International Journal of Research in Hospital and Clinical Pharmacy

Evaluation of knowledge and perceptions of pharmacy students towards doping and the need for doping education

Vismaya Annie Vinod^{*1}, Dhanya Dharman², Merlin N J⁴, Deepa Manohar³, Shaiju S Dharan³, Sunitha Mahadevan¹, Aleena Roy¹

¹IVth year Pharm D student, Ezhuthachan College of Pharmaceutical sciences, Trivandrum, Kerala, India.

²Department of pharmacy practice, Ezhuthachan College of Pharmaceutical sciences, Trivandrum, Kerala, India.

³Department of pharmaceuticals, Ezhuthachan College of Pharmaceutical sciences, Trivandrum, Kerala, India.

⁴Department of Pharmacology, Ezhuthachan College of pharmaceutical Science, Trivandrum, kerala, India.

ABSTRACT

Background: Despite the need for doping prevention strategies, information about doping awareness among pharmacy professionals is limited. Therefore, developing a pharmacy workforce or specialized pharmacists with expertise in sports pharmacy is a necessity, but also a subject of global health significance.

Objective: Objective of this study was to assess pharmacy student's knowledge and perceptions of doping and anti-doping in sports and to explore the curricular needs in the field of sports pharmacy. **Methodology:** An 18 item questionnaire developed according to World Anti-Doping Code and the FIP Statement on pharmacist's role against doping in sports was employed to collect data from pharmacy students at Ezhuthachan College of pharmaceutical sciences. Data were analyzed using descriptive and inferential statistics. **Results:** Questionnaires were distributed to 300 pharmacy students, among them 237 students participated in the survey, with a response rate of 79%. respondents said that they were familiar with the word doping were 78%. 39 respondents (16.5%) had attended a lecture about doping, (83%) had not. 222 respondents held the view that it is not fair for the athletes to use prohibited substances to improve their performance were (94%). According to 40 respondents (17%), most common doping violation in India is unintentional doping and 175 respondents (74%) claimed it to be intentional doping. Only a few respondents correctly recognized the WADA- banned drugs. Most of the respondents think that pharmacist should get involved in anti-doping activities for athletes. Many (73 %) are interested to have training for doping. **Conclusion:** The study highlights the need to provide pharmacy students with advanced theoretical background and practical training concerning doping.

Keywords: WADC; WADA; FIP; OTC.

ISSN: 2582-0672

Research Article

Corresponding Author

Name: Dhanya Dharman

Email: dhanyadharman07@gmail.com

Article Info

Received on: 15-06-2019

Revised on: 21-07-2019

Accepted on: 30-07-2019

DOI: <https://doi.org/10.33974/ijrhcp.v1i4.130>

Copyright © 2019, Vismaya Annie Vinod et al., Evaluation of knowledge and perceptions of pharmacy students towards doping and the need for doping education, Production and hosting by Rubatosis Publications. All rights reserved.

INTRODUCTION

For athletes across a wide spectrum of sports, the use and abuse of medicines, dietary supplements and other substances has become a common and problematic phenomenon. Doping is not only the use or attempted use of prohibited substances or methods by athletes, but also can be committed by anyone who assists in, encourages, aids, abets, conspires with, or covers up a doping rule violation, or engages in any type of international complicity involving an anti-doping rule violation or any attempted violation. Such activity is strictly prohibited by the World Anti-Doping Code (WADC).^[1] Doping is defined as the occurrence of one or more of the anti-doping rule violations set forth by WADA. It is each Athlete's personal duty to ensure that no Prohibited Substance enters his or her body. Athletes are responsible for any Prohibited Substance or its Metabolites or Markers found to be present in their Samples. ^[1] Doping presents dangers to both athletes and society generally. The risks to those participating in activities designed to

improve performance, generally arise from the nature and concentration of the substances used and from the methods adopted. The World Anti-Doping Agency (WADA) was formed in 1999, as a result of an increasing awareness internationally of the need to intensify efforts to fight doping in sports. The WADA has taken over responsibility for international doping control from the International Olympic Committee. A new World Anti-Doping Code, created by the WADA, became effective globally in January 2004. This Code contains, among other things, lists of prohibited substances and prohibited methods. The intention is that the Code will encourage harmonization and co-ordination and make national and international anti-doping programmes more effective in terms of detection, dissuasion and prevention.^[2] The objectives of doping control are to guarantee equity and fairness between competitors and to ensure the safety of the athletes. Accordingly, articles 18 and 19 of the 2015 World Anti-Doping Code were approved and adopted at the fourth World Conference on Doping in Sports.^[3] India plays a leading role in supporting sports nationally and globally. Therefore, developing a pharmacy workforce or specialized pharmacists with expertise in sports pharmacy is a necessity, but also a subject of global health significance. Thus, pharmacy colleges in the country may need to incorporate sports pharmacy content into their curricula. Athletes experience significant social and commercial pressure to win and succeed in sports. This drives them to enhance their performance. Some resort to illegal performance-enhancing substances and/or prohibited methods such as blood transfusions.^[4] Pharmacists dispensing, consulting, or prescribing to athletes who are subject to drug testing must take responsibility for knowing what substances are banned, permitted, or restricted by the athlete's specific sports-governing agency (or agencies), and prevent them from inadvertently taking medications that are not permitted during competition or even out of competition. Banned substance lists can be complicated and are not universal or standardized; they often vary significantly, depending on which organizations are sanctioning and governing the sporting events, and there may or may not be a process for obtaining medical exceptions for a particular drug. Knowledge of pertinent banned-substances lists and adequate record keeping are essential, and pharmacists are in prime position to take responsibility for this.^[5]

METHODOLOGY

A cross-sectional Questionnaire survey was conducted among pharmacy students at Ezhuthachan College of Pharmaceutical Sciences. An 18-item questionnaire was developed. A thorough review was conducted of relevant literature pertaining to knowledge, views, and practices of pharmacists, pharmacy students, and other health care professionals towards the use of drugs in sports. The FIP Statement on pharmacists' role against doping in sports,

the WADA List of Prohibited Substances, and the World Anti-Doping Code were also used in developing the survey.

The survey includes three main domains: 1) the knowledge of doping among pharmacy students. 2) pharmacy students' perception about sports pharmacist. 3) pharmacy students' attitude and interest towards doping education and training. The questionnaire included multiple choice questions. The questionnaire was validated by the institutional ethical committee. The appropriateness, comprehensiveness, readability, and completion time of the survey items were pilot tested among 6 recent pharmacy graduates from the institution.

The questionnaire consisted of 18 questions. The first three questions of the questionnaire gathered personal questions on age, gender and their respective courses. The next twelve questions collected data regarding students' knowledge on doping and related affairs. These included those questions to find out their familiarity with the word doping, their views towards consumption of doping and the role that awareness can play in preventing doping abuse. The last three questions were formulated to assess their interest towards opportunities in doping related affairs and flourishing of sports pharmacy in the country.

Data collection: Data were collected during the 2018–2019 academic year. The questionnaires were distributed to students assembled in the college auditorium and retrieved immediately after completion. Completion time was estimated at approximately 10 minutes. Participants were made aware of the purpose of the study, that their participation was entirely voluntary and that all data gathered were fully anonymous and to be handled with confidentiality. Willing participants were only chosen for study. Questionnaires were distributed to 300 pharmacy students. Two-hundred thirty seven students completed the questionnaire, with a response rate of 79%. Among these individuals, males were 45 and females were 192. The participants from each course ranged between 23–96 students: 91 (38.3%) Pharm D, 23 (9.7%) M Pharm, 96 (40.5%) B Pharm, 27 (11.3%) D Pharm. All the participants were between the age group 18–25.

Statistical analysis: All data collected were analyzed using both descriptive and inferential statistics. Percentages were used to summarize all the responses generated from the survey. The level of significance was set at a p value #0.05.

RESULTS

The college, established in 2003, currently has 4 approved academic degree programs: Pharm D, M Pharm, B Pharm and D Pharm. Among the total

strength, that include 450, Questionnaires were distributed randomly to 300 pharmacy students, among them 237 students participated in the survey, with a response rate of 79%. Within the respondents, All participants were between the age group 18-25. Majority of respondents were females, as they were 81%. 185 respondents (78%) said that they were familiar with the word. 39 respondents (16.5%) had attended a lecture about doping, (83%) had not. 222 respondents (94%) held the view that it is not fair for the athletes to use prohibited substances to improve their performance. According to 40 respondents (17%), most common doping violation in India is unintentional doping and 175 respondents (74%) claimed it to be intentional doping. Only a few respondents^[19] correctly recognized the WADA-banned drugs. Most respondents (50%) knew that OTC medicines and dietary supplements might contain prohibited substances. (6%) were unaware that names of prohibited substances might not appear on the ingredient labels of dietary supplements. 177 respondents (75%) think that pharmacist should get involved in anti-doping activities for athletes. 174 respondents (73 %) are interested to have training for doping. The participants wishing for a flourishing sports pharmacy were 213 (89%).

Most respondents (54.8%) knew that OTC medicines and dietary supplements might contain prohibited substances. (38.3%) were unaware that names of prohibited substances might not appear on the ingredient labels of dietary supplements. The P-Value is < 0.00001. The result is significant at $p < 0.05$.

DISCUSSION

Objective of the study is to evaluate the current knowledge of pharmacy students about doping and sports pharmacy. Doping involves only the use or attempted use of prohibited substances or methods by athletes, but also can be committed by anyone who assists in, encourages, aids, abets, conspires with, or covers up a doping rule violation, or engages in any type of international complicity involving an anti-doping rule violation or any attempted violation. So the pharmacist trained in the area of antidoping can play a major role in doping prevention. For that there is need of adequate knowledge and training.

Figure 1: Respondents' knowledge on the presence of prohibited substances in dietary supplements and OTC products

Most respondents (54.8%) knew that OTC medicines and dietary supplements might contain prohibited substances. (38.3%) were unaware that names of

prohibited substances might not appear on the ingredient labels of dietary supplements. The P-Value is < 0.00001. The result is significant at $p < 0.05$.

Study shows that most of the students have only heard of the word doping and only a small percentage have attended a lecture on the topic. In a similar study conducted in Japan ^[6], the majority of responding pharmacy students claimed to have heard about doping.

Throughout the course of a pharmacy program, students may learn about therapeutic and toxic effects of drugs. But they are not being able to distinguish these drugs based on their effect in doping. The majority of the respondents did not identify the WADA banned drugs correctly as in a similar study conducted in Syria.^[7]

Most respondents knew that OTC medicines and dietary supplements might contain prohibited substances. not aware that some prohibited substances might not appear in ingredients label. Here, athletes can take disadvantage by the pharmacist's lack of such knowledge; so students need to acquire this knowledge as part of their education.

Elements of sports pharmacy that could be incorporated include the regulation of drug use in sports, substances and methods prohibited in sports, systems for doping control, and pharmacy clinical services to advise and support individuals who participate in sports and exercise. Pharmacy educators should work closely with sports pharmacy experts and relevant national and international organizations and stakeholders to design standardized course syllabi that address the safe and effective use of medications in sports. A continuing professional development module could also be designed for training practicing pharmacists to play a more effective role in sports events and/or work in association with hospitals or clinics that primarily focus on sports patients.^[8]

In alignment with previous studies ^[6,7,8], this study indicated that pharmacy students support sports pharmacy being incorporated into the curriculum. Many of the findings were in line with previous studies ^[5-8].

When Universities prepare their curriculum to address doping in the future, content relevant to these areas should be included and creatively developed to ensure high interest among pharmacy students. In addition, it is important for sports pharmacists to have a relationship not only with athletes and coaches but also with other pharmacists and pharmacy students, because there will also be a need in the future for general pharmacists to have appropriate knowledge of doping and supplement use. Lectures for the general public are also valuable, because appropriate knowledge of anti-doping activities will contribute to the formation of public opinion and will

Table 1: Attitudes and perceptions of students

Variables	YES	NO
Heard of doping	185	52
Attended doping lecture	40	197
Is it fair for the athletes to use prohibited substances to improve their performance.	15	222
Is there prohibited substances in dietary products	130	107
Prohibited substances might not appear in the label of dietary products	91	157
Pharmacist should lead an active role in anti doping activities	170	67
Interested for training	174	57
Wish for a flourishing sports pharmacy	213	18

Table 2: Identification of WADA banned drugs

Identification of WADA Banned drugs	Amphetamine	Acetaminophen	Clonidine	Methadone	Number
Point A (correctly identified)	+	-	-	+	19
Point B (identified only one drug)	-	-	-	+	144
Point C (wrongly identified)	-	+	+	-	47
Point D (couldn't answer)					27

While correlating the WADA banned drugs identification of students and their attendance at lecture, The P-Value is .035253. The result is significant at $p < 0.05$.

help demonstrate the significance of the pharmacist's role. The findings and suggestions offered in this study can help us and others prepare new lectures that incorporate the needed content; this new curriculum should be evaluated with more advanced research techniques in the near future. For an international audience, especially people related to pharmacy education, we would like to ask to include the education of doping in the curriculum of pharmacy school for all students because all pharmacists might have opportunity to advise taking medicine to athlete at general community pharmacy.^[6]

This study has got so many limitations. It was done on a single pharmacy institution in India and not be generalizable to all pharmacy colleges in the country. In general, most of the students have valued the role that pharmacists could play in doping prevention. It is to be noted that those who support doping abuse are identified by this study and are not likely to be educated about doping risks. However, pharmacists can act as a resource of information for athletes, doping abusers and those who seek information on adverse effects of performance-enhancing substances.

CONCLUSION

Significance of the study is that it finds out the importance of education and research programs in preventing doping in sports and to provide appropriate education of pharmacy students on the topic of doping thereby boosting the growth of sports pharmacy.

ACKNOWLEDGEMENT

This research was supported by Ezhuthachan College of pharmaceutical sciences, Trivandrum. I thank my colleagues who provided insight and expertise that greatly assisted the research. I thank Miss. Dhanya Dharman, assistant professor, department of phar-

macy practice] for assistance with [particular technique, methodology], and [Dr. Merlin N J, director of PG studies, Ezhuthachan college of pharmaceutical sciences] for comments that greatly improved the manuscript. I would also like to show our gratitude to the (Prof. Shyju S Dharan, principal, Ezhuthachan College of pharmaceutical sciences.) for sharing their pearls of wisdom with us during the course of this research, and I thank anonymous reviewers for their so-called insights. I am also immensely grateful to my professors and my family for their comments on an earlier version of the manuscript, although any errors are our own and should not tarnish the reputations of these esteemed persons.

CONFLICTS OF INTEREST

The author declares no conflict of interests

REFERENCE

1. Hughes, D. (2015). The world anti-doping code in sport: update for 2015. Australian prescriber, 38(5), 167.
2. FIP statement of professional standards: the role of the pharmacist in the fight against doping in sport. 2005. Link Url; http://www.fip.org/www/uploads/database_file.php?id5208&table_id. Accessed August 3, 2014.
3. World Anti-Doping Code. 2015. Accessed September 1 2014.
4. Bloodworth, A. J., Petróczi, A., Bailey, R., Pearce, G., & McNamee, M. J. (2012). Doping and supplementation: the attitudes of talented young athletes. Scandinavian journal of medicine & science in sports, 22(2), 293-301. doi:10.1111/j.16000838.2010.01239.x.

5. Ambrose, P. J. (2008). An advanced pharmacy practice experience in sports pharmacy. *American journal of pharmaceutical education*, 72(1), 19.
6. Saito, Y., Kasashi, K., Yoshiyama, Y., Fukushima, N., Kawagishi, T., Yamada, T., & Iseki, K. (2013). Survey on the attitudes of pharmacy students in Japan toward doping and supplement intake. *Biological and Pharmaceutical Bulletin*, 36(2), 305-310. Pubmed: 23370359.
7. El-Hammadi, M., & Hunien, B. (2013). Exploring knowledge, attitudes and abuse concerning doping in sport among Syrian pharmacy students. *Pharmacy*, 1(2), 94-106. Doi:10.3390/pharmacy1020094
8. Awaisu, A., Mottram, D., Rahhal, A., Alemrayat, B., Ahmed, A., Stuart, M., & Khalifa, S. (2015). Knowledge and perceptions of pharmacy students in Qatar on Anti-Doping in sports and on sports pharmacy in undergraduate curricula. *American journal of pharmaceutical education*, 79(8), 119.
9. Ambrose, P. J. (2011). Educational opportunities and anti-doping roles and responsibilities for pharmacists. *Yakugaku Zasshi*, 131(12), 1761-1764.
10. Ambrose, P. J. (2004). Drug use in sports: a veritable arena for pharmacists. *Journal of the American Pharmacists Association*, 44(4), 501-516. Pubmed: 15372871.