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Doping Practices, Knowledge of Anti-Doping Control and Roles of Physical Education Teachers in Anti-Doping Education

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Abstract: The role of coaches in promoting anti-doping education among athletes is well researched in the western world. The present study examined the role of Physical Education (P.E.) teachers in anti-doping education in Ghana under doping practices, knowledge of anti-doping control and the importance of doping education in training programmes among student-athletes. Semi-structured interviews involving eleven P.E. teachers aged 31-46 who coached all the sporting disciplines in Senior High Schools-football, handball, netball, hockey, volleyball, table tennis, badminton and athletics were conducted. Based on the preliminary results, additional information was requested from 10 student-athletes on the use of doping products and the harmful effects. The interviews were transcribed, and the data were analysed thematically. The findings revealed that although coaches and athletes are aware of the effects of doping, the effort to promote anti-doping education have been met with resistance as students claimed P.E. teachers are not health professionals. To be recognised as the best, P.E. teachers were also found culpable of aiding students to use banned performance-enhancing drugs during competitions. A worrying picture of the present study is the sale of drugs to people especially the youths without prescriptions. This has not led only to loss of lives, but to an increase in doping cases, as students can easily have access to drugs that can be used in doping. The present study proposes recommendations and suggestions to the political stakeholder, based on its findings.

Keywords: anti-doping, performance-enhancing substances, student-athletes, government, sports

1. Introduction and background

The role of coaches in promoting anti-doping education among athletes has been examined thoroughly in the western world [1-6]. Kirby et al. [5] after examining the experiences of five athletes advanced that an important factor resulting in the decision to dope was inadequate information on doping. Smith [6] opined that beliefs, knowledge and interaction on doping issues by athletes' support personnel including coaches, managers and governing bodies contribute to delineating admissible behaviour within a sport. Coaches as part of an athlete support personnel are expected to assist spread anti-doping education to help control doping practices as they can influence an athlete to dope or desist from doping [7-8]. Allen et al. [9], observed that despite the accusation of coaches as key agents to promote doping among athletes' little was known about coaches' perception. It was hypothesised that issues raised by coaches varied and influenced previous actions and judgements. Notwithstanding, there is very little anti-doping research on P.E. teachers' role in athlete's behaviour published outside of westernized countries.

Despite the role of influencing athletes' decision to dope, coaches play an integral part in the athletes' network and served as a reliable source of information concerning doping issues [10]. Considering this, coaches and teachers must assist athletes who are using performance-enhancing drugs to overcome doping practices by promoting anti-doping education as athletes often use coaches' behaviours to justify doping [11]. An analysis of coaches' beliefs, knowledge and attitude on doping revealed that coaches have favourable attitudes towards anti-doping and can encourage athletes to understand and comply with anti-doping rules by promoting a positive performance environment [12]. Engelberg and Moston [13] examined fourteen elite coaches' anti-doping knowledge, beliefs and attitudes in Australia and maintained that coaches have low level of knowledge of banned substances and practices. When prompted on doping prevalent in sports, they believed that doping was not an issue since it cannot facilitate in the development of a particular sporting skills. Instances, when coaches

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have inadequate knowledge of anti-doping education, can be detrimental to students' doping values and health. A typical example is a study by Blank et al. ^[14] who recommended continuous training of coaches to increase knowledge to become competent to promote anti-doping in a trustworthy manner and to assist athletes develop and adjust set values.

Nevertheless, studies on coaches' roles to conduct anti-doping education have revealed that most of the coaches lack the confidence or the knowledge to discuss anti-doping issues with the athletes. Engelberg et al. ^[4] maintained that coaches hardly discuss doping issues with athletes and other coaches and further recommended anti-doping education to be part of the coaching education process supported with strict compliance legislation that further task coaches to provide evidence that they provide preventive measures for athletes. Blank et al. ^[14], saw coaches as a strong influencing factor in regulating athlete's behaviour and attitudes and hypothesised that coaches should be included in targeted education strategies in doping control. Therefore, the role of coaches in anti-doping education cannot be ignored especially in places where there are no agencies campaigning against it.

The World Anti-Doping Agency (WADA) has established policies to combat the social challenges among athletes at the international level. At the national level, sports organisations are expected to implement and monitor the policies to the various sporting associations. In the developed world like Europe and America, specially trained people called Anti-doping advisors have been mandated to disseminate information about anti-doping rules and violations to ensure and promote clean sport. Spanish Agency for Health Protection in Sports (AEPSAD) and the UK Anti-Doping Agency are nationally recognised bodies responsible for conducting anti-doping education. This ensures that doping education is conducted at all levels.

On the contrary, most of the developing countries do not have national governing bodies in charge of anti-doping education. In Ghana, for instance, the ministry of youth and sports recently inaugurated a nine-member National Anti-Doping Committee (NADC) to produce a legal framework leading to the establishment of an independent national anti-doping committee. The committee is to ensure that Ghanaian athletes compete fairly both locally and internationally by policing the use of banned substances ^[15]. Regarding this, doping education has not been effective in the country at all levels. With doping as a topic in Ghana Education Service Physical Education Syllabus for senior high schools, colleges of education and the universities, it is assumed that P.E. teachers have painstaking knowledge on anti-doping education, and they are, therefore, capable of educating student-athletes on how to practice doping-free sports.

The general unit where doping is a topic in the P.E. syllabus for the various levels mentioned focused on sports and drugs. The content further expects P.E. teachers to look at areas such as the definition of doping, common drugs that are used in doping, reasons why people dope, implications of doping and measures to curb drug use in sports ^[16]. These are taught to all final year students in senior high schools. At the tertiary level, the same topics are studied by the students who will major in Physical Education. Therefore, before one becomes a P.E. teacher who doubles as a coach, he has acquired some level of knowledge relevant enough to teach doping as a topic in the syllabus and can also advise student-athletes on drugs and sports.

Studies on sports doping in Ghana have focused on the level of knowledge, perception and attitudes of tertiary students. For instance, Brown et al. ^[17], hypothesised that university sports athletes have significantly higher levels of knowledge of socially abused drugs on the WADA list like cocaine, heroin, cannabis and steroids as compared to drugs that are not socially abused. Ansah and Apaak ^[18], asserted that about 10.4% of grit athletes either consumed alcohol, a mixture of alcohol and energy drink, smoked tobacco, or take illicit drugs like tramadol, tobacco among others. The above studies examined the perception of athletes competing at the tertiary level or drug use among athletes. However, these studies did not examine whether anti-doping education has been preached to athletes by coaches or support personnel. The studies did not further inquire where the athletes got those illicit drugs from, for instance, from coaches, friends, or support personnel.

Research on the role of P.E. teachers to conduct anti-doping education as well as athletes' perception on the use of doping drugs and the effects are aimed to be examined among an under-researched population, namely Ghanaian P.E. teachers / coaches. Regarding this, the current study examined (a) doping practices (b) knowledge of anti-doping control (c) the importance of doping education during training programmes and (d) the perception of athletes on the use of doping products and the harmful effects.

2. Method

2.1 Design

The present study examined P.E. teachers' role in anti-doping education among student-athletes. Considering this, a qualitative constructivist approach that posits that truth is relative and depends on one's view was employed. This theory according to Searle^[19] dwells on the social construction of reality. Semi-structured interviews were used to collect the data.

2.2 Sampling and participants

A purposeful sampling technique was employed for the current study because the researchers were interested in acquiring a piece of reliable information rather than an increase in the number of participants. The purposive sampling method is a technique that involves selecting participants based upon a variety of standards including expert knowledge of the research topic, or the desire and the willingness to participate in the study^[20]. The technique also assists in selecting individuals whose experiences fully enhanced the questions being studied^[21]. Patton further maintained that participants rich in information produce in-depth knowledge and understanding and not merely observed generalisations. P.E. teachers from senior high schools were recruited based on their knowledge of doping and duty as coaches of student-athletes. The final sample represented eleven P.E. teachers (8 males and 3 females) who coach athletes in almost all the sporting events performed in senior high schools in Ghana. Students compete in athletics, football, volleyball, handball, netball, hockey, table tennis and badminton. The mean age of the selected sample was 38.1 with an age range of 31-46 years. All the participants interviewed have coached more than 2 years with 15 years being the most. None of the participants have a partnership with any international body that helps to understand most of the negative effects of doping in sports and therefore, rely on the internet basically on the WADA website for current anti-doping information. In addition to the P.E. teachers, 10 student-athletes (5 males and 5 females) with ages between 18-20 years were interviewed to examine their perception on the use of doping products and the effects.

Ethical issues were explained to the participants before the interview started and consisted of issues of anonymity and voluntary participation.

2.3 Interview guide

A semi-structured interview was adopted for the present study. Probes and prompts were included as expected and deviations from the main probes were allowed as this assisted the participants to explained particular points in detail and share their experiences. This method has been used extensively in qualitative research about doping issues^[13, 15, 22, 23]. A semi-structured interview was considered ideal as it assisted to avoid unnecessary ramblings^[24].

The topic for discussion was grouped into three broad areas similar to Engelberg et al.^[14], groupings on a similar study in Australia as detailed below.

Table 1. The topic for discussion was grouped into three broad areas similar to Engelberg et al. [14], groupings on a similar study in Australia

Themes	Questions	Justification
1. Doping practices	<ol style="list-style-type: none"> 1. Describe what you know about doping in sports? 2. Is doping in sports a good practice? What are the reasons for your answer? 3. How can an athlete obtain banned performance-enhancing substances during sports? 4. How are the athletes able to hide these substances from detection or do you see them openly? 5. If yes, what do you usually do to them? 6. How is doping affecting the life of student-athletes in your school? 7. Which sporting activity do students use performance-enhancing drugs the most? 8. Which group of athletes use performance-enhancing drugs the most? 	To test sports teachers' general knowledge about doping in sports and the effects of doping on athletes and doping practices among student-athletes.
2. Knowledge of anti-doping control	<ol style="list-style-type: none"> 9. What is anti-doping education? 10. Which agency is in charge of anti-doping education in Ghana? 11. What measures are you going to put in place to promote anti-doping education among your student-athletes? 12. What are some of the challenges you are expected to face in anti-doping education among your student-athletes? 13. How can the government assist to promote anti-doping education? 14. Do you have a partnership with any international body that helps to understand the most negative effects of doping? 	To examine P.E teachers' awareness of anti-doping control as well as agencies in charge of anti-doping education in Ghana.
3. Importance of Doping Education in Training Programmes	<ol style="list-style-type: none"> 15. How often do you discuss doping issues with your athletes at training sessions? 16. What are the benefits of making anti-doping education a culture among your athletes? 17. Is there anything you will like us to discuss about doping in sports? 	To find out how coaches talk about anti-doping education during training programmes.
4. Demographic information of participants	<ol style="list-style-type: none"> 18. What is your gender? 19. What is your age? 20. What sport do you coach? 21. How many years have you been in the coaching profession? 22. Do you have a partnership with any international body that helps you to understand the negative effects of doping in sports? 	To find out information about the participants in the study.
5. Other issues	<ol style="list-style-type: none"> 23. Are there any other things you will like us to discuss about doping in sports? 	To find other information about the topic that was not asked.

2.4 Data collection procedure

Interviews were conducted by the lead researcher via phone calls. The telephone interviews enable the researchers to reach participants at different geographical locations without the necessity of travelling as hypothesised by Gall et al. [25]. The telephone interviews also allowed the data to be fast, while coding and analysis of the data begun immediately after the interviews [26]. Before the interviews were conducted, the lead researcher explained all the ethical issues to the participants. Information about the purpose of the study, the nature of data collection procedures, how the data will be handled and stored were all explained. Again, the participants were provided with the opportunity to ask questions before the interviews started. Permission to record the interviews were also sought. Codes were used to represent an individual's names for privacy's sake and to enhance confidentiality and anonymity with each transcript named example (T1, T2-T11). The interviews lasted for 55 to 60 minutes after which participants were thanked for their cooperation. After transcription, the transcripts were sent back to the participants to confirm if they represented what they wanted to say during the interview for accuracy. Based on the responses from the P.E. teachers / coaches, it was relevant to gather additional information. This led to the interview of 10 student-athletes which lasted for 10 minutes as the intent was to analyse their perception of the use of doping drugs and the effects. The students were contacted through the P.E. teachers and the ethical protocols were observed.

Anonymity and assurance of confidentiality from the researchers enabled the participants to freely express their views. This helped to remove biases that are associated with studies of such kinds as participants can deny knowledge of doping practices especially involving students at their school.

2.5 Data analysis

The recorded phone call interviews were transcribed verbatim immediately after each interview. An inductive

approach of the thematic analysis was employed in analysing the data. This was to ensure that the themes are effectively correlated to the data [27]. Miles and Huberman's [28] model for the thematic analysis process made up of three stages-data reductions, data display and data conclusion (drawing) was employed. In the first phase of data reduction, the transcripts were read multiple times to hunt for themes or patterns [29]. Sentences from each of the participants were highlighted in the second phase. The highlighted sentences were used to break the data into smaller themes during the third phase. The full content was read again to compare, contrast and search for relevant missing ideas that were not found in the first level of the themes [30]. Before identifying the next theme, the previous theme validity was discussed to ensure that it represented the whole text. At the next stage, the findings were linked through arranging and organising the research concepts and ideas. At this stage, the meaning of similar and contradictory information was clarified [31]. In the final phase-data drawing and conclusion, some points suggested by Miles and Huberman [29] were adopted and include:

1. The identification of any pattern or themes and statements that were similar or contrasting.
2. Grouping or identifying categories of information that can be put together.
3. Identifying interrelations among factors and variables.
4. Building conceptual coherence and consistency which was used to explore the validity of the findings.
5. Lastly, the data was drawn and verified [29].

However, the researchers remained open to new themes as P.E. teachers' views were unknown.

3. Results

The main aim of the study was to examine the doping practices, roles and knowledge of P.E. teachers in anti-doping education. Themes associated with the research aims were identified using inductive thematic analysis. The results are displayed in Tables 2, 3, 4 and 5. Again, some illustrative conversations are presented in the results.

Table 2. Doping practices

Themes	Codes
Definition of doping	Using substances / drugs to enhance performance. Taking blood infusion to aid performance.
Sources of doping drugs	Pharmacy shops / over the counter drugs. From friends. From coaches / P.E. teachers. From the community.
Effects of doping Health effects	It leads to depression. It causes cardiac arrest. It can lead to madness. It leads to death Respiratory infections.
Effects on performance	Affect later performance. It gives energy to perform.
Community Effects	Social effects. Economic effects.
Sporting activity students dope	Athletics 8x. Football and volleyball 3x.
Group using performance drugs the most	Males 11x.

Table 3. Knowledge of anti-doping control

Themes	Codes
Definition of anti-doping	Educating athletes and their handlers on anti-doping. How student-athletes can protect themselves from doping drugs. Educating student-athletes on the effects of substance and drugs used in doping.
Anti-doping agency	No recognised agency Ghana anti-doping agency yet to start because of financial constraints. Ghana Education Service, Ghana Football Association and the Ghana Athletics Association Food and drugs board seems closer.
Promotion of anti-doping education	Education on doping and the effects Educating athletes on the need to train hard. Teach the topic in the syllabus. Using fliers during competitions.
Challenges of anti-doping education	Lack of testing kits Curiosity to use performance-enhancing drugs. Lack of qualified personnel to do the testing. Access to sample doping drugs. Difficulty convincing students already using drugs. Time to campaign on doping during training. Financial challenges.
Government intervention education	Organising workshops Liaising with stakeholders to provide education Providing resource personnel Using the media. Introducing health education in schools.
Anti-doping committee	Establish anti-doping committee and centres Train anti-doping advisors. Establishment of testing laboratories.
Funding	Financial support to agencies and health workers. Funds for coaches and teachers.

Table 4. Doping and training programmes

Themes	Codes
Doping education frequency at training	Educate athletes daily at training 5x lessons and training 2x. Minimal discussions 2x. Not at all 2x.
Benefits of doping education at training Athlete's benefit	Athletes making an informed decision on drugs. Athletes take only prescribed drugs. Athletes become aware of the effects of drugs. Increase in performance span.
Community benefits	Prevent drug addicts in society. Promote anti-doping education in the community.
Coaches benefits	Select the best and competent athletes. Promotes fair play.
Health benefits	Prevent injuries. Produce physically fit and mentally alert athletes.

Table 5. Students' awareness and effects of doping drugs

Themes	Codes
Awareness of doping	During P.E. lessons. During inter-school competitions. On television.
Effects of sports doping	Destroy the immune system. Attract sanctions. It affects future performances. Improves performance. Promotes cheating. It leads to addiction.

3.1 Doping practices

3.1.1 Definition of doping

To the P.E. teachers, (N = 11) definition of doing was not a problem as their responses could be summarised as an instance where an athlete, management and pharmaceutical companies aid the athlete to take drugs, substances, or foreign materials into their system to enhance performance. T2 maintained that *“ok when we say doping to me it is a situation where an athlete takes foreign materials to enhance his performance during competitions and then the athlete can decide to take it either before the competition or during the competition”*. The comment of T9 also seems to support the taking in of substance or foreign materials when she said: *“Umm example some of the ladies during pregnancy they go to the hospital when it is about to let say the pregnancy is about to let say three to four months, they will just go to the hospital discuss with a doctor and then after that discussion, the athlete will allow the doctor to drain all the blood from her and store it for her, so when it is about two months or three months for her to perform, she will go back to that same hospital and they will infuse that blood or give that blood to her, and that one is very serious it will just boost her morale, it will enhance her performance very well”*.

3.1.2 Sources of doping drugs

Three areas were mentioned as sources of performance-enhancing drugs or substances, for the athletes. From the pharmacy shops or over the counter drugs, friends and coaches or P.E. teachers. All the codes that emerged revealed that pharmacy shops are the easiest places where student-athletes usually purchase performance-enhancing drugs or substances. Another source of doping drugs that emerged was from P.E. teachers or coaches who have the mentality of winning at all costs because of pressure from school authorities. Friends were also mentioned as a source of doping substance for student-athletes while the community provides access to social drugs like cocaine and marijuana.

3.1.3 The reaction of P.E. teachers on athletes taking doping substances

Sports teachers and coaches do not see student-athletes taking performance-enhancing drugs. They only observe through performances. T4 lamented to *“see them openly, it will be very difficult unless the person is willing to come out to tell you I have taken this thing, or I did this”*. Also, some P.E. teachers were of the view that colleagues who intentionally give out drugs or substances to students take them in their presence.

To determine the reaction of the P.E. teachers and coaches when they chanced on students taking performance-enhancing drugs, 8 of the participants propounded that they will advise the students, 4 respondents admitted that they will sack the students from their teams. One participant supported the decision with these words *“If you don’t sack them they will end up convincing other athletes to take them”*. Surprisingly, only two of the teachers mentioned that they will seize the drug or substance from the students.

3.1.4 Effects of doping drugs on the life of athletes

Three main themes emerged under this factor-the health, performance and community effects.

All the participants mentioned health effects made up of codes such as it leads to depression, causes cardiac arrest, madness, it leads to death and respiratory infections. To give a version on the health effects on the life of a student-athlete T5 asserted *“that some of the consequences, so for me, like the students may go mad for things like marijuana, cocaine and that can lead to madness and hallucination, and sometimes death”*. Similarly, another participant opined that *“some may fall sick, some may become depressed, some become overly aggressive, they don’t remain the same person that they were prior to the intake of the drugs”*. A sad statement was given by one of the teachers who said, *“Ok that is Asokore Trinity a teacher gave this drug to a student in order to reduce weight to be legible to play and unfortunately the student died”*. He continued *“yes, he died, and I was surprised. He died so the teacher was not thinking about the effects, but he was thinking about winning at all costs, so consequently, it will affect your health mentally and sometimes it will also disgrace you”*.

Effects of doping on performance were found to be a “double-edged sword” as it initially improves the performance of athletes and affects later performances. *“If I may say positively one will think that if you take the performance-enhancing drugs, it is going to give you the energy to perform beyond your actual strength that is what people think”*. *“Um it affects their performance, it affects their performance because during the sporting seasons, after that they usually do not perform like the way they used to”*. These responses were given by T6 and T9 to throw more light on the above theme.

Economic effects such as student-athletes buying drugs regularly tend to drain them of money. Additionally, social effects like shying away from the public to avoid detection, becoming drug addicts and engaging in other social vices like armed robbery just to get money to buy drugs were the consequences of doping on the community participants propounded.

3.1.5 Sporting activity student-athletes dope

The eleven participants agreed that students who perform the field and track events (athletics) are those who always use performance enhancing drugs. Football and volleyball were mentioned as other events. According to T1 *“Actually,*

what I can testify is that they normally use it during the athletics. So, those athletes who perform the throws and the jumps use the performance enhancing drugs the most". T3 further claimed "athletics, football and volleyball mostly they use these drugs during athletics because they are the individual performing activities so mostly they want to gain fame as a result of that so, mostly in the athletics events".

3.1.6 Group who used doping drugs

The eleven P.E. teachers found males to be the group that use performance enhancing drugs the most. T11 stressed "It is the males because the females when I approached them they complained they are afraid of using these performance enhancing drugs". T7 also maintained that "the males because their activities are more competitive, and they also want to win to become popular".

3.2 Knowledge of anti-doping control

3.2.1 Definition of anti-doping

The definition of anti-doping contained key statements such as educating athletes and handlers on how to avoid the use of doping drugs, performance-enhancing substances and the effects. The participants also highlighted how students can prevent themselves from doping as a key component of anti-doping education. To one of the P.E teachers "letting the athlete and their handlers understand the consequences of introducing substances to aid their ergogenic aids or whatever that we call them, the consequences of it and letting them desist from that and to let them know because some of them they don't know that they are doping, and the substances that are involved, those that are good for athletes and those that are not". This is an indication that interviewees are aware of the definition of anti-doping.

3.2.2 Anti-doping agency

No recognised agency was found to be in charge of anti-doping education in Ghana to disseminate information on doping practices. However, one participant declared that there is Ghana Anti-doping Agency established recently but has not taken off due to financial constraints. Three participants mentioned the Ghana Education Service (GES), the Ghana Football Association and the Ghana Athletic Association as some of the closest bodies that preached against doping in sports during competitions. T2 lamented "truly speaking I don't know any agency like that if any agency is closer to that then it may be food and drugs board".

3.2.3 How to promote anti-doping education

Measures sports teachers / coaches will put in place to promote anti-doping education among student-athletes will be done mainly through education. Most of the sports teachers postulated that athletes should be educated on what doping is, the effects of doping and provide student-athletes with the environment to inform coaches the problems encountered and to enable the handlers to acquire the required assistance for them. Four coaches were of the view that it is better to educate athletes on the need to train hard to become successful during competitions rather than resorting to drugs while two participants maintained that they will teach the topic in the syllabus on doping so that they can advise the students on the banned drugs and substances even before competitions. One participant contended "and then to me whenever we are also organising our competition, we can do some fliers to share among the schools and I think all those things will promote those things but even if you are caught, you will be banned from taking part in our activities, your medals will be stripped off and those things and I think it will also deter them from taking part in those things". In a nutshell, education on how to stay away from performance-enhancing drugs / substances, education on how to train harder for competitions and teaching doping as a topic in the syllabus can promote anti-doping education among student-athletes.

3.2.4 Challenges of anti-doping education

Measures to promote anti-doping education revealed seven challenges. The first was lack of testing kits to determine whether an athlete has used a performance-enhancing drug or not. Participants analysed that once you are not going to conduct a test to determine whether an athlete has used banned drugs or substances to mete out the necessary sanctions, listening to the consequences associated with doping is just a theory and not practicable. To support this statement, a participant asserted that "the other challenge is facilities, we don't have any facility that we can use to actually do a minimal of test on my athlete before, during and after competitions, so we virtually cannot do anything about it apart from just talking to them".

Again, curiosity to use some of the performance-enhancing drugs to determine the effectiveness is a major threat to anti-doping education among the student-athletes. Once students become aware of some of the doping substances, they might be tempted to buy and use them to examine the efficacy. "Two, if you talk to them about certain drugs, curiosity may lead them to go and try those substances, colleagues, the teacher said this and these drugs are not good so let me try it", this statement was made by a participant to throw more light on the topic.

Another factor identified was lack of professionals to do the testing and at the same time educate the student-athletes

on anti-doping. Two of the teachers agitated that the students are aware P.E. tutors are not health personnel so, once you start educating them about drugs they will not be willing to listen to you. A P.E. teacher lamented *“Issues about drugs used in doping can be addressed better if a professional (a doctor) educate them”*.

Access to sample doping drugs to be shown to students in anti-doping education was a major code participant mentioned. Two of the participants see this as a challenge because they have never seen most of the drugs. Therefore, it could be better if they can get some of the drugs to show to the athletes during anti-doping education. Two participants perceived that most of the students will find it difficult to understand anti-doping education while at the same time it will be difficult to convince some of the students who have been using performance-enhancing drugs at the junior high school level to stop using them. An interviewee assumed possible questions like *“Are you a pharmacist? Have you seen those things? So, they will see it to be time-wasting or you are just disturbing them. So, these are some of the challenges we might face if we are to engage in anti-doping education”*.

Time was a major challenge to anti-doping education during sporting competitions especially games. Student-athletes will be eager to play rather than listen to perceived stories on anti-doping education. Besides, time for training sessions is not enough for the students to listen to anti-doping issues. To support this code was a declaration that *“the next thing will be they will not be willing to listen to you, they will say that you are disturbing them or you are taking much of their time especially the footballers they feel like enjoying the game, playing, playing, playing, so, what is the reason of you talking to them are you a medical doctor?”*

Finally, the last code selected were financial challenges. Money will be needed to provide materials like fliers to teach anti-doping education. Also, money is required to purchase some of the drugs used in doping and to invite health personnel to provide painstaking education on anti-doping among student-athletes were all contained in the statements under this theme.

3.2.5 Government intervention

The government interventions were mainly under the following themes.

3.2.6 Education

The main codes generated were organising workshops, P.E. teachers liaising with other stakeholders to provide anti-doping education, using health workers as resource personnel, the use of the mass media and the introduction of health education in schools. For instance, a collaboration between Food and Drug Authority (FDA), P.E. teachers, organised anti-doping agencies, health workers and pharmaceutical companies working together to promote anti-doping education was one contribution the government can make to promote anti-doping education. T7 propounded *“They should work hand in hand if they are to form a team of experts in this case you pick PE teachers, FDA and those at the health sector, so that the effects and those things, they will all put things together, even the pharmacist should come in as well as the doctors so they can achieve the needed results. These groups of expertise should come together and embark on education”*. Besides, education through the media such as a documentary on televisions, various radio stations and information centres and social media were mentioned.

Finally, the introduction of health education in schools could be a major contribution by the government towards anti-doping education. About one-third of the participants agitated for the establishment of health education as a course in the national curriculum with doping as a compulsory topic. In furtherance, there should be well-trained people to handle the course as most of the teachers in charge of health education are not professionals in the field. They, therefore, seem to offer a little as the knowledge base is limited.

3.2.7 Anti-doping committee

Another means by which the government can contribute to anti-doping education is by establishing an anti-doping committee and train advisors to campaign against sports doping. Two-thirds of the participants supported this view by coming up with statements such as; *“the government should set up anti-doping centres in all the 16 regions in the country and train people to be in charge of anti-doping at all levels”*. Also, it emerged from the respondents that the government should set up anti-doping agencies in the communities to educate the masses about the effects of doping so that knowledge about the harmful effects of drugs should not be a preserve of only athletes.

The establishment of a testing laboratory and the provision of doping equipment and testing kits were deemed necessary by five out of the eleven participants. *“That provides this testing so that athletes who have doped would be asked to stay aside because the schools cannot do it and the federation cannot also do it, so, if the government come in and assist by providing personnel to do the testing to help”* was emphasised by T11. Again, the P.E. teachers argued that once they cannot detect whether an athlete has dope or not it will be irrelevant to advise students to stay away from doping. The students are also aware that they are not going to be tested, therefore, if they even take a banned substance, they will not be

apprehended to face sanctions.

3.2.8 Funding

Two of the P.E. teachers were of the view that the government should provide financial support to the anti-doping agencies and health workers to assist the campaign against anti-doping in all parts of the country. Besides, funds should be provided for P.E. teachers to help purchase some of the banned drugs to be used as teaching aids on doping lessons.

3.3 Doping and training programmes

3.3.1 Doping education frequency at training programmes

Under this theme, five participants admitted to discussing doping issues with the athletes immediately after training programmes. These statements were made by the P.E. teachers *“after training, I call it post-training discussions, this is what I normally do I call it like that so, when we finish training we talk about a lot of issues, I will ask them to or invite their ideas about what they know about drugs”*, *“Ahaa after every training session even whiles talking to them, you know sometimes you can have ehh one to one talk with your athlete maybe one or two of them and then through that we advise them not to do that and all that”*.

On the other hand, during classroom interaction and training programmes appeared as a code under doping frequency. The teachers maintained that they teach the concept in the syllabus to the entire students and then hammer on it to the athletes during training sessions. However, two of the coaches usually have minimal discussions with the athletes on doping. T1 said, *“the whole concept of doping apart from what we have in the syllabus is minimal, the service itself has little to do with doping and anti-doping, the emphasis is not placed on the effects or what it entails, the substances that are involved, so, the whole curriculum is not visible on it”*. Three participants stated that they don't discuss doping issues with their athletes. For instance, *“To be frank I have never done such a thing before”*.

3.3.2 Benefits of doping education in training programmes

Based on the themes that emerged, these benefits were grouped as a personal benefit to the athlete, the community, coaches and health benefits.

3.3.3 Personal benefits to athlete

Nine out of the eleven P.E. teachers used statements that were related to this theme. Remarkable among them was helping student-athletes to make informed decisions on taking drugs. From the P.E. teachers' responses, athletes will become aware of the effects of taking performance-enhancing drugs. Additionally, athletes will become conscious that good performance is about effective training and consistency which can increase the performance span.

3.3.4 Benefits to the community

Four participants' views were related to this benefit-it prevents drug addicts in society, it helps to promote anti-doping education in the communities with student-athletes as ambassadors and also preserve the dignity of the student-athlete as those who use performance-enhancing substances are disregarded in the communities. *“One of them is that if the student gets to know the effects of sports enhancing drugs, it will also spread the news across their communities and then wherever they go, so that is the first thing I will say”*. A participant stated.

3.3.5 Benefit to coaches

Two coaches declared that it helps to select the best athletes for sports competitions as they see athletes who used banned drugs and substances performed with aid and not their efforts. This seems to disabuse the aim of fair play.

3.3.6 Health benefits

Lastly, two coaches who mentioned health-related benefits proclaimed that making anti-doping education a culture prevents injuries and helps to produce athletes who are physically fit and mentally alert.

To end the interview questions with the P.E. teachers, opportunities were created to discuss other issues on anti-doping. This was to enable the researchers to gather additional information about doping that was not captured in the interview guide. Some of the issues that were raised were the need to make anti-doping policy in Ghana and enforce it, get anti-doping advisors to spread the information and set up laboratories with testing kits in the universities so that testing athletes can start from there and move to the senior high and the basic schools. A participant advocated that *“let's institute or create a body or national body to deal with this thing because gradually it will give birth in Ghana and these students are now going in for the drugs like people are taking in tramadol and those things during sporting activities and they have started it so if we have a body that will preach against this in educational institutions it will help”*. Besides, student-athletes should be made aware that sports are all about winning and losing and should accept any results.

On organising of coaching workshops or clinics, a teacher protested that doping should be included and if possible some of the banned substances or performance-enhancing drugs should be shown to teachers. Besides, it emerged from the

interview that coaching should not be on only tactical and technical aspects of the game.

3.4 Students awareness and effects of doping

3.4.1 Students awareness of doping

Students confirmed that they have heard about doping in sports from the following sources-P.E. lessons, inter-school competitions and on the television. However, none of the ten participants mention training grounds. A student postulated “we were about to compete in a 400m inter-schools’ competition when I heard that some athletes have taken drugs to enable them to perform well”. “And it made the athlete perform well in that heat than the previous events”.

3.4.2 Student-athletes’ perception of the effects of doping on sports

The best code that all the participants admitted was that it destroys the immune system. A student stressed, “Yes, doping can affect life because it can damage your immune system in life later”. Again, it emerged that doping attracts sanctions, affects future performances, promotes cheating and leads to drug addiction. Contradictorily, some of the students declared that it improves performance. “I learned that it helps you to do things you cannot do when you are using your normal strength”, “They reduce weight and it also makes them run fast as well especially the athletes”. These statements were asserted by some of the students.

4. Discussion

The current study examined doping practices, knowledge of anti-doping education and doping education in training programmes among P.E. teachers / coaches in Ghana. Similar studies examining these factors among coaches are mostly westernised ^[1-6], thereby this research adds valuable information to doping and anti-doping literature in the sports world. The present study has revealed the awareness of anti-doping education among coaches and students, the effects of doping in sports, the need for the establishment of national anti-doping agencies, how governments and corporate bodies can support anti-doping campaign and the roles of P.E. teachers in anti-doping education.

Findings from the study indicate that coaches are aware of what doping is and the sources of supply of drugs used in doping. This is somewhat consistent with the findings of ^[14-32] who found that the sources of doping substances are from doctors, coaches and gymnasiums. Some P.E. teachers / coaches deliberately give performance-enhancing substances to athletes to aid them to win laurels and are also, aware that athletes are not going to be tested during competitions. Most of the pharmaceutical shops do not ask for prescriptions before selling drugs to students. This implies that student-athletes can buy drugs without restrictions. Most of the social drugs are sold in the communities to people irrespective of age. Alcohol, for instance, is sold to people without regard to age. Drugs like marijuana and cocaine can be purchase at places within the community. Friends who used drugs sometimes give them to friends and assist them to get some of the performance-enhancing drugs. The sale of over the counter drugs without prescriptions and alcohol within the communities to minnows have resulted in many drug addicts in the communities. Recently, many youths in the country are using a drug called tramadol a painkiller as a social drug. These youths got into the use of the drug as a result of peer pressure, curiosity or post traumatic addiction (33).

Coaches recognised doping in sports as bad practice as it can affect the health and performance of an athlete and the community. Continuously using performance-enhancing drugs can lead to the destruction of the central nervous system and deaths in some cases. Deligiannis and Kouidi ^[34] postulated that doping in sports is associated with a lot of health-related complications with the destruction of the cardiovascular system seen as a common one. In contrast, students’ belief and assertion that coaches are not health professionals may be an intimidating factor in the campaign against doping. This is somewhat consistent with the findings of Dimeo et al. ^[35]; who hypothesised that despite coaches’ significant influence on athletes, anti-doping education is found to be unnecessary. Additionally, some of the students have the mentality that they can perform better using performance-enhancing drugs and may, therefore, ignore the coaches’ advice.

Although coaches demonstrated background knowledge on doping and anti-doping issues, there was a conflicting statement in the findings. Whereas coaches claimed they incorporate doping education into training programmes, none of the 10 students interviewed mentioned training grounds as a source of anti-doping education. This supports Engelberg et al. ^[22], assertion that coaches were not committed to doping prevention or getting involved in doping practices. However, students confirmed that issues on doping are heard during P.E. lessons and inter-school competitions. The implications could be that P.E. teachers are performing their roles by teaching topics in the syllabus or educate athletes on anti-doping during competitions because of an external influence. The mentality of winning at all costs to become popular could be an important factor for the decision to disregard anti-doping education by many of the P.E. teachers although their job security is not affected by sporting successes. This contrasts with [36] who proclaimed that coaches’ job security is linked

to athletes' success and can influence their decisions on doping issues.

P.E. teachers do not see student-athletes taking banned substances or drugs but suggested three things they will do when they chance on them. The first suggestion was to advise the student-athletes involved. This is very important because coaches and teachers can assist students to overcome doping practices by promoting anti-doping education as athletes often use coaches' behaviours to justify doping ^[11]. Regarding this, advice from teachers / coaches can assist students to desist from doping. Coaches decided to sack student-athletes who use performance-enhancing drugs with the fear that they can influence other athletes to take banned drugs or substances. Peer group influence has been a major factor influencing the behaviour of students to engage in social vices such as drug abuse prostitution and armed robbery. Therefore, sacking such an athlete can assist to promote doping-free culture and to prevent indiscipline in training camps as people who take drugs rebel against authorities.

The importance of education to combat problems associated with doping among student-athletes should not be taken for granted. As mentioned earlier, coaches influence athletes' decision to take a performance-enhancing drug or not ^[4]. This was revealed in the study as some P.E. teachers / coaches were found to be given performance-enhancing substances / drugs to their athletes to win more trophies to be seen as the best. Although testing kits and laboratories are not present in the country, coaches' knowledge of anti-doping education should be shared with the student-athletes. This can assist students to comply with anti-doping rules. A regular check on sports teachers / coaches to examine if they teach the topic in the syllabus can assist to control doping among students. Workshops and seminars on doping to educate teachers on current WADA rules and banned substances / drugs can help to educate student-athletes on current anti-doping rule violations. It is noteworthy that coaches' knowledge is important to champion anti-doping education ^[10]. The continually reading of information from the WADA website to update on doping issues should be regular since teachers do not have a partnership with any organisation that assist to understand the negative effects of doping and current lists.

5. Limitations and suggestions for the future

P.E. teachers who participated in the current study do not form an association with any anti-doping agencies and might have limited knowledge of doping in sports in general. Therefore, there may be some key information that they could not deliver to the researchers. The participants were all volunteers; however, they have succinctly given an account of their roles as teachers / coaches in anti-doping education in a country where no bodies are campaigning against doping in sports. Additionally, student-athletes knowledge of anti-doping and the consequences were preached to the students', but they have not fully accepted the education as they claimed their teachers are not health professionals. A combined education on doping by teachers and anti-doping agencies / health professionals should have been examined to find out how student-athletes have accepted anti-doping education in sports.

The interest of the P.E. teachers to win at all costs can affect how the campaign against the use of performance-enhancing drugs. Although the P.E. attested to informing student-athletes about the negative effects of using performance-enhancing drugs, the demand for an external body to engage the students in anti-doping education should have been beneficial. Considering this more information is needed from the students in future studies on how coaches educate them on doping issues and the frequency of anti-doping education.

6. Conclusion

Studies on doping education and the role of coaches in anti-doping education are more westernised ^[1-6]. There is scanty anti-doping research on P.E. teachers / coaches' role in athlete's behaviour published outside of westernized countries. The current research has filled the gap in the literature. The findings of this study revealed the role sports teachers / coaches play in anti-doping education among student-athletes in Ghana. Although sports teachers are aware of the effects of doping on the student-athlete as stated in the syllabus, little can be done to promote it as no recognised body is assisting teachers' in campaigning against doping in schools. Besides, some of the sports teachers were found of aiding athletes to get performance-enhancing drugs which in general is against the teaching profession. Teachers are expected to promote good morals among students in all disciplines. A worrying scenario of the present study is the sale of drugs to people especially the youths without prescriptions. This has not led to only a loss of life but an increase in doping cases as students can easily have access to illegal drugs that can be used in doping. P.E. teachers, in general, have limited knowledge of doping in sports as they are not aware of some of the performance-enhancing drugs and have not even chanced on them. Their roles as sports teachers / coaches and not health professionals possess a challenge as students see doping education to be a preserve of health professionals or specially set aside body. The government should hasten

to set up a recognised anti-doping agency to campaign against doping during competitions and also, ensure that the media channels and other agencies collaborate with teachers to promote anti-doping education in Ghana. The government should make laws that allow pharmaceutical shops to sell drugs to only people with prescriptions. Anti-doping education should be part of all coaching workshops and clinics in the country and the government should establish an anti-doping policy to ensure that coaches and teachers usually preach against doping in sports. The syllabus should be revised to include many topics on health education with a special emphasis on drugs and sports.

Conflict of interest

The authors declare no conflict of interest.

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