Anti-Doping Knowledge, Attitude, and Experience of General Practitioners in Kenya

J. Rotich[1], E. Rintaugu[2], E. Thangu[3]

[1] *Kenyatta University, Department of Recreation and Sports Management*

Abstract

Background

General Practitioners' functions on the principles of health competence, strong work ethics, and compassion to improve the health of their patients. When dealing with athletes, additional knowledge in sport is requisite to comprehensively address their health need without affecting the integrity of rules that govern fair play. In sport, general practitioners require sufficient doping knowledge to provide athletes with the health needs consistent with anti-doping regulations. In Kenya, there is no previous studies that have investigated or reported the doping knowledge, attitude, or experience leaving a knowledge gap on their ability to treat competitive athletes harmonious with WADA requirements. This study clarified the doping knowledge, attitude, and experience of Kenya general practitioners to inform the current status on the concept.

Methods

A cross-sectional analytical study design was selected because of its robustness in describing general practitioners current doping knowledge and attitude relevant to the study. Data was collected using self-reported questionnaire where 250 general practitioners completed the survey. The questionnaire included a range of questions that assessed participants doping knowledge, attitude, and experience.

Results

Finding revealed that Kenya general practitioners are well aware of doping regulatory agencies, WADA and ADAK. The findings demonstrated GPs to have average doping knowledge, 47.77 ± 14.03. Participants demonstrated limited knowledge on prohibited substances, methods, and prohibited substances in certain sports. Work experience significantly influenced GPs doing knowledge, F (4,245) = 10.852, $p < .001$. GPs showed a negative doping attitude 45.23 ± 13.64. Results indicated that as many as 22% (55) GPs received doping requests for the last 12 months where 35.7% (89) of requests are about drugs to aid recovery. Anabolic steroids, corticosteroids and peptide hormones were among the most sought after PEDs.

Conclusion

General Practitioners in Kenya have inadequate doping knowledge which could limit their efficacy in treating professional athletes in line with WADA guidelines. Additional anti-doping training could benefit them address this limitation. Although GPs demonstrated negative doping attitude, expanding their involvement through active participation in doping seminars, training, and programs can enhance their understanding of the doping concept necessary to develop and maintain strong negative doping attitude.

Introduction

Doping remains a major threat that not only denies athletes a fair display of their sporting abilities but also exposes them to myriads of health problems such as heart diseases, stroke, liver cancer, and many others. Doping regulating agencies such as WADA have made great strides in ensuring fair play through anti-doping education and sanctions. Evidence show that all relevant personnel involved in athlete's life need to work together for an effective fight against doping in sport (Backhouse & McKenna, 2011; El-Hammadi & Hunien, 2013; Jaber et al., 2015; Starzak et al., 2016). In the concept of athlete's doping, general practitioners (GPs) can play a key role in

promoting anti-doping activities in sport. The mandate of GPs is to treat patients and refer them to specialized treatment if the need arises (Chinen et al., 2021). Similar expectations are held in the realm of sports. GPs treating athletes should prioritize in the prevention, diagnosing, and developing care that promotes athletes' health. The WADA expects medical practitioners to treat athlete in compliance with its regulations to control doping and by extending doping liabilities to the health practitioners. However, for this approach to be effective, GPs doping knowledge and its concept and their doping attitude need to meet anti-doping agencies expectations.

GPs are perceived key to doping prevention because of their roles. However, GPs have been reported to possess low doping knowledge insufficient to impact the fight against doping in sport (Auersperger et al., 2012; Dikic et al., 2014; Starzak et al, 2016). A survey conducted with 276 GPs from Serbia revealed only a small proportion 10.5% and 8% of the participants had good knowledge of the list of prohibited substances as well as the methods and the law on the doping prevention. In the reviewed studies, GPs ascribed their low doping knowledge on absence or inadequate education and training. Starzar and Derman (2016) reported that low interest in doping among South Africa GPs and non-existent doping studies in the country were the major contributors of low doping knowledge among the participants.

The consequences of GPs inadequate doping knowledge are apparent in athletes' positive doping cases and sanctions. Team doctors have been blamed for a series of doping cases primarily because of their poor judgment in relation to performance enhancing substances (PEDs) especially those that require therapeutic use exemptions (TUEs) (Dikic et al., 2014). In Kenya for example, in 2019 a medical doctor treated an athlete for Malaria few days before competition leading to athlete's testing positive for doping and subsequently receiving two years ban from WADA (Sports Resolutions, 2019). In a previous year, another Kenyan athlete was given Tramadol and Diprofos for back injury to manage pain but the drugs are in the WADA

prohibited list (ADAK, 2018). The two cases demonstrate the ignorance of GPs about doping despite them being a potential tool in promoting clean sport.

WADA extended doping liabilities to medical practitioners as a prevention approach to doping in sports. The strategy can deter GPs from assisting athletes with doping practices but the practitioners' doping attitude influence their doping compliance (Gucciardi et al., 2011). Donavan et al, (2014) hypothesized that how an individual in this case GP perceives the threat of sanctions because of the ethical conduct and the benefits determine their doping attitude consequently their intention to support it. Although many studies show GPs to have a negative doping attitude, there still a few medical practitioners who sympathize with dopers (Backhouse & McKenna, 2011; Erickson et al., 2015; Domagala et al., 2018). A study on doping attitude of medical doctors in Balkan region, Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, Albania, Macedonia, Greece, Bulgaria and Romania revealed that 14% of the participants agreed that doping can be safely used by athletes (Nenad et al, 2007). GPs positive doping attitude premise is ignorance of the health risks associated PEDs (Laure et al., 2003). Educating GPs about doping and it health and moral concerns would make the practitioners proactive in doping matters and potentially change their doping attitude.

General practitioners experience with doping and it related issues such as athletes request for doping information and substances is relatively low but demonstrates doping existence in sport (Auersperger et al., 2012). Out of 645 GPs from Solvenia, 4% reported to have encountered athletes who used PEDs. Auersperger et al. (2012) established 37% of GPs received requests for doping information from athletes in the past 12 months. GPs are an essential asset anti-doping regulation agency need to optimize their assistance to curtail doping. The practitioners can play a core part in educating athletes about the danger of PEDs and cut off the link as a source of doping substances (Nakajima et al., 2020). A study involving medical doctors from Iraq reported

37.5% (24) participants had interacted with athletes with a history of doping (Salih & Abd, 2021). Some earlier studies by Wood and Moyinan's (2009) reported one in four, 28% (217) of Ireland medical doctors who took part in their studies have been approached for doping assistance by athletes. Dikic et al. (2014) reported 80% of the doctors from Balkan region had received request for doping information and 25% received request for PEDs prescriptions. The role of GPs in the context of sport is to treat athletes and their doping experience encounter presents a critical window of opportunities to assist athletes from engaging in doping.

The above evidence demonstrates GPs encounter doping requests and some treats athletes from doping related health issues. Doping encounters make GPs fundamental in the fight against doping and the need to practically involve them. However, where their doping knowledge, attitude, and experience are unknown, for example in Kenya, it makes it difficult to have a robust anti-doping front from GPs. In light of this knowledge, the study explored doping knowledge, attitude, and experience of GPs in Kenya to establish their efficacy in promoting anti-doping campaigns in Kenya.

Materials and Methods

Study designs, methods and participants

The study was a cross-sectional analytical study design targeting General Practitioners from the seven purposively selected athletic rich counties in Kenya, Nairobi, Nandi, Uasin-Gishu, Elgeyo-Marakwet, Nakuru, Bomet and Laikipia. The survey was conducted between October and December 2021. The GPs contact details and permission to use them was obtained from Kenya Medical Practitioners and Dentist Council (KMPDC). An invitation to participation request was sent via an email and a text message to randomly selected GPs working in the hospitals and health clinics in the selected counties.

Follow-up was made via a phone call upon which the background, objective, and the purpose of the survey were explained. Participation to the study was voluntary and participants were informed they were free to withdraw from the survey without any prejudice or coercion. Once participants agreed to participate in the study a physical meet up was arranged after which the researcher or the research assistance meets and issue the survey questionnaire once the participants signed the consent form. A total of 250 GPs from the seven counties responded and completed the survey questionnaire.

Survey instrument

The study used a self-reported questionnaire developed by the investigator and composed of four sections derived from previously validated self-report questionnaires, A demographics, B doping knowledge questions from WADA athlete's online resources, C doping attitude statements adapted from Folkerts et al. (2020), and D questions on doping experience. To ensure face and content validity of the survey instrument, a pilot study was conducted using 15 general practitioners. The response from pilot study guided a few changes on the survey tool relating to length of the instrument, ambiguous, and irrelevant questions.

The final survey instrument had four sections, A demographic information that collected data such as age, gender, and work experience of GPs. Section B, had six items derived from the WADA athletes' online resource (WADA, 2019) to examine the doping knowledge of the GPs. Item four from section B had 17 statements to assess the GPs familiarity with doping codes and related issues. Each statement was measured using a five-point likert scale. The scale range was 1-not at all familiar, 2-slightly familiar, 3-somewhat familiar, 4-moderate familiar, and 5-extremely familiar. The probable cumulative maximum score a participant could score was 85 indicating extreme familiarity with the doping codes and related issues. A score of 42.5 and

below implied an average to poor doping knowledge and related issues. Section C assessed GP's doping attitude and had 17 statements adapted from Folkerts et al. (2020). Each statement was measured with a seven-point likert scale where 1- Strongly Disagree 2-Somehow Disagree, 3-Disagree, 4-Neutral 5-Agree, 6- Somehow Agree, **7** -Strongly Agree. Possible maximum cumulative score a participant could get was 119 that would mean strong positive doping attitude. A score of 59.5 and below indicated negative to strong negative doping attitude (Petróczi & Aidman, 2009). Section D, examined GPs doping experience. The section had seven items that reviewed how often GPs approached for doping information, types of doping drugs athletes seek, and what motivate GPs to help athletes used PEDs. The items were adapted from Woods & Moynihan (2009).

Data analysis

All data was collected and analyzed using IBM SPSS version 25. Descriptive statistics of percentages, frequencies, means and standard deviations were used for demographic data and GPs' familiarity with doping substances and methods, doping attitude, source of PEDs, and doping experience. One-way Analysis of Variance (ANOVA) was used to assess the effect of work experience on GPs' doping knowledge. Shapiro-Wilk was used to evaluate assumption of normality. Boxplot was reviewed for outliers and Levene's test for homogeneity of variance. Tukeys HSD was applied to examine pairwise difference among the age group means to establish where significant difference in doping knowledge existed. Non-parametric test Kruskal-Wallis was used to identify for possible influence of work experience on GPs doping attitude All statistical level of significance was evaluated at $p < .05$.

Ethical considerations

The survey was conducted in accordance to guidelines of the Kenyatta University Ethical Review Board (KUERB), National Commission for Science, Technology, and Innovation (NACOSTI). Research approval was obtained from Kenyatta University Graduate School and County Commissioners and County Directors of education from each selected county. The objectives and background of the study was explained and consent obtained before commencing on data collection. All data were collected and analyzed anonymously.

Results

Participant's characteristics

Two hundred and fifty general practitioners participated in the study with 60.4% (151) male and 39.6% (99) female GPs. The age distribution of the participants 20-30 years, 38% (95), 30-40 years, 38% (95), 40-50 years, 15.6% (39), and above 50 years 8.4% (21). The results revealed that majority of the GPs 38.4% (96) had less than 5 years work experience. Twenty eight percent (70) GPs had 6-10 years of work experience where 16% (40) had 11-15 years of work experience. GPs with 16-20 years work experience were 8% (20) compared to 9.6% (24) with above 21 years of work experience.

Table 1: Participants Characteristics (N=250)

Category	F	%
Gender		

Males	151	60.4
Females	99	39.6
Age		
20-30 Years	95	38
30-40 Years	95	38
40-50 Years	39	15.6
>50 Years	21	8.4
Work Experience		
≤5 Years	96	38.4
6-10 Years	70	28
11-15 Years	40	16
16-20 Years	20	8
≥21 Years	24	9.6

Kenya general practitioners doping knowledge

The GPs were asked about their familiarity with doping regulatory agencies to assess their eagerness in doping matters and learning. The result showed that majority 70.8% (177) had knowledge of WADA but a few 29.2% (73) stated they were unaware of WADA. When asked about their knowledge of the local doping regulatory body, Anti-Doping Agency of Kenya (ADAK), more than half 69.2% (173) GPs indicated they were familiar with the anti-doping agency. However, a considerable number 30.8% (77) GPs had never heard about ADAK.

Table 2: General Practitioners WADA and ADAK Awareness

	F	%
Yes	177	70.8

WADA	No	73	29.2
	Yes	173	69.2
ADAK	No	77	30.8

The GPs were asked to rate who informed they felt in relation to doping in a five-point likert scale. Around half 50.8% (127) of the participants reported their doping knowledge as average with only 16.4% stating they were excellently informed about doping. A considerable number 32.8% (82) reported their doping knowledge to be between below average and poor as shown in

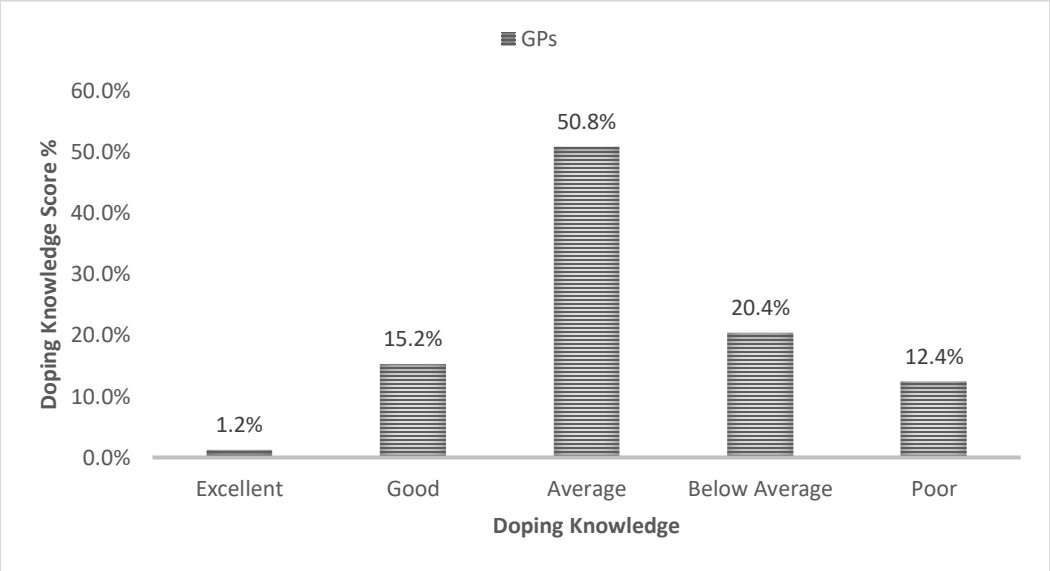

Figure 1: General Practitioners Self-Assessment on how informed they felt Regarding Doping

The study examined the GPs' detailed knowledge of WADA prohibited class of substances, methods, and class of substances prohibited in specific sport. On prohibited class of substances, GPs demonstrated low knowledge on anabolic agents 5.04 ± 1.18, narcotics 4.98 ± 1.16, and peptide hormones, mimetics, and analogues as prohibited substances, 4.84 ± 1.22. The GP's

knowledge of diuretics and masking agents as prohibited substances were relatively high, 4.53 ± 1.35 and 4.69 ± 1.27 respectively.

Kenya GPs revealed low knowledge on prohibited methods in sport, gene doping 5.03 ± 1.29, pharmacological, chemical and physical manipulation 5.02 ±1.3. The GPs, however, had better knowledge of enhancement of oxygen transfer as prohibited method compared to the other two methods, 4.82 ± 1.34.

The GPs were also asked about their familiarity of substances prohibited in certain sports. Beta blocker was more identified 4.69 ±1.21 followed by alcohol 4.82 ± 1.18, and local anesthetics 4.83 ± 1.19. Cannabinoids was least identified in this category, 5.04 ± 1.11 as prohibited substance in certain sports.

Table 3: GPs Self-Report on how correct they are about Various Doping Categories

Doping Substances Category	Mean	Stds.
Prohibited Class of Substances		

Anabolic Agents	5.04	1.18
Narcotics	4.98	1.16
Peptide hormones, mimetics, and analogues	4.84	1.22
Masking agents	4.69	1.27
Diuretics	4.53	1.35
Prohibited Methods		
Gene doping	5.03	1.29
Pharmacological, chemical and physical manipulation	5.02	1.3
Enhancement of oxygen transfer	4.82	1.34
Prohibited substances in certain sports		
Cannabinoids	5.04	1.11
Local anesthetics	4.83	1.19
Alcohol	4.82	1.18
Beta blocker	4.69	1.21

*The higher the score the lower the participants familiarity with the doping substance

Results from 17 statements accessing GPs familiarity with doping showed participants have slightly above average doping knowledge 47.77 ± 14.03, click here for details. General practitioners with a considerable work experience, above 21 years demonstrated high doping knowledge compared to the other four work experience categories, 59.42 ± 2.19. GPs with 16-20 years showed a good doping knowledge 56.15 ± 2.92 compared to participants with 11-15 years, 49.30 ± 1.83. GPs with five and below year of work experience had average doping knowledge 42.5 ± 1.31 while participants with 6-10 years had slightly above average doping knowledge, 47.69 ± 1.75. One-way ANOVA established work experience had significant effect on GPs doping knowledge, $F(4,245) = 10.852$, $p < .001$. Pairwise comparison using Tukeys HSD revealed the difference in doping knowledge occurring between GPs with work experience of

above 21 years and ones with five years and below with GPs with 21 years and above demonstrating high doping knowledge, 59.42 ± 2.19. A significant mean difference in doping knowledge ($p < .001$) was identified between GPs with 16-20 years of work experience and participants with five and below works experience where GPs with 16-20 years of work experience reported high doping knowledge, 56.15 ± 2.92. A significant difference in doping knowledge ($p = .049$) was noted between GPs with less than five years and ones with 11-15 years of work experience.

A statistical mean difference in doping knowledge between GPs with above 21 years and 6-10 years' work experience was established ($p = .049$) where participants with above 21 years' experience demonstrating good doping knowledge, 59.42 ± 2.19. A similar observation was made where GPs with above 21 years had significant mean difference in doping knowledge ($p = .024$) when compared with GPs in 11-15 years of work experience category with the later showing better doping knowledge, 59.42 ± 2.19.

Table 5: Work Experience and Doping Knowledge of GPs in Kenya

Work Experience	≤5 Years	6-10 Years	11-15 Years	16-20 Years	≥21 Years
Mean	47.69	42.5	49.30	56.15	59.42

Stds.	1.75	1.31	1.83	2.92	2.19

*High scores depict high doping knowledge

Source of doping knowledge

Kenya GPs reported to learn about doping and related issues such as sanctions mainly from internet 61.4% (153), TV/Radio 51.4% (128), WADA 42.2% (105), ADAK 40.6 while seminars and friends were least referred source of doping information, 8.4% (21) and 16% (40) respectively.

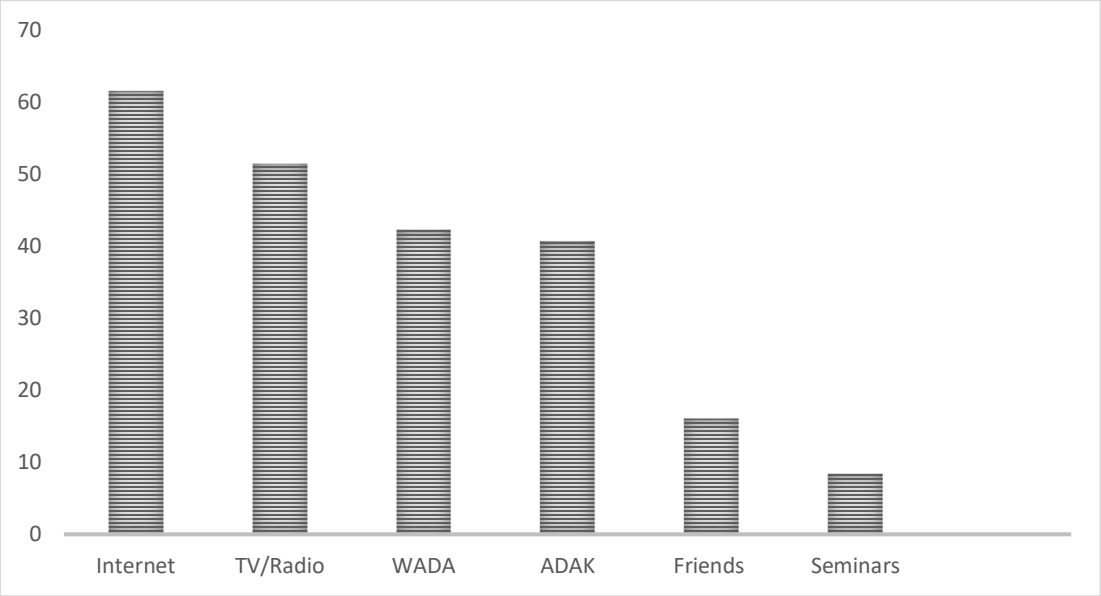

Figure 2: General practitioners' source of doping knowledge

Kenya general practitioners doping attitude

Results from the 17 statements measuring doping attitude showed Kenya GPs to have a negative doping attitude 45.23 ± 13.64. click here for attitude results. The doping attitude questions were measured on a six-point likert scale starting from 1-strongly disagrees to 7-strongly agree. The

maximum score participant could score was 119 that would mean strong positive doping attitude. A score of 59.5 and below indicated a negative to strong negative doping attitude.

Results revealed that GPs with 16-20 years' work experience had strong negative doping attitude compared to the other four work experience categories, 40.30 ± 3.01. GPs with above 21 years work experience also showed strong negative doping attitude 40.33 ± 2.23. Notably, GPs with less work experience, less than 5 years' work experience demonstrated a weak negative doping attitude among the four work experience categories, 48.45 ± 1.24. Further investigations established work experience to have significant effect on GPs doping attitude H (4) = 13.865, p = .008.

Table 7: Work Experience and Doping Attitude of GPs

Work Experience	≤5 Years	6-10 Years	11-15 Years	16-20 Years	≥21 Years
Mean	48.45	43.77	45.48	40.30	40.33
Stds.	1.24	1.65	2.62	3.01	2.23

*The higher the attitude scores the more doping positive orientation the GPs is.

Kenya general practitioners doping experience

When asked if they have ever been approached for doping information for the last 12 months as many as 22% (55) GPs stated yes. A few, 1.6% (4) GPs reported they frequently or 70% chances of encountering athletes seeking information or prescription of banned substances although a large number 82% (215) denied ever receiving request for such assistance from athletes.

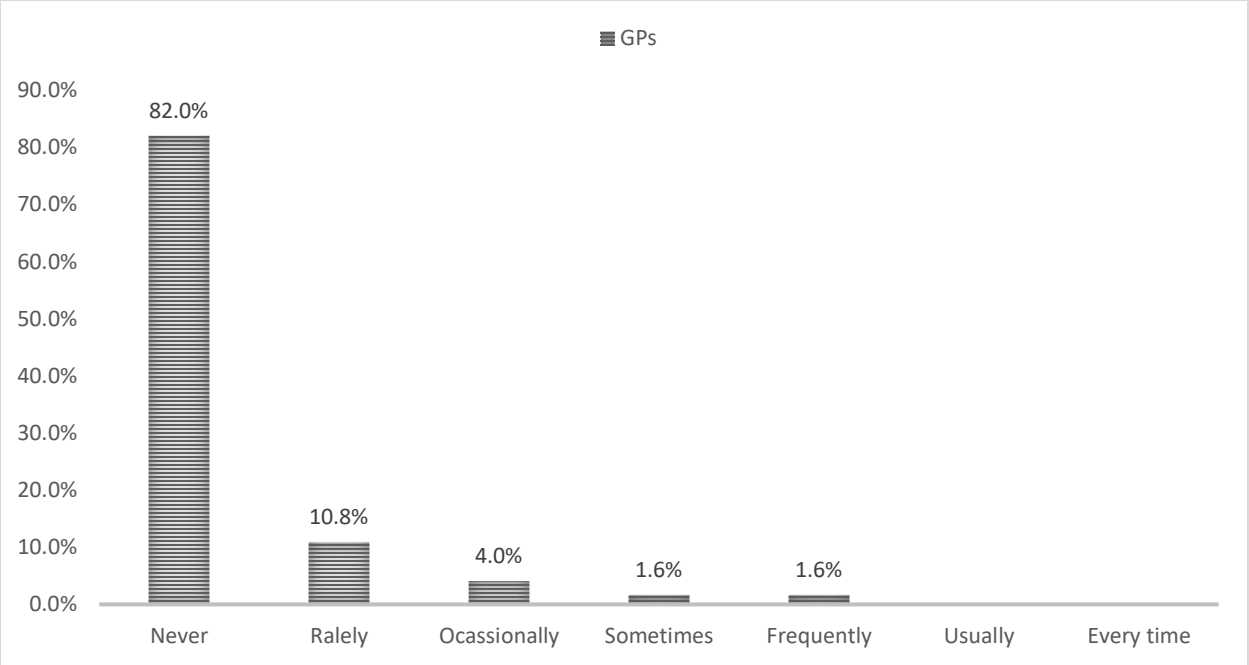

Figure 3: GPs and Ps encounter with athlete seeking doping information/substances

Some of the information on doping athlete were seeking the most from GPs was about drugs to aid recovery 35.7% (89), drugs that shorten recovery after injury 26.1% (65), side effects of PEDs 20.1% (50), right dosage 13.3% (33), and additional laboratory information 4.8% (12).

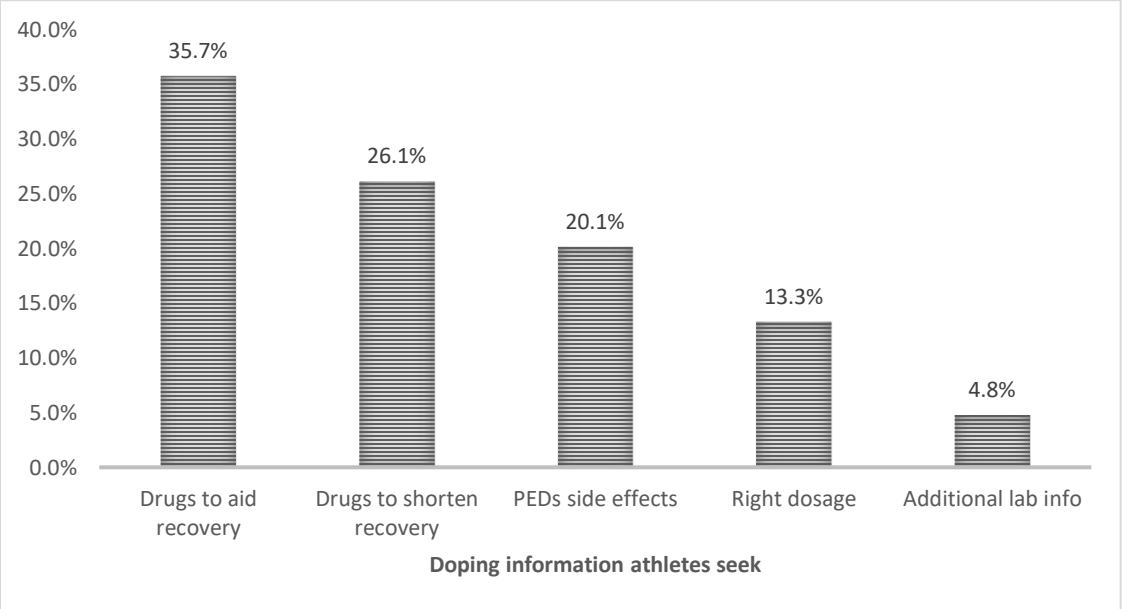

Figure 4: Doping Related Information Athletes Seek from GPs

In relation to types of performance enhancing drugs athletes often seek, the GPs revealed most are anabolic steroids 68.6% (59). GPs also reported corticosteroids and peptide hormones as among the top sort of PEDs 54.7% (47) and 52.3% (45). Stimulants and masking agents were also reported among the least sought PEDs 40.7% (35) and 25.6% (22) respectively. Diuretics was the least doping substance sought for prescription by athletes, 17.4% (15).

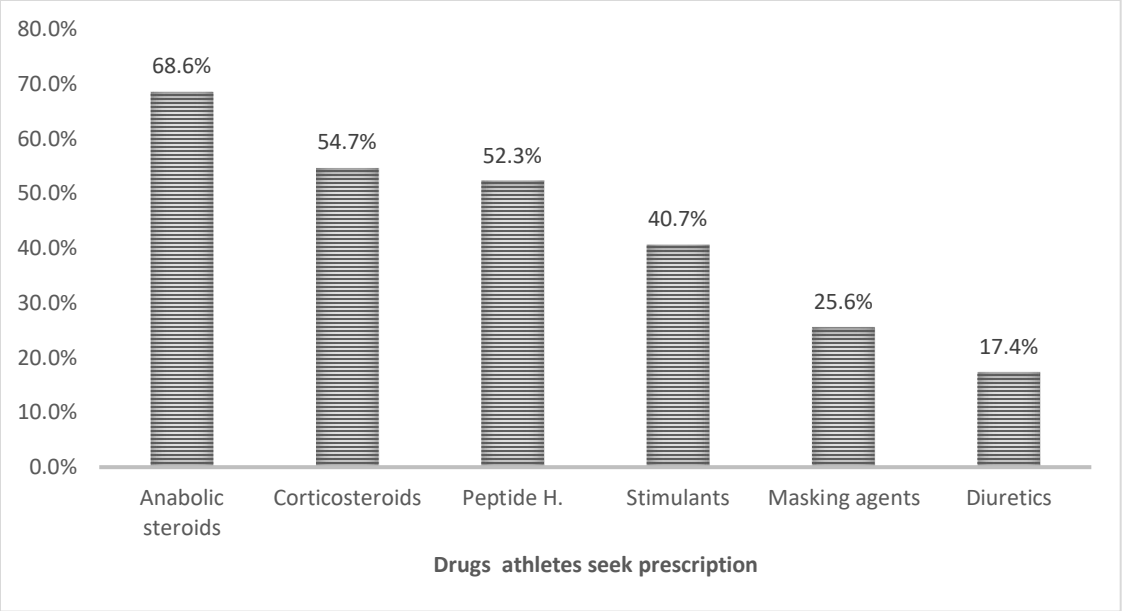

Figure 5: Drugs Athletes Often Seek from General practitioners

Source of drugs

Based on GPs perspective, pharmacists are the main source of PEDs for athletes in Kenya, 52.4% (131). Results revealed dealer supplies as significant source of PEDs for athletes, 44.8% (112). Other mentioned source of PEDs were GPs 40.4% (101), clinical officers 36% (90), internet 30% (75), athletes' technical staff 27.6% (69), Gym trainers 26% (65), team members 18.4% (46), sport scientist 16.8% (42), researchers 7.2% (18), and athlete family 9.3% (34).

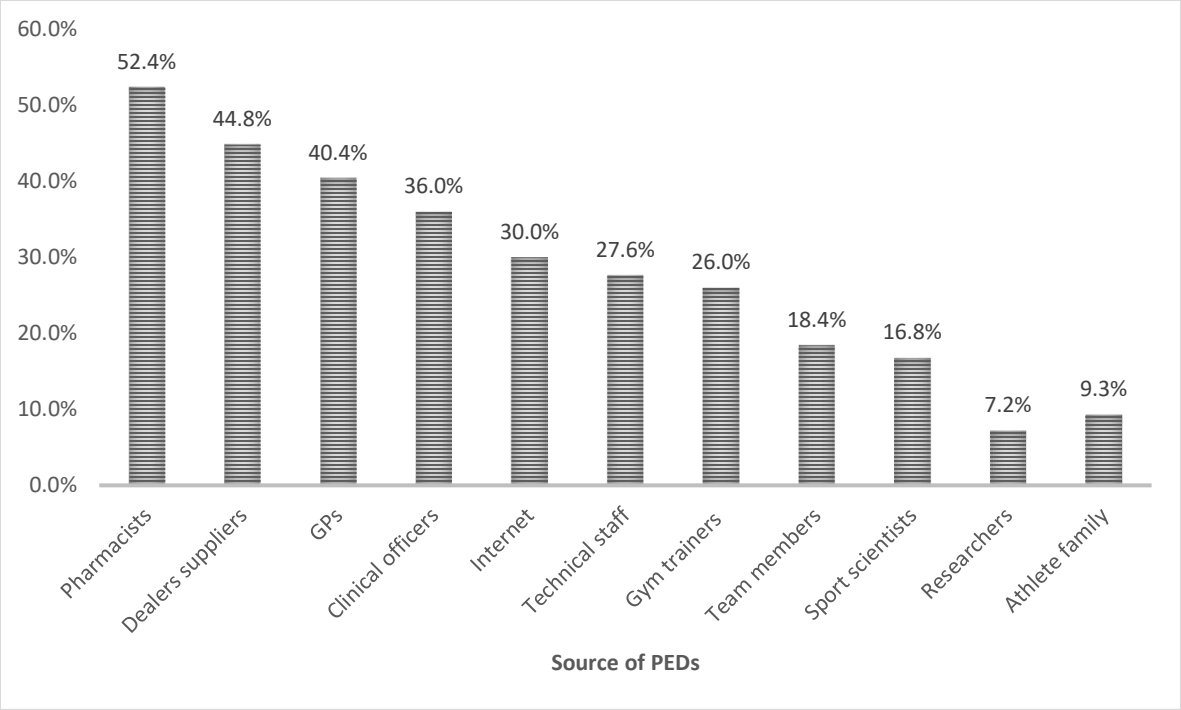

Figure 6: GP Opinion about source of doping substances

Views on what motivate General Practitioners to help athletes to dope

The study revealed money as a major cause for Kenya GPs to assist athletes in doping 86.1% (210). Weak doping regulations were also established to be a considerable contributor to GPs assisting athletes in doping, 29.5% (72). The GPs also stated ignorance 27.9% (68), ease of accessibility of doping agents 18.9% (46), and self-satisfaction 15.6% (38) as motivation factors to assist athletes in doping.

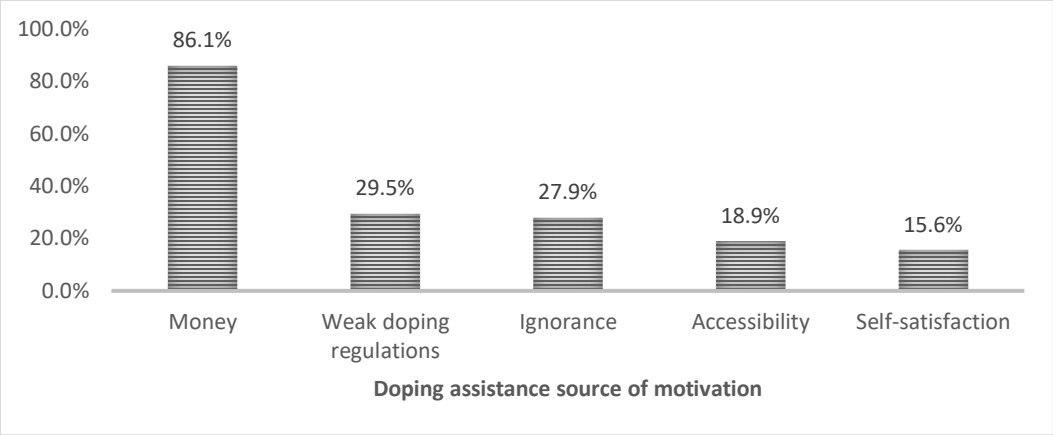

Figure 7: General practitioners views on what motivate some to assist athletes' dope

DISCUSSION

The aim of this study was to establish General Practitioners' knowledge in Kenya on different doping aspects such as, prohibited substances, methods, and related issues. Our study further investigated the GPs doping attitude, and their experience with doping including source of doping substances.

The findings revealed Kenya GPs are aware of WADA and ADAK as the main anti-doping regulatory bodies in Kenya. WADA and ADAK have engaged in rigorous doping campaigns that involve anti-doping education and awareness targeting athletes, coaches, medical practitioners, and athlete's immediate family members in Kenya. Specifically, ADAK has collaborated with KMPDC in pursuit of clean sports (ADAK, 2021). The active involvement of the two anti-doping agencies in Kenya is key to their popularity among the Kenya GPs.

The GPs when asked to self-rate on how informed they feel about doping more than half 50.8% indicated their doping knowledge is average. A concerning number 32.8% said their doping knowledge was below average and poor. Other studies have reported medical practitioners to possess insufficient doping knowledge necessary to treat and guide athletes on doping matters

(Dikic et al., 2014; Yee et al., 2020). Although our findings revealed WADA and ADAK as consequential source of doping information for the GPs, the anti-doping education, training, or seminar is lacking. WADA and ADAK haves an online platform whose goal is to provide anti-doping education to all participants (WADA, 2021). While the Kenya GPs can use this avenue to improve their doping acumen lack of proper quantifications such as attached value and ideal follow-up explains participant's low doping knowledge.

On knowledge of prohibited substances, methods, and substances prohibited in certain sports our findings established GPs have inadequate knowledge in this concept. On the three categories, the GPs reported low knowledge in prohibited methods followed by prohibited class of substances. Precisely, Kenya GPs had little knowledge that cannabinoids are prohibited in specific sports, gene doping is a prohibited method, and anabolic agents are on prohibited class of substance category. The paucity of doping knowledge in these aspects limit the Kenya GPs competence in treating professional athlete in compliance to WADA requirements. Similar findings were reported with Serbian general practitioners, medical practitioners from Balkan region (Bulgaria, Greece, Romania, Serbia and Turkey), and South Africa general practitioners where low doping knowledge was linked to lack of doping topics in college, lack of interests in doping, and insufficient training (Antic, 2017; Dikic et al., 2014; Starzak et al., 2021; Dorota & Derman, 2016). In sports low and even average doping knowledge incapacitates GPs ability to treat competitive athletes in line with anti-doping agencies requirements and to effectively contribute towards the fight against doping. Antic (2017) acknowledges that General practitioners dealing with athletes required additional knowledge drugs that are harmful to and prohibited for athletes. GPs need a decisive doping knowledge and its aspects such as methods and regulations to fully participate in anti-doping campaigns and promote fair play.

The findings revealed that the work experience of GPs mediated their doping knowledge, $p<$ .001. GPs with over 21 years work experience demonstrated a higher doping knowledge compared to GPs with a few years of work experience. The positive influence of work experience on the GPs doping knowledge is based on the extended exposure to doping information and experience (Dikic et al., 2014). While there is no existing evidence to support this claim among our investigated GPs, the trend from the collected data backs this view. Significant difference, $p<$ .001 in doping knowledge was established between the different age categories, for example, GPs with over 21 years work experience had more doping knowledge than GPs with 11-15 years of work experience.

In terms of doping attitude, GPs demonstrated a negative doping attitude. Backhouse et al. (2016) during their systematic review made similar observation that athlete support personnel had negative doping attitude. Poland physicians also reported negative doping attitude which is been identified vital in curbing doping (Domagala et al., 2018). Recent doping criticisms and calls for healthcare providers to take part in anti-doping accounts for GPs negative doping attitude (Backhouse & McKenna, 2011). General practitioners doping attitude is fundamental in the fight against doping because it determines their behaviors in doping matters and willingness to support the course. An earlier study conducted in France, GPs supported the use of prohibited drugs that could cause athletes addiction to the prescriptions (Laure et al., 2003). Such report affirms the positive impacts of doping sensitization and sanctions involving the healthcare providers. Our findings revealed that many GPs believed doping can be avoided and unnecessary. The doping attitude status of GPs is important because it guides their perception s, ethics, and responsibilities in treating athletes and educating them against doping.

Work experience significantly influenced GPs doping attitude, $p = .008$ with GPs with less work experience demonstrating some leniency towards doping practices. GPs who have been active

for many years have experience about doping and its consequences to athletes (Lemettila et al., 2021). Similarly, more experienced GPs are conversant with sanctions and they may be more concerned with their moral value compared to relatively inexperienced GPs. Donovan et al. (2014) suggest that if the threat of sanctions or rules are perceived weak many people in this case GPs may support athlete with doping because the weak regulations and lack of strong individual ethics facilitate positive doping attitude. To counter doping support from GPs, evidence suggests increasing doping awareness including it health threats to athletes among the healthcare providers (Backhouse and McKenna, 2011). Anti-doping agencies need to ensure active involvement of GPs in ant-doping besides educating them to foster their doping knowledge that is pivotal in altering potential positive doping attitude.

Our findings demonstrate that as many as 22% of GPs are approached for doping information in the last 12 months. Athletes seek information such as drugs to aid and shorten recovery that are prohibited for athletes or require Therapeutic Use Exemption (TUE). Comparable findings were made with the physicians from Balkan region where 25% of the participants stated they received doping request for the past 12 months (Dikic et al., 2014). Our findings reveal how crucial it is to involve GPs in anti-doping education. GPs can be a great source of athletes doping education an opportunity they can exploit when athletes reach out for doping assistance or treatment.

The findings showed anabolic steroids, corticosteroids and peptide hormones as among the main PEDs substances athletes seek from GPs. Anabolic steroids and corticosteroids are allowed under TUEs because of its potential to stimulate muscle growth and enhance endurance (Huang & Basaria, 2018; Thorsby & Gjelstad, 2021). This capability makes anabolic steroids to be a major target for athletes in resistance sports such as distance running which Kenya is recognized for. Athletes can abuse corticosteroids to numb pain and inflammation that may be associated with some sports such as marathons.

The GPs revealed that money, poor and weak doping regulations in Kenya are the main contributors to healthcare providers assisting athletes in doping. Chebet (2014) reported ignorance and money are the main cause of doping cases experienced in Kenya. The limited doping knowledge reported among the participants is evident of how reluctant GPs are towards doping. Lack of robust doping regulations and sanctions for GPs in Kenya may appeal to ethical behaviors of some GPs to assist athletes dope (Donovan et al., 2014; Mazanov et al, 2014). A case example of how Kenya GPs are ignorant to doping and its concept is from the medical practitioner who prescribed a Kenya 100m sprinter with prohibited drugs, Tramadol and Diprofos leading to a positive doping test (ADAK, 2018). There is a chance the involved medical practitioner was testing the effectiveness of Kenya anti-doping regulations, ignorance, or motivation for money. Nonetheless, our evidence indicates the needs for proper doping education and doping regulations for Kenya GPs.

Limitation of the Study

The findings of this study should be interpreted with cautions as the study used self-administered questionnaires to obtain data. The approach may not be robust as participants may provide socially desirable responses. However, GPs works with a high ethical standard a virtue in line with our expected conduct.

There were a few studies investigating doping knowledge, attitude, and experience of GPs in Africa specifically in Kenya which limited access to sufficient literature to make firm conclusion. To ensure the rigor of our study, research design and methodology was carefully selected to respond to the study objectives.

Conclusion

Based on our findings, Kenya GPs have inadequate doping knowledge. Specifically, GPs have low familiarity on the concept of doping such as identifying prohibited substances, methods, and prohibited substances in certain sports. Notably, Kenya GPs doping knowledge is relative to work experience with GPs with more work experience demonstrating good doping knowledge.

Our study concludes that Kenya GPs have negative doping attitude. We also note that GP's work experience considerably affect their doping attitude where GPs with a few years of work experience demonstrated leniency towards doping. The study further concluded that Kenya GPs encounters doping prescription and information requests with anabolic steroids, corticosteroids and peptide hormones being the most sought after PEDs. Pharmacists, drug suppliers, and GPs were the main source of PEDs where money, ignorance and weak doping regulations were the main motivation for GPs to assist athletes in doping.

Our study recommends the need for introduction of reliable anti-doping trainings for Kenya GPs and proactive involvement in doping seminars and trainings. A collaborative approach between ADAK, KMPDC, and sport organizations can initiate a workable long-term solution needed to control doping in Kenya. There is a need to develop effective and realistic anti-doping policies, structures, or regulations for Kenya healthcare providers that define appropriate actions against health providers involved in doping.

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Conflict of Interest

The authors would like to declare no conflict of interest in relation to this manuscript.

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