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Assessment of the Knowledge About Exercise Induced Asthma Among Middle school Physical Education Teachers in Chlef State, Algeria.

تقييم معارف أساتذة التربية البدنية و الرياضية بخصوص ربو الجهد البدنى بالمدارس المتوسطة في ولاية الشلف الجزائر.

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Abstract :

Objective : To assess the level of knowledge regarding exercise induced asthma and its management among physical education teachers working in middle schools in Chlef state, Algeria.

Methods: A descriptive cross-sectional study design was used to examine physical education teachers recruited from 20 randomly selected middle schools between January and February 2019. The study sample consisted of 45 teachers. A face-validated questionnaire was used to collecte data from the participants. The collected data were reviewed and statistically analyzed by using SPSS.

Results: Overall, 80٪ of teachers had experience with teaching pupils with asthma in their physical education classes. only15٪ reported knowing Exercise as an asthma trigger, and 87,5٪ of teachers didn't have competancies for dealing with asthma attacks. In addition, 95٪ reported the unavailability of asthma medications in schools, wich reflected an absence of an asthma action plan in schools.

Conclusion:The results suggest a knowledge deficit among this sample of teachers , and they

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are not adequately prepared to teach pupils with asthma due several barries like lack of communication with parents, medications availability, asthma traning program for teachers and lack of an asthma action plan (asthma management), as well as developed countries.
Key words: Asthma , Physical education teachers, Knowledge, Asthma management.

الملخص:

هدفت الدراسة الى تقييم معارف أساتذة التربية البدنية و الرياضية بخصوص ربو الجهد البدنى و طرق إدارة ومواجهة نوبات المرض في المدارس المتوسطة بولاية الشلف،الجزائر

وكانت دراسة وصفية مستعرضة صممت لتقييم معارف أساتذة التربية البدنية و الرياضية المشاركين فى البحث من 20 مدرسة متوسطة تم اختيارها عشوائيًا بين جانفى وفيفرى 2019 و كانت عينة الدراسة مكونة من 45 مدرسًا بحيث تم استخدام استبيان لجمع البيانات. تمت مراجعة البيانات التي تم جمعها وتحليلها إحصائيا باستخدام برنامج SPSS.ومن نتائجها 80 ٪ من المعلمين لديهم على الأقل طفل مصاب بالربو في حصص التربية البدنية والرياضية، بحيث 15 ٪ فقط من االأساتذة أجابوا بأن الرياضة أو الجهد البدنى بشكل عام تعتبر من مهيجات او محرضات أزمة الربو او ما يسمى بربو الجهد

البدنى و 87،5 ٪ من المعلمين ليس لديهم الكفاءة والخبرة اللازمة للتعامل المستعجل مع نوبات الربو. بالإضافة إلى ذلك ، 95 ٪ أجابوا بعدم توفر أدوية الربو في المدارس ، مما يعكس غياب خطة عمل لمواجهة وإدارة أزمات الربو في المدارس. .

تشير النتائج إلى وجود معارف محدودة وغير كافية عند أفراد العينة ، وأنهم ليسوا مستعدين بشكل كاف لتعليم وقبول التلاميذ المصابين بالربو فى حصص التربية البدنية و الرياضية بسبب عدم حصولهم على التدريب الكافى للقيام بذلك، بالإضافة إلى عوائق وتحديات منها عدم وعى الأولياء وغياب التواصل بينهم وبين الأساتذة، عدم توفر المدرسة على أدوية الربو وعدم وجود خطة عمل لمواجهة وإدارة نوبات الربو كما فى الدول المتقدمة.

الكلمات المفتاحية: الربو، أساتذة التربية البدنية و الرياضية، المعرفة، تسيير وإدارة نوبات الربو.

Introduction :

Asthma is a common lung disorder among children and adolescents, it is characterized by reversible airways obstruction, dyspnea, wheezing, coughing, bronchial hyperres ponsiveness, especially at night or early morning (Ripabelli et al., 2013, P1) .The prevalence of asthma among children was estimated at 9.3% in the US. In addition, the prevalence of asthma symptoms were estimated to range between 5% and 35% among children in different countries around the world, being higher in developed compared to developing countries . (A Alshaikh et al., 2017, P1) Asthma is a leading causes of school and work abesenteeism. It is limited participation in physical and social activities, including exercise (O. O. Adeyeye et al., 2018, P76).

Exercise is a common trigger of asthma, known as exercise-induced asthma(EIA) or exercise-induced bronchoconstriction (EIB). It is defined as a is a transient narrowing of the airways that affects 40—90% of asthmatic children and adolescents (Tripodi et al., 2016, P1). However, although exercise is a powerful trigger of asthma symptoms, it has been shown that exercise training has a positive impact on symptoms management by reducing absences from school and emergency room visits and improving asthma control scores and quality of life (QoL) in children with asthma aged 10-18 years (Milanese et al., 2019, P3).

Children spend up to half of their day at schools under the supervision of the teachers. Thus, classroom teachers may be the first to assist a pupil who is having an asthma attack in the school (Jaramillo & Reznik, 2015, P1). However, studies have shown that teachers have only limited knowledge of asthma and its management. Physical education teachers in particular play an important role in education and in motivating pupils with asthma to practice physical activity, but few studies have focused on their role. Knowledge of exercise-induced asthma among physical education teachers is therefore important because in order to offer adapted physical education courses to work with asthmatic children and adolescents (Sandsund et al., 2011, P172). To our knowledge , no studies have yet been conducted on the assessement of physical education teachers' knowledge regarding exercise induced asthma in Algeria.

Research questions :

The aim of this study was to explore the current knowledge and attitudes regarding exercise induced asthma management among physical education teachers working in middle schools in Chlef state and the factors that might influence such knowledge and attitudes. The following specific research questions were investigated:

- What are the levels of knowledge and attitudes towards exercise induced asthma among physical education teachers ?
- What are the barries present in school setting that impact teachers exercise induced asthma management ?

Hypothesis :

- Knowledge and attitudes towards exercise-induced asthma are limited among physical education teachers.
- There are many barries such as; lack of communication with parents, lack of supplies including medications (medications availability) , no specific training regarding asthma management.

Objectives:

- To assess the level of knowledge regarding exercise induced asthma and its management among middle school physical education teachers.
- To identify the needs of physical education teachers who educate children with exercise-induced asthma in middle schools.
- To assess barriers present in the school setting that impact teachers asthma management.

Definition of terms :

- Assessment :

Assess means give a right, a value to the person whom will be assessed (Boudrouaz, Harouite, & Rahli, 2010, P424).

- Exercise induced asthma :

EIA is defined as an acute narrowing of the airways occurring as a result of exercise. EIB can cause an increase in asthma symptoms including shortness of breath, wheeze and cough, and is estimated to occur in as many as 90% of patients with asthma (Lang, 2019, P55).

- Physical education teacher:

Physical Education Teacher is defined as a qualified teacher who has undertaken a programme of academic and professional training, over 50% of the study load of which (excluding general education or pedagogical study) has related to the subject known as Physical Education or its subject specific equivalent term (Hardman & Green, 2011, P178).

Previous research:

- Study 01: Exercise-induced asthma in adolescents: Challenges for physical education teachers.

A descriptive study conducted by (Sandsund et al., 2011, P172). by using a questionnaire for identifying the needs of physical education teachers in dealing with adolescents with exercise-induced asthma and studying their self-reported knowledge of asthma.

One hundred and six physical education teachers at secondary schools in the city of Trondheim and colleges in Sør-Trøndelag County in Norway answered the questionnaire (65% response rate). Eighty-two physical education teachers (78.1%) had pupils with asthma in their sports classes, and 89.4% answered positively regarding their need for advice on teaching pupils with asthma. Twenty-seven (25.9%) reported that they had sufficient knowledge to teach adolescents with asthma. Teachers of physical education in particular should be given training in dealing with exercise-induced asthma. .

- Study 02: What Level of Knowledge Do Elementary School Teachers Possess Concerning the Care of Children With Asthma? A Pilot Study.

A self-report questionnaire has been developped in order to assess the level of knowledge among a convenience sample of 34 elementary school teachers in a rural school district in Illinois (USA).

The questionnaire addressed general asthma knowledge and management, including signs and symptoms, triggers, and treatment. It has been suggested that the teachers thought they had not sufficient knowledge about asthma; the average score was 75%. Teachers with an increased exposure/experience with asthma scored significantly higher than did those with limited exposure. Implications of these findings for schools in rural areas are discussed.

-Study 03: Asthma education taught by physical education teachers at grade schools: A randomised cluster trial.

The purpose of this study was to Assess whether the Asthma, Sport and Health (ASAH) program taught by teachers improves asthmatics' quality of life, asthma knowledge, and reduces school absenteeism.

(Praena-Crespo et al., 2017) in a randomised cluster trial parallel group study of 2293 students (203 asthmatic) in the Intervention School group (IS) and 2214 in the Comparison School (CS) (224 asthmatic) belonging to primary school.

The intervention was a program called "The Asthma, Sport and Health Educational Program" develpped jointly between school teachers and health care professionals. It contains the symptoms of asthma, its triggers and how to avoid them, how to respond to an asthma crisis and ways to prevent asthma symptoms. The researchers used the Pediatric Asthma Quality of Life Questionnaire (PAQLQ) to assess the quality of life among asthmatics.

They founded that the ASAH programme improved asthma related quality of life (emotional function and limitation of activities) and asthma knowledge, but it failed to reduce school absenteeism.

Study 04: Asthma management in New York City schools: A physical education teacher perspective

(McClelland et al., 2019) explored the physical education teachers' perspectives on in-school asthma management and barriers to physical activity (PA) in asthmatic children. They conducted qualitative semi-structured interviews with 16 physical education teachers from 10 Bronx, New York City elementary schools.

It has been shown that Most PE teachers did not attend an asthma training program. Many PE teachers expressed confidence regarding asthma management. PE teachers identified students with asthma most commonly through communication with students. Several barriers to physical activity were identified, including PE teachers' unawareness of PE requirements, lack of gym facilities, rain or abnormal climatic conditions, inconsistent PE class time, asthma diagnosis, and having no asthma medications at the nurse's office.

Materials and methods:

- Research Design:

A descriptive cross sectional study was conducted among physical education teachers employed at 20 middle schools randomly selected from Chlef state. At the beginning of the study, participants were given a verbal

explanation and written consent forms about the purpose of the study, and they were told that their participation was voluntary. The questionnaires were handed to the teachers and collected from them the same day.

- Sampling procedures:

The main criterion for inclusion criterion was that the participants should work as a physical education teacher (PET). Participants were 45 teachers from a population of 300 of physical education teachers.

- Questionnaire study:

An asthma knowledge questionnaire was developed, in consultation with Sports Medicine Specialist from our National Center Of Sport Medicine (CNMS, Algiers), and based on previous examples from the literature (Bonavent, 1998; McClelland, Avalos, & Reznik, 2019). This tool is a self-administrated questionnaire comprised seventeen

(17) questions including, "yes" and "No" questions, Open-ended questions and Multiple choice questions.

-The face validity :

Face validity is established when a researcher who is an expert on the research subject reviewing the questionnaire (instrument) concludes that it measures the characteristic or trait of interest (Bolarinwa, 2015).

In our study, Face validity of the instrument was investigated based on the opinions of experts (Sport Medicine Physician , researchers), we have deleted and adjusted some questions . In the end , we have just keep fourteen (14) questions from seventeen (17) questions.

These questions assessed knowledge about asthma symptoms, asthma triggers, first aids, availability of asthma medications, exercise induced asthma and how to avoid it. The teachers were asked additional questions about years of experience and level of education.

- Statistical Analyses:

Statistical analyses used the IBM SPSS 23.0 statistical package with a priori significance level of 0.05.

- Results:

A total of 40 physical education teachers returned the completed questionnaire, giving a response rate of 88.88%. Most respondent teachers were from the age range of 30-40 that were 25(62.5%) and the lowest respondent were with the age group of 51-60 that were 06 (15%). The majority of the teachers were bachelor's degree holder 24(60%) followed by Masters 07(17.5%) and CREPS diploma 07 (17.5%). Teachers with experience 6-10 years and 11-15 years were 25%. The participants' socio-demographic data information are shown in Table 1.

Table 1: Socio-demographic data Information of Participants.

Characteristics	Frequency
Age	
[30-40]	25(62.5٪)
[41-50]	09(22.5٪)
[51-60]	06 (15٪)
Education	
CREPS diploma	07(17.5٪)
Bachelor of science	24(60٪)
Master of science	07(17.5٪)
No response	02(5٪)
Work Experience	
1-5 years	03(7.5٪)
6-10 years	10(25٪)
11-15 years	10(25٪)
16-20 years	02(5٪)
More than 20 years	08(20٪)
No response	07(17.5٪)

Question 1: How many children have asthma in your school?

Table 2: Frequency of asthma cases in the classroom.

Sample	Frequency	Asthma cases
6	12 (15٪)	72
1	1(42.5٪)	1
3	2 (7.5٪)	6
2	3 (5٪)	6
1	5 (2.5٪)	5
2	6 (5٪)	12
1	8 (2.5٪)	8
17	0 (2.5٪)	0
7	Missed reponses (17.5٪)	0
Total	100 ٪	110

The number of children with asthma per classrom ranged from 1 to 12, and the asthma

cases are 110 in a population of 10752 children in 20 middle schools in Chlef state. The prevalence of asthma is about 1.02٪ among children and adolescents.

Question 2: How many asthmatic children have been excluded from physical education course?

Table3: Frequency of the excluded asthma cases from physical education course.

Sample	Frequency	Exclusion cases from PE courses
17	0 (42.5٪)	0
3	1 (7.5٪)	3
4	2 (10٪)	8
3	3 (7.5٪)	9
1	15 (2.5٪)	15
12	Missed reponses (30٪)	0
Total	100٪	**35 cases**

Table 3 indicates that 35 (31.81٪) from the 110 asthma cases are exculded from the PA lessons.

Question 3: what are the asthma symptoms?

- Coughing.
- Wheezing.
- Chest tightness.
- Other symptoms.

Table 4: Asthma knowledge.

Responses	Frequency	Percentage	Khi-2	P- value
Chest tightness	22	55,0٪	132,000[a]	,000
wheezing	1	2,5٪		
Chest tightness+ paleness	1	2,5٪		
Chest tightness + breathing difficulty + patient can not keep standing position	1	2,5٪		

Chest tightness + breathing difficulty	2	5,0٪		
Chest tightness+ wheezing+coughing	1	2,5٪		
Chest tightness+ tiredness+low respiratory capacity	1	2,5٪		
Coughing+wheezing	3	7,5٪		
Chest tightness+ coughing	2	5,0٪		
Chest tightness+ wheezing	1	2,5٪		
Chest tightness+ Allergy + tiredness	1	2,5٪		
Wheezing + breathing difficulty	1	2,5٪		
Breathing difficulty	2	5,0٪		
Missed reponses	1	2,5٪		
Total	40	100٪		

Table 4 shows that the majority of teachers 55% gave one symptom (Chest tightness), 7.5% of them think that asthma symptoms are Coughing and wheezing. The difference between observed and expected frequencies is statistically significant (P <0.05).

Question 4: How many times wheezing or asthma attacks occurred during the physical education course in the last two months ?

- Gymnasium (indoor).
- Stadium (outdoor).

Table 5: The number of wheezing or asthma attacks that occurred during PE course in the gymnasium (indoor).

Responses (indoor)	Frequency	Percentage	Khi-2	P- value
0	24	60٪	37,556[b]	,000
1	2	5٪		
2	1	2,5٪		
Missed reponses	13	32,5٪		
Total	40	100٪		

Table 6: The number of wheezing or asthma attacks that occurred during PE course in in the stadium

Responses(outdoor)	Frequency	Percentage	Khi-2	P- value
0	2	5٪	32,667[b]	,000
1	23	57,5٪		
2	2	5٪		
Missed reponses	13	32,5٪		
Total	40	100٪		

The results in table 5 and 6; show that wheezing or asthma attacks may happen more often in the stadium (outdoor) 58% and there is significant differences in both cases (P <0.05).

Question 5: How did you know about their asthma ?

- The child tells me about his asthma.
- Parents,
- Medical certificate,
- I discovered this asthma case during the PE course.

Table 6: knowing chidlren's health status?

Responses	Frequency	Percentage	Khi-2	P- value
-I discovered this asthma case during the PE course	6	15,0٪	39,000[c]	,000
The child tells me about his asthma	13	32,5٪		
-The child tells me about his asthma,Parents, Medical certificate	1	2,5٪		
-The child tells me about his asthma, I discovered this asthma case during the PE course	4	10,0٪		
-Parents	1	2,5٪		

-Parents, The child tells me about his asthma	1	2,5٪		
-I discovered this asthma case during the PE course, Medical certificate	1	2,5٪		
-The child tells me about his asthma, Medical certificate	2	5,0٪		
-The child tells me about his asthma, Parents, I discovered this asthma case during the PE	1	2,5٪		
Missed reponses	10	25٪		
Total	40	100٪		

Most of teachers 32.5% know about asthma from the child himself. However, 15% of the asthma cases were discovered in PE lessons when exercising. The results are significant (P <0.05).

Question 6: Do you accept asthmatic children in your physical education classes ?

- Yes. - No

Table 7: Integration of the asthmatic children in the PE course.

Response	Frequency	Percentage	Khi-2	P-value
No	13	32,5٪	3,789[a]	,052
Yes	25	62,5٪		
Missed reponses	2	5,0٪		
Total	40	100٪		

No significant differences were observed (P> 0.05) in the table 7 . In addition, 62.5٪ of the teachers accept asthmatic childen in their PE lessons.

Question 7: what are the asthma triggers?

- Allergens exposure
- Viral infections
- Exercise - Other triggers

Table 8: Common asthma triggers percieved by teachers.

Responses	Frequency	Percentage	Khi-2	P-value
Allergens exposure	11	27,5٪	42,053[a]	,000
Viral infections	7	17,5٪		
Exercise (exercise induced asthma)	6	15,0٪		
Allergens exposure, Viral infections and exercise.	2	5,0٪		
Exercise, humidity and fumes.	4	10,0٪		
Allergens exposure and indoor gymnasium.	1	2,5٪		
Allergens exposure, Viral infections and genetic determinants.	1	2,5٪		
Pollution.	1	2,5٪		
Viral infections and indoor gymnasium.	1	2,5٪		
Allergens exposure, Viral infections and contamination	1	2,5٪		
Allergens exposure, lack of aeration and living near an industrial zone	1	2,5٪		
Don't know	1	2,5٪		
Wind, dust and indoor gymnasium.	1	2,5٪		
Missed responses	2	5٪		
Total	40	100٪		

Table 8 shows that most of teachers reported one trigger; 27,5٪ "allergen exposure" and17,5٪ "Viral infections". As such that only 15٪ of the teachers reported that "Exercise" is the only trigger of asthma, 10,0٪ reported two or more triggers of asthma. The difference between observed and expected frequencies is statistically significant (P <0.05).

Question 8: Do you think that asthma is a contraindication to exercise?

- Yes. - No.

Table 9: Exercising with asthma

Responses	Frequency	Percentage	Khi-2	P-value
No	28	70,0٪	24,800[b]	,000
Yes	4	10,0٪		
Missed reponses	8	20٪		
Total	40	100٪		

The majority of the teachers of physical education (70٪) think that children with asthma can participate in PE lessons and exercise. Based on the results shown in the above table , there were statistically significant differences (P<0.05).

Question 9: Do you think that you have the skills to teach children with asthma and intervene urgently if they have an asthma attack?

- Yes - No

Table 10: competancies and skills to dealing with asthmatic children.

Responses	Frequency	Percentage	Khi-2	P- value
No	35	87,5٪	24,641[c]	,000
Yes	4	10,0٪		
Missed reponses	1	2.5٪		
Total	40	100٪		

Table 10 shows that 87,5٪ of the teachers didn't have competancies for dealing with asthma attacks and there were significant differences as shown above.

Question 10: Did you attend a first aids training course ?

Table 11: First aids training course.

Responses	Frequency	Percentage	Khi-2	P- value
No	32	80٪	14,400[a]	,000
Yes	8	20,0٪		
Total	40	100,0٪		

80٪ of the teachers didn't attend a first traning course , only 20٪ have a certificat of first aids. The difference between observed and expected frequencies is statistically significant (P <0.05).

Question 11: Do you know the first aid treatment for asthma attacks to be undertaken before the arrival of the SAMU?

-Yes. -No.

- What are the treatments....

Table 12: First aids treatments for asthma attacks.

Responses	Frequency	Percentage	Khi-2	P-value
No	29	72,5٪	158,769[b]	,000
place him into a comfortable position	3	7,5٪		
Open the airways	1	2,5٪		
Cardiopulmonary resuscitation (CPR)	1	2,5٪		
lay the patient on the ground and throw him with water	1	2,5٪		
Take a rest before being ready to start again exercising	1	2,5٪		
open the airway and Loosen tight clothing such as belts or ties	1	2,5٪		
Stop exercising , Open the airways, put the patient into recovery position	1	2,5٪		
Open the airways, Ask the patient to use his inhaler (puffer)	1	2,5٪		
Missed responses	1	2,5٪		
Total	40	100٪		

The table 12 shows that 72.5٪ didn't know the first aid treatment for asthma attacks to be undertaken before the arrival of the SAMU, 7,5٪ react by placing the patient into a comfortable position but they didn't explain how it must be undertake. The others responded by stoping the exercise , Open the airways and place the patient into comfortable position. One response (2.5٪) was about CPR as a first aid for asthmatic patient which is threaten and reflected a lack of knowledge about the fisrt aids skills. There resulats were statistically significant (P<0.05).

Question 12: Do you have the first aid equipment and / or asthma medications in your school?

Table 13: Availability of Asthma medication in the School.

Responses	Frequency	Percentage	Khi-2	P- value
No	38	95,0٪	35,103[b]	,000
Yes	1	2,5٪		
Missed responses	1	2.5٪		
Total	40	100٪		

As shown in the table 13, several teachers (95)٪ replied by "No". The unavailability and poor access to asthma medications reflected a lack of a school asthma care plan. The results were signifants (P<0.05).

Question 13: Does endurance sport cause EIA?

-Yes.

-No.

Table 14: Endurance sports and EIA.

Responses	Frequency	Percentage	Khi-2	P-value
No	12	30,0٪	5,769[a]	,016
Yes	27	67,5٪		
Missed responses	1	2,5٪		
Total	40	100٪		

The results showed that the majority of the respondents knew that continuous or endurance sport appear to be a higher risk for developing Exercise Induced Asthma (EIA) and according to table 14 there is significant differences ($P<0.05$).

Question 14: Do you know the preventive treatments of exercise induced asthma?

-Yes.

-No.

- The different preventive treatments that you know are.....

Table 15: Preventive treatments of EIA.

Responses	Frequency	Percentage	Khi-2	P-value
No	25	62,5٪	133,053[a]	,000
Avoid dry climate and collision sports	1	2,5٪		
Avoid cold climate	1	2,5٪		
Avoid dry climate	1	2,5٪		
Deep respiration	3	7,5٪		
Avoid intense exercise and climate changes	1	2,5٪		
interval training and swimming	1	2,5٪		
Low intensity exercise training	1	2,5٪		
Medicaments and swimming	3	7,5٪		
Avoid high intensity exercise training and keep a good cardiorespiratory fitness	1	2,5٪		
Missed responses	2	5٪		
Total	40	100٪		

The results in table 14 show that 62.5٪ of the teachers don't know the preventive treatments of Exercise Induced Asthma, 7.5٪ of them think that practising deep respiration before exercising can avoid EIA and 7.5٪ of the school teachers also

commented on the importance of prevention through correct use of medication and swimming. Significant differences are shown above (P<0.05).

Discussion :

It has been shown that adequate asthma knowledge among school teachers is critical for the safety of their pupils with asthma exacerbation during the school rime (A Alshaikh et al., 2017, P1).

The results obtained in our study, showed that most of physical education teachers (80٪) had experience with teaching children with asthma, and the asthmatics children were 110 with 35 who has been excluded from physical education lessons. The study revealed knowledge gaps about the symptoms. the answers of the "question3" are all correct but Fifty –five percent of the teachers indicated that chest tightness was the only asthma symptom. However, this rate was 7٪ and 5٪ for (wheezing , coughing) and breathing difficulty, respectively. In addition, The teachers did not have satisfactory understanding of the symptoms of asthma. It has been shown that teachers lack knowledge and confidence to support children with asthma symptoms, and there is no asthma policies in schools .P (McWhirter et al., 2008) . A number of studies have reported that teachers might find difficulty in recognizing and managing attacks of asthma, which can happen to children in school . Asthma might be significantly complicated by such ignorance (Faisal A Latif Alnasir, 2004 , P4). .

Environmental factors such as temperature of inhaled air, the humidity and intensity of exercise are thought to be the main cause of EIA symptoms . In a study made with the aim to understand if school also could be a significant site of allergen exposure for children in terms of environmental factors, such as atmospheric conditions and the presence of allergens, both potentially predictive of exercise-induced symptoms during physical education courses, it was found that environmental factors, like humidity and barometric pressure, and environmental allergens, in particular it was observed of cat allergens, on the occurrence of the EIA and cough in schoolchildren (Caggiano et al., 2017 , P 3).

Less than half of the teachers with a child with asthma obtained information about asthma from the child. In contrast, 15% of the teachers knew about the asthma case only when the children experience the symptoms of asthma during the courses. Asthma information provided by parents was poor. Therefore, Communication was worse between parents and the teachers. It has been found that a wide gap was observed in communication among physicians, parents, school personnel, and community health agencies (Getch & Neuharth-Pritchett, 2009) P130. In addition, Since improved knowledge of parents has been shown to improve asthma in their children (Bahari et al., 2003 , P131).

Twenty-five (62.5٪) of the teachers agreed that children with asthma take part in the physical education lessons on equal footing with the other healthy peers, and no significant differences were observed (P> 0.05). In contrast, thirty-five (31.81٪) from 110 child avoided physical education classes. Therefore, the results were statistically insignificant. As it has been noted "that 80% of teachers knowing about exercise-induced asthma. Asthmatic students may subsequently be excluded from sporting activities, which may, in turn, promote an inactive lifestyle and unsatisfactory management of the condition (Hussey et al,1999) " (Adeyeye et al., 2018 , P80).

An asthma trigger is anything that can set off the asthma symptoms. In our study, most of teachers reported knowing at least one asthma triggers; (27,5٪) for "allergen exposure" , (17,5٪) "Viral infections", (15٪) for Exercise or exercise induced asthma and other triggers like dust, living near an industrial zone, fumes, pollution...ect. Such triggers represent a problem for children with acurate sensitivity beause these triggers are likely to aggravate worsen the symptoms. However, Avoiding triggers, if possible, can help to control asthma and reduce symptoms (Getch & Neuharth-Pritchett, 2009 , P129).

Twenty eight (70٪) of the teachers think that children with asthma can participate in PE lessons and exercise. Physical activity is important for children and youth, especially asthmatics. Several studies have shown that physical activity improve aerobic fitness, and other benefits such as reduced hospital admissions, reduced absenteeism from

school, fewer consultations with health professionals, reduced medication administration, and improved ability to cope with asthma. Moreover, it is obvious that being able to participate in physical activity, particularly at school, is an important contributing factor for psychological wellbeing by, for example, reducing the body dissatisfaction that can be associated with asthma (Williams et al., 2008 , P3).
Thirty-five (87,5٪) of the teachers didn't have competancies for dealing with asthma attacks and there were significant differences as shown in table 10 above. In a study conducted by Fernández-Oliva CRR and his colleagues, (84٪) of the teachers reported having at least one asthmatic child in class, though (64٪) admitted that they would not know what to do if a pupil has an asthma attack. Fifty-eight percent considered themselves capable of helping with administration of the Inhalers (puffers) , although (95٪) considered that they needed further training. In addition, Watson et al. underscored the importance of standardised training protocols to improve teacher knowledge and self-confidence in dealing with emergencies in children with allergic diseases in school (Juliá-Benito et al., 2017). Moreover, It has been shown that teachers who had contact with an individual with asthma or who had received previous training on asthma had a significantly greater knowledge (Faisal A Latif Alnasir, 2004).
When children with asthma attend school, their safety and management of asthma becomes a shared responsibility of the family, their asthma care provider, and the school personnel (American Lung Association, 2019). Several national organizations have developed policy recommendations to help schools optimize the well-being of students with asthma. These recommendations focus on the importance of having written asthma action plans on file and quick-relief medication (albuterol) readily available for asthmatic children (Gerald et al., 2012 , P1). In our study, 95٪ reported the unavailability of asthma medications in schools. The unavailability and poor access to asthma medications reflected a lack of a school asthma care plan. Julia Naman and her colleagues conducted a study aimed to illuminate minority students' experiences

with asthma at school and perceptions of facilitators and barriers to care. They found a Stigma around inhaler use, lack of concern by school staff, and limited access to medications remain as barriers in asthma management in schools (Naman et al., 2018 , P1).

Whether playing sports or playing a game of tag outside, daily physical activity helps keep children healthy and happy. In children with asthma, however, exercise can make breathing more difficult and possibly trigger an asthma attack (Children's Health, 2019). In our study, We found that the majority of the respondents (67,5٪) knew that continuous or endurance sport appear to be a higher risk for developing Exercise Induced Asthma (EIA) and according to table 14 there is significant differences ($P<0.05$). It has been shown that some types of exercise and the environment where the child exercise cause asthma symptoms. Endurance sports for example that require more continuous activity such as swimming, soccer, and long-distance running are more likely to trigger asthma symptoms. Therefore, the prevalence of asthma can be higher in long-distance and endurance sports (Uchino et al., 2017).P6. But that doesn't mean children can't do these sports if they truly enjoy them. Many athletes with asthma have found that with proper training and the right dose and use of medicine, they can play any sport they want (Bonnie B. Hudak, 2017).

Furthermore, Our results regarding knowledge of the preventive treatments of exercise induced asthma among physical education teachers showed that 62.5٪ of the teachers don't know the preventive treatments of Exercise Induced Asthma, (7.5٪) of them think that practising deep respiration before exercising can avoid EIA and (7.5٪) commented on the importance of prevention through correct use of medication and swimming. The fact that the

most of teachers do not know how to prevent an attack triggered by exercise indicates the need to train them on this problem (Varela et al., 2016 , P 685).

Similarly, in another study , few knew that the most common method in order to minimize or prevent the the symptoms of EIA involves the prophylactic use of medications and under these circumstances students with asthma need not avoid

exercise (Bruzzese et al., 2010 , P189). In addition, some teachers also commented on climate conditions (cold dry air, dust). It is shown that environmental factors such as temperature of inhaled air, the humidity and intensity of exercise have a significant effect on the EIA (Stelmach et al., 2016 , P25).

Conclusion :

We can conclude that the data supports the hypothesis (1) and (2). Our findings demonstrate that physical education teachers participating in this study have a lower and limited exercise induced asthma knowledge and they are in need of an education program regarding exercise induced asthma in order to dealing with asthmatic children. Additionnaly , there are many barries present in school setting that impact teachers exercise induced asthma management such as; asthma traning program for teachers, medication unavailability, lack of communication with parents and a specific asthma management program.

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