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Physical activity and anxiety levels in students of private and public networks school in Recife-PE, Brazil

Atividade Física e níveis de ansiedade em escolares da rede privada e pública de Recife-PE, Brasil

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ABSTRACT
In our society, reduction of usual physical activities, increase in sedentary behavior and anxiety symptoms, especially in adolescents, has negatively impacted health in its different dimensions. This study aimed to analyze the relationship between physical activity and anxiety symptoms in school with ages 11 to 17. Characterized as a cross-sectional study, 25 adolescent students from Recife-PE participated, where an electronic questionnaire was applied containing sociodemographic data, physical activities (GSHS) and anxiety symptoms (DASS-21), with descriptive analysis and correlation Pearson, $p<0.05$. The results revealed that 80% of students had physical activity levels below those recommended, in relation to anxiety, only 16% were classified at the moderate level. It was concluded that no significant relationship was found between anxiety and physical activity, no high levels of anxiety were observed, but physical inactivity predominated among adolescent students.

Keywords: Adolescents. Anxiety. Exercise.

RESUMO
Na nossa sociedade, a redução das atividades físicas habituais, o aumento do comportamento sedentário e dos sintomas de ansiedade, sobretudo em adolescentes, tem impactado negativamente na saúde em suas diferentes dimensões. Este estudo teve como objetivo analisar a relação entre atividade física e sintomas de ansiedade em escolares de 11 a 17 anos. Caracterizado como estudo transversal, participaram 25 escolares do Recife-PE, onde foi aplicado um questionário eletrônico contendo dados sociodemográficos, de atividades físicas (GSHS) e de sintomas de ansiedade (DASS-21), com análise descritiva e correlação de Pearson, $p<0,05$. Os resultados revelaram que 80% dos escolares apresentaram níveis de atividade física abaixo do recomendado, em relação à ansiedade somente 16% foram classificados no nível moderado. Concluiu-se que nenhuma relação significativa foi verificada entre ansiedade e atividade física, também não foram observados níveis elevados de ansiedade, mas a inatividade física predominou entre os escolares.

Palavras-chave: Adolescentes. Ansiedade. Exercício físico.

INTRODUCTION

Currently, the population lives a lifestyle with direct implications for health, in which sedentary behavior predominates, especially among younger people[1,2]. As a consequence, the mental health of adolescents can be affected, favoring an increase in levels of mental disorders, such as anxiety and depression[3].

Physical activity is a practice that encompasses the voluntary movements of the body, helping to expend energy and promoting social and environmental interaction for the individual[4]. Thus, this type of activity seems to be inherent to human beings, in addition to being fundamental to their health.

In this context, the literature mentions that physical activity is an important element of health promotion and disease prevention, such as chronic non-communicable diseases[5], in addition to providing well-being, quality of life and mental health[6]. This is "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to contribute to his or her community"[5].

On this matter, related to mental health, anxiety "is seen as a state of restlessness or disorder, resulting from an anticipated situation of a real or imaginary threat"[7]. In general, anxiety has negative aspects, bringing with it unpleasant symptoms, such as headache, sweating and nausea, which can represent a warning sign[8]. Anxiety is a very common mental disorder among adolescents, especially in the current context of greater electronic interaction and less social interaction[9].

Among all stages of life, adolescence is one of the most likely to trigger symptoms that affect mental health, such as anxiety, stress, fear, insecurity, all resulting from the process of change and development that individuals go through at this stage[10]. A study carried out with 302 adolescents aged 14 to 19 years from a state school in a city in Minas Gerais, aimed to explore the adolescents' knowledge regarding the benefits of physical exercise for mental health, reaching the conclusion that the greater the knowledge about the benefits of physical activity on mental health, that is, in the prevention of depression, anxiety, stress, nervousness, the greater the incentive to practice, in addition to it being highlighted that knowledge alone is not enough, that in fact it is necessary that there are interventions on the subject in the lives of these adolescents[10].

However, studies show that the rate of physical inactivity, especially among young people, has increased[11,12]. Given this, an inversely proportional relationship between age and the level of physical activity can be considered as a possible factor, that is, as age increases, PA levels tend to fall, but it must be taken into account consideration that the lack of it can cause harm to human beings[13]. However, there are divergent studies, carried out with adolescents aged 10 to 14 years on average, which found results that associated the adolescent's maturity phase with a moment of total encouragement for physical activity practices[14,15].

It is also possible to observe that this high rate of physical inactivity is not only present in Brazilians, as shown in a study in Portugal, where 55% of the population does not practice any type of physical activity, and only 24% practice it sporadically, without a constant regularity, some sport or physical exercise[16].

Adolescents are prone to developing psychological problems, such as anxiety, which can have a detrimental effect on their daily lives[17]. It is possible that this fact is due, among several aspects, to the lack of physical activity among young people, as exposed in a survey carried out with 516 young people aged 14 to 19 years old from public schools in Goiás, aiming to compare the practice of physical activity and the symptoms of anxiety, stress and depression in young people in part-time and full-time schools, which the sedentary lifestyle of young people may reflect in

health risk factors, especially in the development of chronic degenerative and mental illnesses[1].

In a study carried out with 3617 young people between 14 and 19 years old from Sergipe, using the GSHS, with the objective of analyzing the level of insufficient physical activity and behaviors that pose a risk to the health of adolescents, it was found that there is in fact a high prevalence in low levels of physical activity or inactivity among this population, confirming that these indices pose a huge risk to health in general, and may be linked to several factors, including sociodemographic and economic factors[18].

Furthermore, recently, in 2020, a public health emergency was declared worldwide due to the widespread contamination of the disease transmitted by the new coronavirus, known as Covid-19. Therefore, several measures were taken as a way to combat and prevent the disease, including social distancing. However, with this measure, it was noticed that the population, above all, young people, started to have habits that can negatively impact their quality of life, such as sedentary behavior and low levels of physical activity, which ends up influencing mental health. , that is, in the increase in anxiety rates among young people[19].

A 2017 study showed that in Japan it was observed that students started to show symptoms of anxiety, after the excessive use of smartphones, in a context of exchanging messages, where waiting for a response was generating anxiety. So, based on the measures to combat Covid-19, which in a way encouraged the continued use of electronic devices, a longer period of sedentary behavior and physical inactivity, these situations that generate anxiety symptoms ended up becoming even more frequent[20].

Therefore, it is important to carry out this analysis, as the rates of physical inactivity among young adolescents have increased, creating the hypothesis that from this fact, there is a greater probability of the appearance of symptoms related to damage to the mental health of young people, such as anxiety. As concluded by a study carried out with 73,399 adolescents, practicing physical activity following the WHO recommendations reduces the chances of mental disorders appearing at this stage of adolescence[3,21]. Furthermore, the exacerbated and uncontrolled use of electronic devices also leaves room for sedentary behavior and physical inactivity[23].

In view of the above, it is important that diagnostic strategies are developed as well as prevention and health promotion interventions both individually and collectively, inside and outside the school environment, for all ages and audiences[22]. Therefore, the research aims to analyze the relationship between physical activity habits and anxiety symptoms in schoolchildren aged 11 to 17 in the city of Recife-PE.

METHODOLOGY

This is a descriptive study with a cross-sectional design carried out with 25 students, between August 2022 and April 2023, with adolescents from public and private schools. The location chosen to carry out the research, as it has neighborhoods that surround the Federal University of Pernambuco, was the Political Administrative Region four (RPA4) of the city of Recife (PE). The selected educational institutions were located in the neighborhoods of Iputinga, Engenho do Meio and Várzea.

Regarding the inclusion criteria, adolescents aged between 11 and 17 years old, enrolled in a public or private school, the target of this research, were invited to participate in the study. Adolescents with disabilities, illnesses or any other condition that, under medical prescription, limited or made it impossible to practice physical activity were excluded.

For data collection, which took place in February and March 2023, an electronic invitation was sent to each student, with the consent and collaboration of the schools, to which a

questionnaire was attached containing questions taken from research instruments such as National School Health Survey (PeNSE), the Global School-based Student Health Survey (GSHS) and Depression, Anxiety and Stress Scale (DASS-21), prepared on the Google Forms platform, by the authors themselves. The Free and Informed Consent Form (TCLE) was also sent to parents or guardians, and the Free and Informed Consent Form (TALE) to the adolescents, if they agreed to collaborate with the research. It is worth noting that no responses were received on the form after the deadline for filling it out, which was from February 1st to March 31st, meaning that there was no need to exclude volunteers.

Part of the National School Health Survey (2015)-PeNSE[24,25] instrument was used to collect sociodemographic information and deficiencies/ limitations. Questions were included about family income, number of residents, education of the head of the family and number of electronic devices in the household.

To investigate the health behavior and protective factors of young people, the Global School-based Student Health Survey (GSHS)[26,27] was used. This is an instrument that assesses the level of physical activity, the number of weekly physical education classes and the time spent practicing daily physical activity in a typical week. The analysis of levels was carried out using frequency scores and time of weekly and weekend physical activity.

As a way of investigating anxiety symptoms, the Depression, Anxiety and Stress Scale (DASS-21)[28] was applied in its short version, with only the 7 questions referring to anxiety being selected. The scale translated and adapted in Brazil by Vignola and Tucci is valid for use with adolescents, as it develops strategies that well characterize symptoms of anxiety and depression[29]. Symptoms were analyzed using the classification adopted by the instrument, ranging from 1 to 5, normal to extremely severe, which is divided from 0 to 42, with 0 to 6 being normal, 7 to 9 mild, 10 to 14 moderate, 15 to 19 severe. and 20 to 42 extremely severe.

Data collection took place in February and March 2023. The results were organized and tabulated using Microsoft Excel 2016, version 2402 64 bits, and evaluated by the Statistical Package for Social Sciences (SPSS), version 25.0. A descriptive analysis was carried out, obtaining the absolute and relative frequencies, as well as a measure of central tendency (mean) and dispersion (standard deviation). To check data normality, the Kolmogorov-Smirnov (KS) test was applied. Regarding the verification of the relationship between the variables physical activity and anxiety, the Pearson Correlation test was used.

The research was duly approved by the Ethics and Research Committee of the Health Sciences Center of the Federal University of Pernambuco, according to CAAE 64990322.40000.5208 and opinion number: 5,783,279, in compliance with resolution 466/12 of the National Health Council.

RESULTS

Of the 25 students who answered the instruments, 100% (n=25) declared that they did not have a disability, 64% were female (n = 16), whose average age was 13.56 years (SD=1.91). Of the total number of participants, the majority declared themselves to be white (n = 11) and 36% (n = 9) reported having a monthly income of one minimum wage. Regarding the education network and school year, 88% (n = 22) and 28% (n = 7) of those surveyed studied in a private school and were in the 7th year, respectively. Regarding school activities and shifts, 72% (n = 18) and 60% (n = 15) of students attended classes only in person and in the afternoon. Regarding the number of residents, 32% (n=8) reported living in a house with 4 residents, and 44% (n=11) have the head of the family with a complete high school education and incomplete higher education (Table 1).

Table 1. Sociodemographic characteristics of students from public and private schools in RPA4 in the city of Recife-PE.

Variable	All	
	%	n
Sociodemographic		
Disability or limitation		
Yes	00	00
No	100	25
Sex		
Feminine	64	16
Masculine	34	09
Race		
White	44	11
Black	16	04
Yellow	04	01
Brown	36	09
Income (SM - Minimo Wage)		
1	36	09
2	24	06
3	16	04
≥ 4	24	06
School		
Public	12	03
Private	88	22
School year (elementary II)		
6th	16	04
7th	28	07
8th	08	02
9th	16	04
Others	32	08
Classes		
In-person only	72	18
Online only	04	01
Online and in-person	24	06

(Conclusão)

Variable	All	
	%	n
Shift		
Morning	36	09
Afternoon	60	15
Full	04	01
Number of residents in your house		
1	00	00
2	16	04
3	20	05
4	32	08
5	20	05
6	04	01
7	08	02
Head of household education level		
Fundamental I complete/fundamental II incomplete	04	01
Complete Elementary II/ Incomplete High School	20	05
Complete secondary/incomplete higher education	44	11
Graduated	32	08

As for electronic devices present at home, all students had at least one cell phone, 64% (n = 16) did not have a tablet or IPad, 52% (n = 13) had a computer or notebook, while 52% (n= 13) claimed to have at least 2 televisions and 76% (n=19) no video games. For access to WI-FI internet at home, most declared to have good internet (Table 2).

Table 2. Number of electronic devices present in the homes of students at public and private schools in RPA4 in the city of Recife-PE.

Variable	All	
	%	n
Electronic devices		
Television		
None	04	01
1	32	08
2	52	13
3	08	02
4 or more	04	01
Cell phone		
None	00	00
1	20	05
2	12	03
3	36	09
4 or more	32	08
Video game		
None	76	19
1	16	04
2	04	01
3	00	00
4 or more	04	01
Computer		
None	32	08
1	52	13
2	12	03
3	04	01
4 or more	00	00
Tablet		
None	64	16
1	24	06
2	12	03
3	00	00
4 or more	00	00
WI-FI internet access		
Very good	36	09
Good	56	14
Bad	08	02

Regarding data related to physical activity, of the 25 students, 40% (n=10) claimed to participate in two physical education classes weekly and 60% (n=15) claimed to practice physical activity in their free time. Regarding their opinion about their physical condition and their agreement to practice physical activity, 28% (n=7) and 80% (n=20) of the participants wanted to become physically active in the next 6 months and partially and completely agreed with practice it, respectively (Table 3).

Table 3. Data on physical activity practices, physical condition and satisfaction of students from public and private schools in RPA4 in the city of Recife-PE.

Variable	All	
	%	n
Physical Activity (PA) – (GSHS)		
Physical education classes during the week		
0	12	03
1	36	09
2	40	10
3	12	03
0	12	03
Physical activity in free time		
No	40	10
Yes	60	15
Opinion regarding physical condition		
I am not, and do not intend to become, physically active in the next 6 months	08	02
I'm not, but I plan to become physically active in the next 30 days	24	06
I'm not, but I plan to become physically active in the next 6 months	28	07
I have been physically active for more than 6 months	20	05
I have been physically active for less than 6 months	20	05
Agreement to practice physical activity		
I partially agree with practicing	40	10
I completely agree with practicing	40	10
I neither agree nor disagree with practicing	20	05

Regarding the level of physical activity, there was an average practice of moderate to vigorous physical activity per day/week and per minutes/day of 2.16 (±1.95) and 55.28 (±55.30), respectively. . When evaluating these parameters in the last 7 days, the results showed an average of 1.64 (±1.91) and 45.68 (±54.66) for moderate to vigorous physical activity per day/week and per minutes/day, respectively. Furthermore, according to the classification of the level of physical activity, all students were considered physically inactive as they spent less than 300 minutes/day engaging in at least moderate physical activity (Table 4).

Table 4. Description of the level of physical activity of students at public and private schools in RPA4 in the city of Recife-PE.

Physical Activity (PA) – (GSHS)	n	Minimum	Maximum	Mean	Standard Deviation
Moderate to vigorous PA (days/week)	25	0	06	2,16	1,95
Moderate to vigorous PA (min/day)	25	0	240	55,28	55,30
Moderate to vigorous PA in the last 7 days (days/week)	25	0	06	1,64	1,91
Moderate to vigorous PA in the last 7 days (min/day)	25	0	240	45,98	54,66

Regarding anxiety symptoms, 68% (n = 17) of students had normal levels of anxiety (Table 5).

Table 5. Classification of anxiety levels of students at public and private schools in RPA4 in the city of Recife-PE.

Variable	All	
	%	n
Anxiety – (DASS-21)		
1- Normal		
0 to 6	68	17
2- Light		
7 to 9	04	01
3- Moderate		
10 to 14	16	04
4- Severe		
15 to 19	12	03
5- Extremely severe		
20 to 42	00	00

Regarding the relationship between the variables physical activity levels and anxiety symptoms, an inversely proportional result was obtained, although not significant (r = - 0.235; p = 0.258).

DISCUSSION

Primarily, it is worth mentioning that the results have an impact on the entire population, whether for students, researchers, health professionals, as sedentary behavior and low levels of physical activity have become recurrent when it comes to daily habits, further enhancing negative points related to mental health such as increased anxiety symptoms[1], thus leading to a low quality of life, a situation that needs to be reversed through health promotion projects.

The results indicated that the level of physical activity of adolescents between 11 and 17 years old was below that recommended by the WHO[24]. According to its guidelines, the practice of physical activity of moderate to vigorous intensity for 300 minutes per week for children and adolescents is recommended for health promotion. Therefore, although most participants stated that they participate in a weekly physical education class, practice physical activity in their

free time and agree to do this type of exercise, the levels of physical activity are negative when taking into account the recommendation of the WHO. These results are similar to a study composed of a sample of 51,192 9th year students, with an average age range between 14 and 15 years old, where they observed that the majority of students, around 80% female and 63% male, found become physically inactive[30].

Despite the reduced level of physical activity observed among students, a considerable number of them admitted to being physically active or intended to become so in the coming days or months. This finding can be explained if we consider that school physical education plays an essential role in promoting health. Indeed, through this type of education, knowledge about health can be provided, which associated with body practices related to it will allow the subject to build critical thinking in relation to the social, collective, individual, affective aspects, among others[31].

Therefore, for physical education to be increasingly seen as a means of promoting health, its work must be focused on the needs of students, bringing proposals for interventions that encourage the practice of physical activities.

Regarding students' anxiety, it was identified that the majority did not present symptoms of anxiety. However, regardless of this finding, it must be considered that this type of symptom in adolescence is a pathological phenomenon, capable of compromising or worsening the daily lives of many young people as it is related to problems, such as physical and psychological[32]. Although we consider that physical inactivity can harm mental health, in particular, the lack of a relationship between physical activity levels and anxiety in this study highlights the fact that, in adolescence, anxiety symptoms may also not be triggered due to lack of adherence to physical activity.

This assumption can be understood by admitting that anxiety can be caused by typical adolescence events, such as excessive worry, psychological and physiological changes, in addition to school-related aspects, such as self-demand and insecurity in sports performance[33]. Just as we cannot ignore the influence of the use of electronic devices, which is currently completely immersed in everyone's daily lives, including students, which is capable of triggering levels of anxiety and a sedentary lifestyle, due to the exacerbated amount of time we have intended for the use of these devices, such as smartphones[34].

However, it is possible to correlate the variables level of physical activity, habits related to it, anxiety and the use of electronic devices. Concluding that low levels of physical activity may result from the exaggerated use of electronic devices, which also provide more time for sedentary behavior, in such a way that it becomes possible for this set of factors to affect psychological health, triggering symptoms of anxiety. Thus leading to the need for public health interventions for the population.

Some limitations were found in the study, such as the small number of participants, probably due to contact with participants occurring electronically. Furthermore, the fact that the majority of students were from the private network made a better comparison between them and those from the public network unfeasible.

CONCLUSION

It was found that no significant relationship was found between anxiety and physical activity, no high levels of anxiety were observed, but physical inactivity predominated among schoolchildren. In view of the findings, the need for interventions to promote an active lifestyle is highlighted, for example, using strategies to expand the possibilities of an active life in physical education classes, offering diverse activities and considering the preferences of students, encouraging their active participation,

with the aim of fostering interest and pleasure in practicing physical activities throughout their lives, transforming it into a habit, in such a way that it will positively influence their health.

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