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Original Research Article

Incidence of the Practice of Recreationel Physical Activity and Sports and Risk of Sudden Death in the Population of the City of Yaounde, Cameroon

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Abstract

This study aimed to determine the percentage of a recreational physical activities and sports (PAS) practitioners or non-competitive athlete in Yaoundé city, and the risk of sudden death incurred. Seven hundred and ninety-three (793) men and women practicing recreational sports took part in this survey. The analysis of the variables of the socio-demographic, professional and clinical characteristics of those practicing physical activity ≥ 3 hours per week and those practicing physical activity < 3 hours was made. Data collection was carried out using a pre-established questionnaire, after obtaining an ethical clearance from the Ministry of Public Health. The average age of participants was 27.3 ± 10.6 years, they are mostly made up of men (56.2%). Five hundred and forty-seven (68.9%) said they practice physical activity at least 3 hours a week. Fifteen (15) participants or 1.6% declared to be carriers of a cardiovascular pathology and thirty-nine (39) or 4.9% are hypertensive. A large number (439; 55.6%) refrained from disclosing their clinical status or were unaware of it. The rate of recreational physical activities and sports practitioners is high in the population of Yaoundé. In this population, some practitioners are carriers of pathologies exposing them to sudden death. Knowledge of these data can contribute to taking appropriate measures to reduce cases of sudden cardiac death related to sports practice, a phenomenon increasingly observed in Cameroon.

Keywords: recreational sport, incidence, sudden death, Yaoundé.

INTRODUCTION

A recreational (leisure) or non-competitive athlete is any person practicing sports more than 3 hours per week on a regular basis for his well-being and/or his own pleasure and outside of a competition [1]. A recreational athlete is anyone who practices sport on a regular or irregular basis for their well-being and/or their own pleasure, outside of competition [1]. A competitive sports activity is defined as any intensive physical activity during an official competition, be it individual or collective, and involves substantial rewards depending on the performance and level of excellence of the athlete [2]. Sudden cardiac death (SCD) is defined as a natural, unpredictable death, without extracardiac cause, which occurs within one hour of the onset of an initial symptom. Sudden cardiac death in athletes relates to any SCD occurring during or within an hour of sports activity [3].

The practice of moderate and regular physical activity and sports is beneficial and recommended for health. However, whether moderate or intense, regular sports activity can exceptionally lead to cardiac complications that can go as far as sudden death [4]. Physical activity includes leisure activities, competitions as well as those practiced at home and at work [5]. Sudden cardiac death is a public health problem claiming up to 20% of deaths in Western societies [6]. The causes of sudden non-traumatic death on sports fields are in 85-90% of cases of cardiovascular origin and in general, due to cardiac arrhythmia [7]. The actual frequency of these sudden deaths is not precisely known. The figures proposed vary, depending on the collection method, between 0.5 and 2.5/100.000 practitioners aged 12 to 35, and between 1 and 4/100.000 practitioners aged over 35. However, these figures appear to be underestimated [8]. In Western societies, many works have been carried out in order to describe and understand physical and sports practice. According to a survey conducted by several governments among their populations, it appears that 40% of the population in the State of Quebec in

Canada, practice a sports activity [9]. In France, according to a survey carried out by [10], 60% of French people say they play sports at least once a week. This rate is 45% in the population of the Swiss Confederation [11]. It is 46% in England [12].

In sub-Saharan Africa, and more particularly in Cameroon, data on the prevalence of sports practice are rare; when conducted, they tend to be confined to a social definition of sports practice [13]. The study by Tchanana *et al*., [14] on the multifaceted surveillance for 12 months, of 86.189 inhabitants over the age of 12 in 2 districts of Douala (Cameroon), had recorded a case of death linked to the practice of sport (subject aged 35). Sport is a major social phenomenon. Alongside competitive practices organized by sports federations, recreational sport has continued to develop in the city of Yaoundé, and cases of sudden unexplained death are increasingly reported. Recreational physical activities and sports practitioners show little interest in non-contraindication visits including electrocardiography. The study of Ebal *et al.*, [15] relating to the interest of these visits of no contraindication in 300 subjects practicing leisure sports in the city of Yaoundé, revealed that only 48 (16%) of them had undergone non-contraindication visits including electrocardiography before practicing physical activity. Those of Mbouh *et al.*, [16] analyzing the long QT in elite athletes and non-athletes reported that, of 87 athletes and 85 non-athletes, 63% of the athletes and none of the non- athletes had suffered a cardiac assessment including an electrocardiography.

SCD is a catastrophic event with a profound psychological impact in the family and in society. However, from the point of view of public health, the promotion of sports practice leads to a substantial improvement in overall health, in particular in terms of the fight against non-communicable diseases. Although it is recognized that hypertrophy cardiomyopathy is the major cause of sudden cardiac death in African athletes practicing elite sport, these data are limited in subjects practicing recreational sports. However, the practice of PAS is on the increase in the city of Yaoundé, the political capital of Cameroon, with its 2.969.156 inhabitants [17].

PAS practitioners are considered as a set of bodily dynamics and physical exercises that contribute to balance, health, education, culture and the total development of the individual [18]. They are also the expression of a voluntary and democratic practice, the aim of which is to improve physical condition and record human behavior. This raises the problem of the incidence of PAS practitioners in Yaoundé, pathologies of which practitioners are carriers and which predispose them to sudden death, which is increasingly observed in our environment.

MATERIALS AND METHODS

Nature, Type and Location of the Study

This work is a descriptive cross-sectional study. The survey took place in the 7 districts that make up the city of Yaoundé, in different places such as the Parcours Vita, the Concorde stadium, the Omnisports stadium, as well as in the neighborhoods where motorsport organized takes place. Yaoundé, a city located in the Center region of Cameroon, has a population equivalent to 2.969.156 inhabitants [17]. Being the political capital, Yaoundé houses the headquarters of the various sports federations and also has sports practice areas open to the public.

Sampling and Sample Size

The inhabitants of the city of Yaoundé constituted our target population. The number of participants recruited was determined according to the Lafont formula. Out of 1066 people estimated, for a level of confidence of 95 %. A margin of error tolerated here was 3%, for a consistency threshold of 1.96. 793 participants completed the questionnaire. The inclusion criteria were as follows: age between 15 and 65, live at least 6 months in Yaoundé, any form of physical activity prohibited by a health professional, practice a sporting physical activity without belonging to an elite club.

Data Collection Tool

The various data were collected through a questionnaire consisting mainly of 3 sections (sociodemographic data, sports practice and clinical history) and developed for the study.

Conduct of the Investigation

The survey was carried out on the basis of a questionnaire sent to participants at places where recreational sports are practiced. The sites were chosen randomly.

Ethical Considerations

Approvals from the Regional Delegate of Public Health on the one hand and from the President of the Regional Ethics Committee for Human Health Research of the Center Region of the Ministry of Public Health of Cameroon on the other hand were obtained before the start of the investigation (number: 2018/0592/CEIRSH/ESS/MSP). All precautions have been taken to ensure that the rights of participants are respected. In accordance with the Declaration of Helsinki [19], an information leaflet and an informed consent form have been drawn up. These different documents were read and signed by the participants submitted to the study.

Data Analysis

The characteristics of the surveyed populations were presented in the form of tables. Microsoft Excel software was used for data entry. Quantitative variables

were expressed as mean ± standard deviation (SD) and the qualitative variables in percentage (%). Student's t tests was used to compare some variables. The p-value less than 0.05 chosen for results considered significant.

RESULTS

Table 1: socio-demographic characteristics of participants

Variables	Total (n = 793)	Physical activiyy≥3 hours/week		P value
		Yes (n=547)	No (n= 246)	
Age (mean± SD)	27.34±10.6	26.1±10.5	30.0±10.4	<0.0001
Sex, n (%)				
Male	446 (56.2)	376 (68.7)	70 (28.4)	
Female	347 (43.7)	171 (31.2)	176 (71.5)	
Ages (years)				
≤ 35	627 (79.0)	312 (5.0)	212 (88.1)	
> 35-55 ≤	112 (14.1)	175 (31.9)	37 (15.0)	
> 55	25 (3.1)	60 (10.9)	7 (2.8)	
Without answer	29 (3.6)			
Marital status, n (%)				
Single	545 (68.9)	351 (63.8)	194 (46.1)	
Married	176 (22.1)	101 (57.3)	75 (42.6)	
divorce	5 (0.6)	4 (80.0)	1 (20.0)	
Widower widow	16 (0.6)	9 (60.0)	7 (40.0)	
Concubinage	51 (6.2)	37 (72.1)	14 (38.0)	
Without answer	01 (0.1)	01 (0.1)	-	
Highest level of education, n (%)				
No degree	17 (2.1)	9 (1.6)	8 (3.2)	
Primary school degree	91 (11.4)	45 (8.2)	46 (18.7)	0.0628
Secondary school degree	410 (51.7)	295 (53.9)	115 (46.7)	
University degree	275 (34.6)	198 (36.2)	77 (31.3)	

n: number; % : percentage; PAS : physical activity and sport; SD : standard deviation

Seven hundred and ninety-three (793) participants out of the 1066 people in the estimated population were interviewed during this study. Recreational PAS practitioners were between 15 and 65 years old, an average of 27.34 ± 10.6 years. Most were men (56.2%). Five hundred forty-seven (547) or 68.9% of the participants declared practicing physical activity for more than 3 hours per week. The study population was mainly made up of single people (68.98%).

Table 2: occupations and monthly income of participants

Variables	Total (n = 793)	PAS≥3 hours/week		P value
		yes (n=547)	no (n= 246)	
Profession, n (%)				0.0007
Student	345 (43.5)	280 (51.1)	65 (26.4)	
Self-employed	24 (3.0)	14 (2.5)	10 (4.0)	
Public agent	62 (7.8)	45 (8.2)	17 (6.9)	
Unemployed	107 (13.4)	57 (10.4)	50 (20.3)	
Informal sector	251 (31.6)	148 (27.0)	103 (41.8)	
Not reported	4 (0.5)	3 (0.5)	1 (0.4)	
Income per month, n (%)				0.8771
Low (<50)	401 (50.5)	263 (48.0)	138 (56.1)	
Middle ($50-$300)	244 (30.7)	171 (31.2)	73 (29.6)	
High (>$300)	27 (3.4)	18 (3.2)	9 (3.6)	
Unknow	121 (15.2)	95 (17.3)	26 (10.5)	

n: number; % : percentage; PAS : physical activity and sport

43.5% of recreational PAS practitioners were students. A relationship is observed between the level of schooling and commitment to recreational PAS. A very significant difference (p = 0.0007) between this population of students and the working population was reported with regard to the practice of leisure PAS. Individuals with a high monthly income (>$300) practiced recreational PAS less than the others (3.4%).

Table 3: types, frequencies and durations of physical activity and sport

Types of sport practiced n (%)	Total (n = 793)	PAS≥3 hours/week yes (n=547)	no (n= 246)
Running/walking	456 (57.5)	250 (45.70)	123 (50.0)
Team sports	219 (27.6)	164 (29.9)	81 (32.)
Other sports	107 (13.4)	133 (24.3)	42 (17.07)
Without answer	11 (1.)	-	-

n: number; % : percentage; PAS : physical activity and sport

The subjects practiced more running or walking (57.5%).

Table 4: Clinical characteristics reported by participants

Pathologies n (%)	Cardiovascular 374 (44.4%)	Diabetes 376 (47.2)	Renal failure 364 (45.7)	High blood pressure 372 (46.7)	Others 194 (24.3)
No	15 (1.6)	20 (2.6)	12 (1.5)	39 (4.9)	25 (3.1)
Yes	352 (41.9)	350 (43.8)	341 (42.8)	325 (40.8)	156 (19.6)
Nope unknown	7 (0.9)	6 (0.8)	11 (1.4)	8 (1)	13 (1.6)
Without answer	439 (55.6)	417 (52.8)	429 (54.3)	421 (53.3)	599 (75.7)

n: number; % : percentage

In view of table 4, it appears that 439 participants, i.e. 55.6%, did not state their clinical history concerning cardiovascular pathologies. Fifteen (15) participants nevertheless declared to be carriers of the said pathologies.

DISCUSSION

The socio-demographic characteristics of the practitioners of physical activities and sports in the city of Yaoundé were determined using data collected in the field, according to the criteria of age, gender, marital status, occupations and monthly income, and their clinical characteristic declared. Most of the participants (53.0%) are under or equal to 35 years old. Young people are very involved in regulated or self-organized sports competitions and aspire to a career in high-level sports. This point of view corroborates with the theory of social representations developed by [20], according to which the choices of an individual depend on the representation that he has of the advantages that he can derive from different activities. The age of the practitioner plays a major role in the risk profile of sudden death and this question mainly concerns subjects over 35 years old; they represent 42.95%. A minority component of practitioners (3.1%) belongs to the age group over 55 years old. This is in line with the conclusions of [21] who, conducting a prospective study in the Netherlands on the sports practice of seniors, found a decrease in it at the time of retirement. In the literature, statistics on the incidence of sudden cardiovascular death related to sports practice are imprecise [3]. The studies are very heterogeneous from the point of view of methodology and concern competitors more than the general population, with varied collection methods. Several figures are proposed and very often underestimated. Among young competitors (12-35 years old), it is between 1/25.000 to 1/50.000 (0.4-0.7/100.000 among sedentary people), 33% of whom are under 16 years old. After the age of 35, it is more frequent and varies between 1/15.000 and 1/25.000 [22]. In France, a prospective regional study and a national registry estimated the number of sudden sports-related deaths in the general population at least 1.000 per year, whose nearly 3 per day [23, 24].

Running and cycling are the most affected by sudden death episodes [22]. This is the observation made in our study where running and walking (57.5%) were the sports disciplines most practiced by our participants. The risk of sudden death in women during sport appears extremely low compared to that of men; women represent only 5% of all cases [24]. The main reasons proposed are hormonal protection and less practice of competition for the purpose of performance in women [25]. This could be explained by the fact that they tend to think that they have body mass to lose and feel the need to engage in physical activity and sport. Regardless of gender, sports practice is justified by the pursuit of health and well-being [26]. This incidence is 31.2% and 68.7% respectively for women and men in our study. The vast majority of PAS practitioners (63.8%) are single. This goes against the results of surveys conducted in France by [27], according to which people living in a couple practice more sporting activities than others, especially when the life of the couple is stable, and the children are old over three years.

Our study allowed us to establish a relationship between the level of monthly income and the practice of physical and sports activities. The subjects justifying the lowest incomes (less than $300) are those who devote themselves the most to the practice of PAS (48.0%). On the other hand, in Western countries, as demonstrated by the survey carried out in France by [10], on physical and sporting activities, there is a positive relationship between the level of income

and the practice of physical and sporting activities. The wealthier parents are, the more they have the ability to pay their children the cost of practicing physical and sporting activities.

In order to determine the rate of metabolic diseases among practitioners of physical and sports activities in the city of Yaoundé, the study was based on questions relating to the clinical history of these practitioners. The interpretation of our results showed that fifteen (15) participants declared to be carriers of cardiovascular diseases and thirty-nine (39) were hypertensive. The work of Tchanana *et al.,* [14], had reported cases of sudden death related to sports activity (1.7 cases per 100.000 athletes per year for an estimated sports population of 59.452). The cardiovascular diseases associated with the victims were hypertension (22.2%), diabetes (11.1%), heart failure (14.8%), dilated heart disease (7.4%) and infarction myocardium (7.4%). Our work reported the incidence risks of 1.6%, 2.6%, 1.5% and 4.9% respectively for cardiovascular diseases, diabetes, kidney failure and high blood pressure. Most often, the cause of death is not identified, especially in the population practicing a leisure sports activity [4]. Our work shows high abstention rates (55.6% for cardiovascular diseases) among respondents. These high percentages could be due to ignorance of their health mapping. Ebal *et al.*, [15] had carried out a study on the interest of non-contraindicated visits in subjects practicing leisure sports in the city of Yaoundé ; only 16% of these subjects had undergone a non-contraindication visits including electrocardiography before the practice of PAS. The logical explanation for this phenomenon could be the high costs of clinical visits in Cameroon and the low incomes of the majority of PAS practitioners in the city of Yaoundé (for example an electrocardiographic examination -ECG- costs €20. In a study by [28], on the factors that influence the disclosure of HIV status for people living with HIV/AIDS, it appears that the three main barriers mentioned were: fear of discrimination, fear of disclosure of their status and fear of the reactions of partners. This means that with pathologies in general, there is a strong psychological dimension linked to the fear of rejection and stigmatization. This may be the case for practitioners of recreational PAS in the city of Yaoundé. Moreover, given the abstention rate, the high number of non- respondents to clinical questions (Table 4), and the existence of certain pathologies within the population practicing leisure sports in the city of Yaoundé, the risk of cases of sudden death in these subjects remains, hence the need to take preventive measures against cases of sudden death in the practice of physical and sporting activities.

CONCLUSION

The death of an athlete is not the result of chance and sudden exercise-related death reveals an often unrecognized cardiac pathology. 68.9% of the population of the city of Yaoundé, in Cameroon, practice recreational APS and are carriers for some of cardiovascular diseases. Others are unaware of their health mapping, which puts them at risk of sudden death. The prevention of these accidents requires the training of insufficient sports doctors in Cameroon, the encouragement to undergo medical examinations adapted to the risk of the practitioner, the education of the population in first aid gestures and, in the rules of good practice of the sport.

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CONFLICTS OF INTEREST

The autors declare no conflict of interest.

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