

يجب إرفاقها
فما المستفاد

بسم الله الرحمن الرحيم



Elshaikh Abdallah Elbadri University
Faculty of Health Science
Department of Nursing Science

Research about

***Determination of Asthma Triggers in Pediatric
School Children (5-16) years in River Nile State***

**A Research Submitted as Fulfillment or Partial Requirement of
B.S.C Degree of Nursing of Science**

Submitted By:

- 1. Abrar Hassan Alyas***
- 2. Amna mohammed Seed Ahmed***
- 3. Eslam Abdullah Abd alrahman***
- 4. Mareb Mustafa Abd al kareem***
- 5. Monia Muslim Mustafa***
- 6. Tagwa abd alazeem***

SUPERVISORS:

US: Fatima Ahmed Babekir

Lecturer in psychiatric department

Elsheikh Abdulla Elbadri University

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الاستهلال

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

الإسراء ٨٥

قَالَ تَعَالَى: ﴿وَمَا أُوتِيتُمْ مِنَ الْعِلْمِ إِلَّا قَلِيلًا﴾

طه: ١١٤

قَالَ تَعَالَى: ﴿وَقُلْ رَبِّ زِدْنِي عِلْمًا﴾

البقرة ٢٨٦

قَالَ تَعَالَى: ﴿رَبَّنَا لَا تُؤَاخِذْنَا إِنْ نَسِينَا أَوْ أَخْطَأْنَا﴾

الإهداء

إِلَهِ التي حملتني وهنا على وهن، ووفرت لي كل سبل الراحة

إِلَهِ ملاكي في الحياة

إِلَهِ بسمَةِ الحياة ونورها

أُمِّي الغَالِبَةُ

إِلَهِ الذي حثني على العلم والعمل كل هذه السنين

إِلَهِ من أحمل اسمه بكل افتخار

إِلَى والدِي الغَالِي

إِلَهِ من أرى التفاؤل في عينيهم والسعادة في وجودهم بجانبِي

إِخْوَانِي

إِلَهِ من أحرقوا أنفسهم لينيروا لنا الطريق

أُسَاتِذِي

إِلَهِ من أرى نفسي فيهم وهم بمثابة مأوى وملاذ

الزُمْلَاءُ وَالزُمْلَاتُ

الْبَلَمَ جَمِيعًا أَهْدِي هَذَا الْبَحْثَ الْمُنَوَّاعَ

ABSTRACT

Are substance, weather condition, or activities that are harmless to most people, but can lead to coughing ,wheezing and shortness of breath in those with a asthma and lead to asthma symptoms and flare-up.

Triggers vary from person to person, they are sometimes seasonal and may even stop affecting kids with asthmas they grow older.

Example: pollen, wool, feather, cotton seed, smoke, powder and dust (especially house dust with mite).

Determination of Asthma Triggers in Pediatric School Children (5-16) years in River Nile State.

The data was collected by use master sheet then analysis by using simple statistical technique then by using software computer program (SPSS) determ statistical measured used (frequency, percentage) .

The largest age group was 5-9 years, followed by the age group 9-12 years and the lowest category was 12-16 years.

The majority of the urban population is 8% and the rural population is 12%.

We find that the highest percentage of the farms were 22% and the least surrounds the housing was the petrol stations and the train by 2%.

Conclusion:

The incidence of childhood Asthma is higher of male than females.

- The most irritating disease was in the dust and dust of houses.
- Age has an impact on the incidence of childhood crisis and the most age group (5-9 years).
- The residential area has the effect that the population of the city has the highest proportion of the population of the villages.

المستخلص

هي المادة، حالة الطقس، أو الأنشطة التي هي غير ضارة لمعظم الناس، ولكن يمكن أن يؤدي إلى السعال، وضيق في التنفس في أولئك الذين يعانون من الربو ويؤدي إلى أعراض الربو ومضيفة المتابعة.

المهيجات تختلف من شخص لآخر، فهي في بعض الأحيان موسمية، بل قد تتوقف عن التأثير على الأطفال الذين يعانون من الربو الشعبي مع التقدم في السن. مثال: حبوب اللقاح والصوف والريش وبذور القطن والدخان والمسحوق والغبار (وخاصة الغبار المنزلي مع السوس).

وكان الغرض تحديد مسببات الربو لدى الأطفال (5-16) سنوات في ولاية نهر النيل. تم جمع البيانات باستخدام ورقة رئيسية ثم تحليل باستخدام تقنية إحصائية بسيطة ثم باستخدام برنامج حاسوبي للبرمجيات (SPSS) يحدد الإحصائي المقاس المستخدم (التكرار، النسبة المئوية) كانت الفئة العمرية الأكبر من 5 إلى 9 سنوات، تليها الفئة العمرية 9-12 سنة وأقل فئة كانت 12-16 سنة.

وغالبية سكان المدينة اعلى معدل من سكان الريف. ووجدنا ان نسبة المنازل جوار المزارع كانت أعلى 22٪ والأقل هي التي تحيط بمحطات البنزين والقطار بنسبة 2٪. استنتاج:

- إن نسبة الإصابة بالربو ف الإناث اقل من الذكور.
- كانت معظم المهيجات المزعجة في الغبار والأتربة في المنازل.
- العمر له تأثير على حدوث مرض الربو وأغلب الفئات العمرية من (5-9 سنوات).
- المنطقة السكنية : تؤثر على أن سكان المدينة لديهم أعلى نسبة من سكان القرى.

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Chapter one

Introduction

Chapter One

Introduction

1.1 Introduction:

Asthma is an inflammatory disease of the lung. Once the airway get inflamed and swollen, it becomes narrower, and less air gets through to the lung tissue. This causes symptoms like wheezing, coughing, chest tightness, and difficulty breathing. Once considered a minor ailment, asthma is now the most common chronic disorder in childhood.

Asthma does run in families, which suggests that genetics play an important role in the development of the disease. If one or both parents have asthma, the child is much more likely to develop the condition.

Some the patient's guardian are unaware of. Once asthma is triggered, especially in pediatric patients, they are most likely to go to visit the clinic or emergency department. Overtime, this can be overwhelming financially and physically for the families.

Therefore, it is vital to reduce the asthma attack morbidities and mortalities by education and prevention.

Raising awareness about asthma triggers to guardians of pediatric asthmatic patients could play an integral role in achieving this goal. Asthmatic patients tend to react strongly to certain inhaled substances.

When the airways react, the muscle around them tighten, causing the airways to narrow causing less air to flow into the lungs. Cells in the airways might make more mucus than usual and this can further narrow the airways[1].

The numerous factors including allergic, familial, infectious, occupational, socioeconomic, environmental, weather changes, exercise, and psychosocial have been implicated in the induction and exacerbation of asthma. Genetics have been identified as predisposing patients to having asthma.

A study done by the National Institute of Environmental Health Science in 615 Mexico City families show that variations in the genes, ORMDL3 and GSDML, were associated with the increases risk of childhood asthma. [2]

Numerous asthma triggers have been identified and some are still unknown. Triggers caused by substances in the environment are called allergens. Some examples of the most important environmental triggers for asthma include dust mites, cockroaches, pets, and molds. Researchers from the U.S. Department of Housing and Urban Development conducted a survey of lead hazards and allergens in household and found that 46 percent of homes had dust mites allergens that are high enough to produce allergic reactions. They also found that nearly 25 percent of homes have allergen levels high enough to trigger asthma symptoms in genetically susceptible individuals. The same survey also showed that nearly two thirds of American homes have cockroach allergens. [3]

A word map of prevalence of asthma conducted by the European community and international study of asthma children 12,5% . Conducted study in Egypt (past 12 month ago) questionnaire was distributed to a sample of 2,645 of school age in Cairo the prevalent 8,7% to 13,8%.

In African counters including Sudan the prevalence recently by the study 13,59.

- *The epidemiology :*

- It is increase and epidemic rates since the early (1980).
- Most common cause of school absent and hospitalization .
- Most prevalence causes of child hood disability
- Children with asthma have higher rate of social and emotional problems

- *Variability in asthma prevalence :*

By gender: boys are more likely than girls to have asthma attack
By race high of white than black.

1.2 Justification:

- Asthma becomes common disease in child.
- Asthma triggers in the children under 16 years not clear and affected seriously.

1.3 Research Objectives:

General objective:

Determination of Asthma Triggers in Pediatric School Children (5-16) years in River Nile State.

Specific objective:

Determine of pediatric asthma triggers

- To assessment common asthma triggers.
- To assessment relationship between asthma triggers and growth and development.
- To assessment differentiation trigger form place to other.

Chapter Two

Literature Review

Chapter Two

Review of Literature

2.1 Definition of Asthma:

It is chronic inflammatory disorder of the lower air way due to temporary narrowing of the bronchi by bronchospasm, the peak incidence is found in 5 to 10 years of age .boys more suffering than girls. The condition may be caused by allergy –infection or psychological factors, other alone or combination .allergic asthma is most common in children.

2.2 Path physiology: [5]

Their major pathological changes resulting air way obstruction bronchial asthma are:

- Inflammation edema of the mucous membrane lining the air way.
- Increased secretion and acculation of thick tenacious .
- mucus inflammatory cell and cellular debris. Within the bronchi. And bronchioles.
- Spasm of the smooth muscle of the bronchi. these processes interfere with ventilation and produce the clinical features several biochemical and mechanical events contribute to bronchial smooth muscle contraction and airway harrowing antigen . antibody reaction is stimulated by extrinsic trigger.

The antigen combines with causes bronchi constriction on dilated epithelium to reduce mucous clearance, on bronchial gland to cause mucus secretion on blood vessels to cause vasodilation and increased permeability and on leukocytes to cause a cellular infiltration and inflammation, late phase reactions include in flax of eosinophil's lymphocytes and monocytes.

2.3 Classification:

Bronchial asthma can be classified as extrinsic asthma and non-allergic asthma is non-common in children. [5]

- Allergic or extrinsic asthma produced by hyper immune response to the inhalation of specific allergen (pollen, dust feather) . the children with extrinsic asthma usually have positive skin test to the offending allergen and positive family history of allergy.
- Non allergic or intrinsic asthma, it is produced in response to unidentified or nonspecific factors (triggers) of the environment.

- *Classification of asthma depend severity: [6]*

- Mild intermittent asthma: child with mild asthma has intermittent, in frequent symptoms occurs less than twice a month, and can easy control the symptoms with use the bronchodilator.
- Mild persistent asthma:
- Frequent 2-3 times per month, symptoms are mild not require hospitalization.
- Moderate persistent asthma:

This is similar to mild expect the symptoms are more sever and frequent (1-2per week).

- Sever persistent:

Child has very frequent symptoms more than twice a week or has continuous symptoms.

2.4 Causes of asthma: [6]

- In hereditary traits.
- Exposure to environment factor or reaction between genetic and environmental factor.
- Viral infection as (common cold)
- Increase immune system sensitivity.
- Recurrent of sever upper respiratory tract infection.

2.5 Clinical Manifestations: [5]

The acute asthmatic paroxysmal attack is usually begins suddenly at night. the onset may be gradual. The sudden attack occurs usually due to

exposure to allergens. An episode of asthma may be preceded by nasal congestion, rhinitis, sneezing, coughing and upper respiratory infection it may be preceded by an asthmatic aura as tightness of chest, restlessness, itching, polyuria and mental excitement.

The typical attack of asthma is characterized by marked dyspnea, bouts of cough and respiratory wheezing. Nasal flaring with subcostal and intercostal retraction are apparent. Restlessness, sweating, exhausting, tachycardia, cyanosis and pallor are usually present. The child looks anxious and pale and can speak only in difficulty, abdominal pain and vomiting may be found in intense cough.

The child may suffer with attack generally for a period of 2 to 7 days.

2.6 Investigation :

Chest x-ray.

Skin test.

MRI of lung.

Blood gas analyses.

2.7 Management: [5]

- Drug therapy:

- Bronchodilator as salbutamol, terbutaline.
- Theophylline, aminophylline.
- Corticosteroids as (inhalation, beclomethasone, prednisolone).
- Antibiotics as prophylactic to avoid infection.

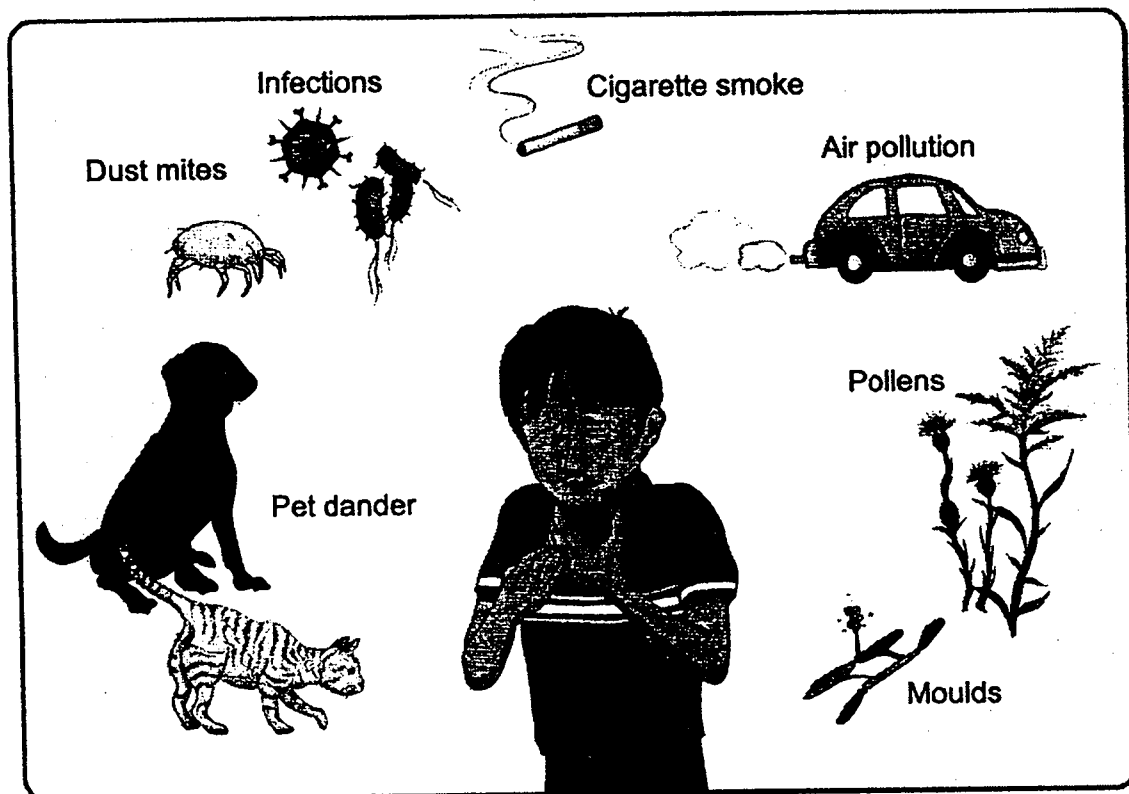
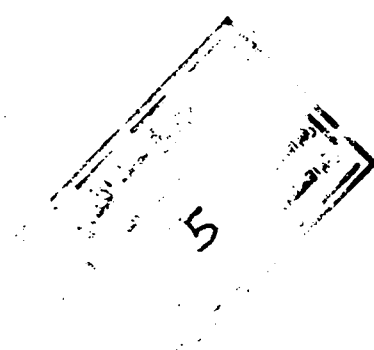
- Additional measure:

- Mild tranquilizers to remove anxiety and emotional stress
- Expectorants to remove excessive secretion
- Oxygen therapy in severe respiratory distress and cyanosis
- Iv fluid therapy from maintenance of fluid electrolyte balance and to correct metabolic acidosis
- Comfortable prop up sitting position to relieve respiratory position

- Calm in a quite environment to provide rest and supportive major with good nursing care.

2.8 Complication:

- Status asthmatics.
- Respiratory failure and congestive Emphysema
- Sever hypoxemia.
- Cardiac arrhythmia.
- Atelectasis and pneumothorax.
- Heart failure.



2.9 Triggers:

Are substance, weather condition, or activities that are harmless to most people, but can lead to coughing ,wheezing and shortness of breath in those with a asthma and lead to asthma symptoms and flare-up.

Triggers vary from person to person, they are sometimes seasonal and may even stop affecting kids with asthmas they grow older.

- Common asthma triggers include:

- Allergy to certain substance produce allergic extrinsic asthma:[5]

- Inhalation of pollen ,wool , feather , cotton seed , smoke, powder and dust (especially house dust with mite).
- Ingestion of food like egg some fish, meat, chocolate, wheat, vegetables (Aubergine) and food additives.
- Drugs like aspirin or penicillin.

- Irritants: [6]

(Perfumes, spray, paint or gas fumes, cleaning product)

- Respiratory infection like colds (influenza).
- Change Weather conditions or climate.
- Worm infestations.
- Emotional disturbances due to stress, anxiety, tension, fear and conflict.
- Excessive exhaustion and exercise.
- Gastro esophageal reflux [6].
- Chemical Fumes and strong odor (pesticides, paints and spray).

- Trigger factor:

An environmental pollutant (indoor or outdoor) may affect asthma severity in: [7]

- The pollutant might act as an inciter or trigger, leading to an asthma attack in an Individual with hyper responsive airways.

- The pollutant can exacerbate preexisting airway inflammation, leading to increased airway hyper responsiveness, which may persist after cessation of exposure.

- The pollutant might augment or modify immune responses to inhaled antigens or Intensify the impact of other pollutants in the respiratory tract.

According to the Natural Resources Defense Council, scientists have shown that air Pollution from cars, factories and power plants, is a major cause of asthma attacks. A research study published in 2002 estimated that 30 percent of childhood asthma is due to environmental Exposures, costing the nation \$2 billion per year.

- The Council also listed several air pollutants that can trigger asthma.

- Ground Level Ozone: this is a toxic component of smog. Ozone is produced at ground level when tailpipe pollution from cars and trucks reacts with oxygen and Sunlight. This is a big problem in big cities with lots of traffic such as Los Angeles, Houston and New York City.

- Sulfur Dioxide: this is a respiratory irritant that is produced when coal and crude oil are burned.

- Particulate Matter: this refers to a wide range of pollutant i.e. dust, soot, exhaust Particles, and sulfate aerosols which are suspended as tiny particles in the air. Some of these fine particles can become lodged in the lungs and could trigger asthma attacks.

- Nitrogen dioxide: this is a gas that is emitted from tailpipes and power plants.

Nitrogen dioxide contributes to the formation of ground level ozone and smog. It can also react with other air pollutants to form small particles that can cause breathing difficulties, especially in patients with asthma. 8

Another study at the Keck School of Medicine of the University of Southern California found that children living within 150 meters of a freeway

were more likely to be diagnosed with asthma than children who lived further away. This was based on a study of air pollution in Southern California cities. Researchers at the same university also found that children who had higher levels of nitrogen dioxide exposure around their homes were more likely to develop asthma symptoms. [9]

To measure outdoor air pollution, the National Ambient Air Quality Standards required by the Clean Air Act, have sets for six criteria pollutants (ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, lead, particulate matters less than 10 or 2.5 micrometers).

The standards are designed to protect the health of all susceptible groups. For people with asthma, sulfur dioxide, sulfuric acid aerosols, and nitrogen dioxide can exacerbate respiratory symptoms in the short term. The Air Quality Index provides standardized means of communicating health information associated with daily ambient levels of ground-level

Chapter Three

Methodology

Chapter Three
Methodology
Subjects and Methods

3.1 Study Design:

Descriptive cross-sectional study done in Al damer during the period extend from (5/7/2017- 19/7/2017).

3.2 Study Area:

Al damer, a city in the northern Nile state of Sudan, is 355 meters (1,164.70 feet) above sea level and 300 kilometers (186.41 miles) north of Khartoum and about 13 kilometers (8 miles) south of Atbara.

3.3 Study Setting

Al Gabass girl School in Al damer have 8 class collected data from the seventh (42 N) and eight class (50 N).

Al Raghiy boys School in Al damer have 8 class collected data from the fifth class (35 N) and sixth class (45 N).

3.4 Study Population:

Include all students, who have asthmatic disease during the time of breakfast.

3.4.1 Inclusion Criteria

asthmatic child (5-16) years and actually ensure of diagnose.

3.5 Sample Technique

Collected data from randomly sample.

3.5.1 Sample Size:

$$n = 50.$$

3.6 Data of collection Tools:

Self-administer questionnaire ended question compose of (16) question
Part one: question (1-6) about including demographic (age- Gender- Residence- House surrounding, Animal house, Heredity/ Acquired).

Part two: question (7-12) about including demographic (time disease – determine Asthma attack – duration of symptoms - time of symptoms increase – season symptoms increase – limit of symptoms without use of drugs).

Part three: question (13-16) about including demographic (thing increase of trigger – food – medication – place of symptoms occur).

3.7 Data Collection Technique

Within two weeks during (5/7/2017- 19/5/2017)

The information was completed from student no one refuse to the participate and informed the information should be confidential and use for purpose of study only.

3.8 Data analysis:

The data was collected by use master sheet then analysis by using simple statistical technique then by using software computer program (SPSS) determine statistical measured used (frequency, percentage) .

P-value was consider significance if less than (0.05) then percentage in from of figure.

3.9 Ethical Consideration

Approve was taken from the faculty verbal consent was taken from participation after explanation the purpose of study and data should be confidential.