09)	125(89.92)	<0.0001
	Absent	93(66.91)	14(10.08)	
Awareness on ban for doping rule violation	Present	39(28.06)	118(84.89)	<0.0001
	Absent	100(71.94)	21(15.11)	
Awareness on prohibited substance and methods	Present	31(22.30)	93(66.90)	<0.0001
	Absent	108(77.7)	46(33.1)	
Side effects of prohibited substance	Present	34(24.46)	123(88.49)	<0.0001
	Absent	105(75.54)	16(11.51)	
Performance enhancing prohibited substance cause death	Present	87(62.59)	137(98.56)	<0.0001
	Absent	52(37.41)	2(1.44)	

p value <0.0001 is considered to be highly statistically significant.

Table 2: Attitude and behavior towards anti-doping among study participants.

Attitude over anti-doping		Pretest N(%)	Posttest N(%)	P value
Prohibited substance and method improve performance	Present	108(77.70)	137(98.56)	<0.0001
	Absent	31(22.3)	2(1.44)	
Health more precious than Medal	Present	87(45.07)	105(75.53)	<0.0195
	Absent	52(54.93)	34(24.47)	
Discussion with physician before taking medicine/supplementation	Present	21(15.11)	110(79.13)	<0.0001
	Absent	118(84.89)	29(20.87)	

p value <0.0001 is considered to be highly statistically significant.

Table 3: Self-reported impact of health education session on study participants

Impact of anti-doping health education on study participants	Frequency N(%)	
Improvement in knowledge after attending antidoping health education session	<35%	11(7.91)
	36% - 65%	25(17.98)
	>65%	103(74.11)
Improvement in attitude towards avoiding doping substance after attending health education session	<35%	19(13.67)
	36% - 65%	34(24.46)
	>65%	86(61.87)