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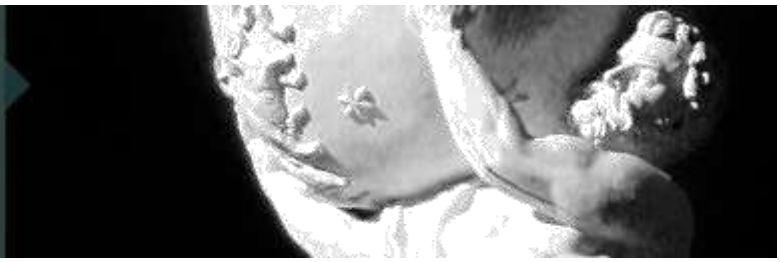

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CHILDHOOD DIABETES AND ITS IMPACT ON ACADEMIC PERFORMANCE

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Summary

Diabetes is one of the most common chronic diseases in pediatric age, and it is quite possible that every teacher will have a child or adolescent with this disorder in their class during their professional life, Therefore, it is necessary for the teacher to know some aspects of it in order to create social integration and safe and affective inclusion of the child with diabetes. Ideally, the school should be prepared to care for children with diabetes, and parents should be part of this process by providing information to the school. The child affected by diabetes is a person with great potential for development as long as he has the necessary support so that his evolutionary progress is not affected by the disease, for which the various contexts surrounding him must be integrated, adapting them to their needs, medical and educational treatment so that their academic performance is not impaired.

Key words: **diabetes - academic performance - educational - childish**

Abstract

Diabetes is one of the most frequent chronic diseases in the pediatric age it is very possible that each teacher has in his class, throughout his professional life, some child or adolescent with this

ailment, for which it is necessary that the teacher knows some aspects of it to create the integration and social, safe and affective inclusion of the child with diabetes. Ideally, the school is prepared to serve children with diabetes, and parents are part of this process, providing information to the school. The child affected by diabetes is a person with a great potential for development as long as he has the necessary support so that his evolutionary progress is not affected by the disease, for which the diverse contexts that surround him must be integrated, adapting them to his needs of medical and educational treatment so that their academic performance is not diminished

Keyword: diabetes - academic performance - educational - childish 1.-

Introducción

Many American authors refer to childhood diabetes as insulin deficiency that appears during the first twelve months of life, distinguishing juvenile diabetes from that which manifests itself during childhood and puberty, with a limit of 15 years of age. The terminology is still not entirely clear as in some countries childhood diabetes is called first, second and third childhood diabetes.

By juvenile diabetes we mean that which occurs during puberty and adolescence, from 10 to 16 years of age in girls, and from 12 to 17 years of age in men.

Normally the body secretes insulin stimulated by food intake in addition to its basal secretion between meals and at night. Therefore, before the diagnosis of childhood diabetes, the current treatment regime that mimics the constancy of this secretion using multidose insulin with long-acting and fast-acting analogues is extremely important (Castellanos, 2016).

The child affected by diabetes is a person with great potential for development as long as he has the necessary support so that his evolutionary progress is not affected by the disease, for this effect must integrate the various contexts surrounding him, which must be adapted to their medical and educational treatment needs.

Diabetes is one of the most common chronic diseases in pediatric age it is quite possible that every teacher has in his class, throughout his professional life, some child or adolescent with this disease, Therefore, it is necessary for the teacher to know some aspects of it in order to create social integration and safe and affective inclusion of the child with diabetes. Ideally, the school should be prepared to care for children with diabetes, and parents should be part of this process, providing information to the school, ensuring that the information reaches the right people. Parents should also prepare the child to be able to manage diabetes when they are away from home

2.- Development

2.1.- Contextual framework

Problem:

Due to poor eating habits, lack of nutritional information, children may lose weight or become obese, food anxiety, causing childhood diabetes, which is the most harmful consequence, all this can affect the educational process, reflected in poor academic performance due to learning deficiencies or recurrent failures due to morbid episodes.

Definition.-

Childhood diabetes is a metabolic disease, characterized by hyperglycemia caused by a defect in the usual secretion or action of insulin, which generates the need for an exogenous source of insulin. It is one of the most common chronic diseases in childhood with a prevalence of 1.7 individuals per 1,000 inhabitants under 20 years of age. There are two types:

- Type 1 diabetes: consists of the destruction of the beta cells of the islets of Langerhans lo which causes a deficit in insulin production. Often there are antipancreatic antibodies, these self-antibodies are present at the diagnosis in 84-97% of patients (Castellanos, 2016) is also characteristic the decrease in the size of the islets and the number of their beta cells; As a result there is a marked decrease in the insulin content of the pancreas, with decreased or no insulin in the blood plasma.

Type 1 autoimmune diabetes, the most common type in childhood, occurs due to genetic susceptibility, associated with the HLA system, on which various environmental factors act, resulting in an autoimmune response that destroys the cells of the islets of Langerhans, progressively decreasing insulin secretion.

- Type 2 diabetes: produced by insulin resistance due to a relative deficit of insulin or secretory defect, usually caused by excessive food intake, is associated with childhood obesity, poor eating habits and sedentary lifestyle.

Incidence

The incidence is very varied in several countries, the highest being found in Finland (64.2 per 100,000 inhabitants), in contrast with the Asian figures which are very low (Japan 2 per 100,000 inhabitants), and in Spain it is intermediate (15 per 100,000 inhabitants). As for sex, there is no predominance until adolescence where we find it more frequently in the male sex.

The risk of have childhood diabetes is greater for those children whose brother was diagnosed at an early age, and even older in children of parents with Type 1 Diabetes (3.6 a 8.5%) not so when the person suffering from demonstrates it was The mother (1.3 to 3.6%), all this its relationship with family heritage. (Castellanos, 2016)

Diagnostic criteria

Symptoms of diabetes: polyuria plus nycturia, polydipsia, reported weight loss in the last 2 to 6 weeks with finding on two different days any of the following alterations in blood tests:

Plasma glucose > 200 mg/dl.

Fasting blood glucose > 126 mg/dL.

Glycosylated hemoglobin is not applied in pediatric age.

Clinical picture

Parents go to the doctor quickly with their children, with a history of polyuria, polydipsia and noticeable weight loss in recent weeks. Polyphagy is very common in adults, but not in children who usually start with anorexia due to increased plasma ketone bodies.

The picture is different in adults, where polyphagia is always present, accompanied by polydipsia and polyuria.

Eventually children report abdominal pain and vomiting without a trigger being recognized.

In severe cases, Kussmaul breathing is identified in pediatric patients, consists of open mouth breaths, rapid and deep, in some cases with clear inspiratory pauses, use of accessory muscles, may be prone to drowsiness but maintains a normal response to different stimuli. Peripheral coldness may occur, tachycardia, delayed capillary filling, ketoacidosis coma may occur.

Many children have moderate hyperglycemia that does not give symptomatology, sometimes the disease is identified in a routine blood test without the child presenting any kind of complaint. Unlike type 2 diabetes, casual diagnosis in type 1 diabetes is rare, as it usually takes very little time from the onset of hyperglycemia to clinical manifestation.

Children after being diagnosed with childhood diabetes, present a stage called partial remission also known as "honeymoon", is a phase following the onset of diabetes, in which insulin needs decrease to be almost zero. It is due to a recovery in insulin secretion by the pancreatic islets. This situation is always transitory and its duration varies between weeks and 2 years.

Approximately 80% of children and adolescents have partial remissions. (Castellanos, 2016)

Initial assessment

Anamnesis:

•In undiagnosed patients: Assess clinical history suggestive of diabetes: polyuria, polydipsia, polyphagy, asthenia, weight loss.

•Duration and intensity of symptoms.

•Existence or not of a previous or coincident trigger with the current clinic (infections, stress).

•Family history of diabetes.

When performing physical examination we should look for:

Weight, size, (important to know if there was any weight loss in the last 2-6 weeks)

Clinical signs of metabolic acidosis (Kussmaul respiration).

Degree of dehydration and signs of shock. (Dark circles, saburral tongue).

Deterioration of the sensation (probably cause cerebral edema in children under 5 years when they have developed ketoacidosis).

Clinical forms of presentation. -

According to the degree of decompensation, three successive stages are distinguished:

Simple hyperglycemia without ketosis: children have polyuria, polydipsia and usually no vomiting, good general condition. Ketone bodies may be present in urine.

Mild or moderate ketoacidosis: This is the stage at which childhood diabetes is most frequently diagnosed. To polyuria and polydipsia is added significant weight loss that will be noticed quickly by the parents, acidotic breathing, ketone odor and even decreased sensation. Hyperglycemia is drastic plus metabolic acidosis.

Severe ketoacidosis: Characterized by the following laboratory tests that reveal
severe acidosis: (pH < 7.1 or bicarbonate < 10 mmol/L).

Intense involvement of the state of consciousness.

Signs of severe dehydration or shock.

Severe electrolyte disturbances.

Respiratory or cardiac disorders.

Treatment

The objective of treatment is to achieve adequate metabolic control to avoid complications (acute and chronic) ensuring a good quality of life for the child who suffers from diabetes so early. It is important to know the insulin treatment that is part of the pillars of patient management, as well as a correct diet and exercise will also be important, these three things will help us to maintain blood sugar at an appropriate point.

It is important to emphasize that before the use of insulin, the survival of the diabetic child did not exceed five years after diagnosis.

As already mentioned, with good insulin management, diet and exercise regime children can develop and have normal growth according to their percentile of age, maintaining a general state equal to that of their classmates.

There is to monitor in blood periodically the glycosylated hemoglobin, it is advisable that it is quarterly, this way we will know the average glucose during 2-3 months previous this will be a predictive factor of the complications of childhood diabetes. (Castellanos, 2016)

Types of insulin

Fast-acting analogues (AARs). Its action begins 15-20 minutes after application with a half-life of 3 hours. They should be administered 15-20 minutes before food intake, their dose may vary depending on the blood sugar obtained in the pre-dietary control that we will carry out, studies have shown decreased hypoglycemic episodes with its proper use.

The following is an indicative table of the appropriate insulin dose after the use of preprandial blood glucose tests.

INDICATIVE DOSE OF INSULIN	
Result of blood glucose control	**Units Fast insulin**
140-200 mg/dl:	1 unit
200-250 mg/dl:	2 units
250-300 mg/dl:	3 units
> 300 mg/dl:	4 units

Source: Researchers' study

Long-acting analogues (LCA).

They are administered subcutaneously. These insulins decrease the risk of hypoglycemia, especially at night, their great advantage is that they reduce glucose variability after application

once or twice depending on controls and individual needs so much so that they can be used in children from 2 years old.

Continuous subcutaneous insulin infusion (SCI)

Pumps are devices that allow insulin to be infused continuously subcutaneously by mimicking pancreatic physiological secretion, The use of these devices in pediatric age has been increased, especially in younger children, By allowing better adjustment of treatment, continuous infusion pumps reduce glycemic variability as it allows to adjust to the basal needs of minors.

Nutrition

Nutritional requirements do not differ from those of other children of the same grade, sex and physical activity. The dose of insulin should be adjusted to the child's intake, but without neglecting physical exercise and dietary tastes of the child and parents.

Patients with childhood diabetes have the same vitamin and trace element needs as other children.

The total ban on children's favourite foods can have an adverse impact psychologically speaking, coupled with the family concern surrounding the child. With regard to the above, several authors advocate not developing dietary restrictions but maintaining a free or normal diet as stated by Lichtenstein in Sweden, Stolte in Germany, Fanconi in Switzerland and Guest in USA. (Violante, 2001)

This fact is important to consider when preparing the school lunch box, balance the nutritious and healthy with whatever is of the child's liking so that his life can be as normal as possible.

Caloric distribution. -

Carbohydrates: The minimum intake is 40% of the total caloric value.

Proteins: They are very important for their plastic and protective value. At least 20% of the total caloric volume is required in protein. This represents approximately 100 g. of protein per day.

Fats: The corresponding calories of carbohydrates and protides are deducted from the caloric value of the diet by 40%. Maintaining an intake of milk and its derivatives, eggs and meat includes more than 50% of what is necessary, leaving the rest to cover with oils

Diet for a 6-year-old: 1,500 calories

Diet for a 10-year-old: 2,000 calories

Exercise

It is essential in the treatment of diabetes, especially in children, to exercise, always taking into account the risk of hypoglycemia that could occur during its performance and even appear 12 hours later, in relation to the duration, intensity and frequency with which you exercise.

Therefore, prior planning should be carried out by means of a capillary blood glucose control (with hemoglucotest) before starting the exercise routine and considering additional carbohydrate intake during prolonged exercise, in some cases it is useful to decrease the dose of insulin before or after exercise.

Therapeutic behaviour and psychological support

From the beginning, parents or relatives should be informed of the diagnosis of the disease; this should be done in every patient as soon as the disease is determined, making known that the treatment is very effective and that better treatments will exist in the future. The trigger factor of the symptomatology shall be sought.

Simple hyperglycemia without ketosis: Rapid insulin should be used subcutaneously at an initial dose of 0.2-0.25 U/kg. Successive doses should also be administered subcutaneously every 6 to 8 hours, about 30 minutes before each meal, taking into account the glycaemia present at that time and the previous dose administered.

Hyperglycemia with ketosis: Occurs when the dose of insulin given is insufficient. It is common in the context of heat surge or periods of stress due to increased metabolic needs. Parents should be informed of how to recognize a diabetic complication so that they can prevent hyperglycemia with ketosis from evolving into ketoacidosis, this is achieved by continuously measuring glycemia and ketonuria in the presence of symptoms of diabetes decompensation such as polyuria, polydipsia, polyphagia, nausea, or any other disease.

Triggers: Lack of therapeutic compliance by the patient, stress, trauma, infections, hyperglycemic drugs, for example corticosteroids as a side effect.

Complications: Micro vascular and hypoglycemia, late: retinopathy, nephropathy

Angiopathy is more common in women than in men and death occurs in most cases due to nephropathy and kidney failure; in males, the most common cause of death is coronary sclerosis.

Hypoglycemia is the most frequent complication, its episodes occur with recurrence at night time, so routine controls should be done. In children, severe hypoglycemia is one in which there is altered level of consciousness during episodes that can lead to seizures. These hypoglycemia occur in excess of

on the dose of insulin or by a delay in food intake, may also be caused by excessive physical exercise.

Too rapid corrections of blood glucose or acidosis can lead to cerebral edema, an unusual but very serious complication that occurs 4-16 hours after the start of treatment.

Children with diabetes in school age. -

As already mentioned, the child or adolescent diagnosed with diabetes is primarily a child who has great potential for development and should therefore be given the necessary support to ensure that his evolutionary progress is affected as little as possible due to the disease, In order to achieve this objective it is necessary to incorporate the various contexts surrounding it: individual, family, social and school. These should be adapted to their medical and educational treatment needs.

Diabetes is one of the most common chronic diseases in the pediatric age, so it is necessary that the teacher is soaked in some aspects of it. Ideally, the school should be prepared to cater for children with diabetes, and parents should be part of this process by providing information to the school, ensuring that the information reaches the right people and meets with the management team to discuss diabetes management at school. Parents should also prepare the child to be able to manage his or her diabetes when he or she is away from home highly recommended is to be advised by health professionals so that the teaching team can learn the guidelines to follow in each case, since the child with diabetes must be considered as an ordinary student, so that he or she can successfully tackle all the school activities undertaken by his or her colleagues, whether intellectual, sporting or recreational; Their illness does not prevent it, but it is necessary to plan and plan school activities. Therefore, it is important that teachers have the minimum knowledge about diabetes. (Barrio, s.f.)

It may seem complicated, but the medical team handling your child’s diabetes can help, and both school administration and nursing staff are gaining experience in helping children with diabetes participate successfully and safely in school activities.

Collaborating with the school

It is recommended that parents share with the school what the child needs to take care of their health, as if they were at home, such as their specific plan for diabetes control, medications and testing tools. At school, children may need to: measure blood sugar levels, receive insulin or other diabetes drugs, have snacks when necessary, have lunch in

at a given time, having enough time to finish it, being able to access the water easily and be able to go to the toilet when necessary. Practicing physical activities and participating in school celebrations and excursions, knowing how to identify and treat episodes of low blood sugar.

Items a child should bring to school for diabetes control include: medications, test replacements, snacks, a medical alert bracelet or necklace.

The American Diabetes Association (ADA) recommends that you provide your school with a document containing general information about diabetes, including how to recognize and treat hyperglycemia and hypoglycemia, aside from your child's diabetes control plan. It should also include information to contact parents and other caregivers in an emergency, along with the pediatrician's details and those of other members of the medical team that carry your diabetes.

Communicate with the child's educators. - School staff should be aware of the child's diagnosis and current health status. It is also appropriate to make clear which are the responsibilities of parents and which of the school.

Thanks to the inclusion enshrined in Ecuador's constitution, school staff can be kept well informed, and even consider revising a child's diabetes control plan annually, or whenever it is updated. It is necessary for the staff to have experience and some preparation on the handling of the diabetic student in order to have a smooth situational development that guarantees a healthy educational environment. This is a new experience and challenge currently experienced by Ecuadorian education.

How to prepare the child. - It is normal the initial concern of the parents when the diabetic child must begin his school preparation, but he must face the fact and explain to the children about the disease without printing excessive apprehensions, they must learn how to deal with diabetes, gradually according to their age. The school needs to be prepared in advance to receive these children as they need special supervision, and they also need to feel welcome in their classroom.

When in school, children with diabetes should:know who to ask for help, such as a teacher, nurse or monitor, know how to act at lunchtime and in other food-related situations, Have the refreshments you need to manage your diabetes easily. The child should get used to regularly reporting on how he is doing in class in every way, especially with diabetes. Getting your child and school used to the routine of disease control seems difficult at first but with help from your school and follow-up with your pediatrician or doctor they will succeed. (Dowshen, MD, 2013)

Responsibilities of the school:

- Keep carbohydrate-rich products provided by the family available to the child.
- Consider that a child with diabetes should drink water during school hours, and may have to eat after hours in occasional situations and before physical activity.
- Keep glucagon in a refrigerated place and within reach of staff at the centre.
- Provide food rich in carbohydrates in case of hypoglycemia.
- In case of severe hypoglycemia, administer glucagon and notify medical emergencies.
- Educate the education community about what diabetes is and how to care for the affected child within the school.
- Inform parents or guardians of significant changes in schedules and activities.
- Assist with glucose control and insulin administration.
- Work with the family to adapt to the new rhythms of the child in school.
- Communicate to the nearest primary care center the schooling of a child with diabetes at the school.

Contextual framework

There are nearly 62 million people with diabetes in the Americas and it is expected that cases will continue to increase because of high overweight rates in the region, where obesity is twice the global average, with the Bahamas, Mexico and Chile among the highest rates.

Each year the incidence in children increases, Ecuador is no exception, both in problems related to overweight and diabetes. Details are given below.

Field: Health - Education

Scientific research area: Social Sciences and Good Living.

2.2.- Subject of the investigation

Analyze the incidence of diabetes in children as one of the causes that can affect academic performance.

Context:

Using the statistics found in the research, it was possible to identify that there is low performance among students due to diabetes in the first years of life.

General Objective:

Establish the incidence of childhood diabetes in poor school performance through literature, documentary and field research to improve the quality of life of this vulnerable group

Specific Objectives

• Know the cause and consequences that cause diabetes.

• Describe the physical, psychological and social characteristics of children with this disease.

• Propose activities to reduce malnutrition in children with a balanced diet and physical exercise.

• Indicate which foods are appropriate for a patient suffering from the disease.

• To make known the results of this inquiry.

2.3.- Justification and importance

The national government has clear policies on this issue, but also educational institutions must carry out campaigns for young mothers to raise awareness about this disease.

The present research focuses on studying bad habits and the intake of an inadequate diet that causes this disease. There are 490,100 children under the age of 14 with type 1 diabetes and 77,800 new cases are diagnosed each year.

Type 1 diabetes, one of the most common chronic childhood diseases, has been increasing in number. Years ago, most children were diagnosed with type 1 diabetes, while type 2 diabetes mellitus was prevalent in adults and the elderly, however in the last 10-20 years there has been an alarming increase in the prevalence of type 2 diabetes mellitus (T2DM) in children's diabetes centres around the world. Type 2 diabetes mellitus was recently considered a rare disease in childhood and adolescence.

This research is important because the incidence of diabetes is very high, with figures of 12 million people, of which 7 million have been diagnosed.

This survey describes the clinical and epidemiological behavior of diabetes in children and adolescents, to improve early detection of this pathology, as well as primary care to avoid complications; In addition, this study can be used as a means of communicating preventive action in schools and colleges.

Children and young people are the present of our homeland and that is why it is important to communicate this information to prevent diabetes.

2.4.- Theoretical framework

Background

Diabetes in the United States

In the U.S. There are laws protecting the rights of students with diabetes, which consider it a disability, so children affected cannot be discriminated against. Any school that receives federal funding or any kind of support must be well-suited to the special needs of children with diabetes. Teachers and nurses assess each child to determine how best to ensure their education while controlling their diabetes. A legal document, called

Plan 504, which describes how the child will be cared for satisfactorily. There is also the option of taking an Individualized Education Program (IEP), which sets out the child's educational goals and how they can be achieved at their school.

For the psychological health of the child it is necessary that he receive an education within a normal school environment, this helps the children to feel like one more of their peers. In addition, the school should have extracurricular activities outside of the classroom where the child can enjoy other learning environments such as sports, recreation and more organized by the school.

It would be ideal for schools to have specialized staff for the care of these children but you can very well adapt a nurse for several schools in the District, which through a schedule can support these children and their activities especially in outings and excursions. In addition, children with diabetes, like anyone else, have a right to privacy regarding the disease under the Health Insurance Portability and Liability Act. (HIPAA) of the year 1996. But because of the support these children require, it is necessary to share information with the school and medical team that keeps the child's health history

Diabetes in Ecuador

According to information in Ecuador the excess of sweets make children suffer several
Diseases such as obesity and diabetes. Diabetes is a non-communicable disease, common in childhood; its incidence in children increases every year at an average rate of 3.9 per cent; However, there are important differences by age group. Thus, in the range from 0 to 4 years, the increase in new cases occurs at a rate of 5.4% per year; 5 to 9 years, 4.3%; and between 10 and 14 years old in a 2.3%. (Espinoza De Los Monteros, 2018).

In Guayaquil, according to the 2014 ENSANUT survey, 30% of children between 5 and 11 years old are overweight. This incidence rises to 62.8% in the population between 19 and 59 years of age, which constitutes a serious public health problem. In 2015, there were 6,817 new cases of obesity in the age group of 20 and 49 years old in Health Zone 8 (Guayaquil, Durán and Samborondón).

The same ENSANUT survey shows that the prevalence of obesity is increasing in all age groups. 3 out of 10 school-age children are overweight and obese. 1 in 4 preschool children is small for their age and the percentage of overweight has doubled over the last three decades.

In Ecuador the problem is synthesized to 1.4 million diabetics and in Manabí there are 100 thousand of them. These statistics are growing every day, because 10 percent of obese people are at risk for diabetes. In this province, the disease is considered among the top 10 with the highest incidence, according to a report from the Health Directorate. However, this institution does not have clear data on the number of

diabetics. It has been possible to observe the growth of the disease, precisely because manabites have bad eating habits, there is a lot of consumption of carbon and fats, accompanied by the intake of alcoholic beverages. It is estimated that 16 per cent of the population in Manabí is prone to diabetes, compared with 13.3 per cent in other provinces. Cases diagnosed reach 6% in Manabí (90,000), a high figure if one takes into account that the province has about 1.5 million inhabitants. Montecristi is the Manabit canton with the highest average, 25% of the inhabitants have diabetes, which contrasts with the number of cases treated that the Ministry has in its records, since they receive treatment in the public health system, about 30 thousand people, five thousand of which are from Manabi.

Diabetologists indicate that a diabetic needs an initial budget of more than 200 dollars per month, but this figure increases as the disease evolves, because it generates various complications in the body such as: loss of vision and death of the recovering cells, leading to amputation of limbs and kidney problems.

Professionals comment that the initiative of the executive is plausible, but it is not the solution if there is no work to prevent the disease, which passes through awareness in the population about exercise and healthy eating. If the problem continues at this rate, diabetes will become governments' most expensive disease, as 90 percent of diabetics will become disabled and all because of a shared irresponsibility between state and community. The case of Manta is a subject for analysis, seeking to update and disseminate knowledge that will prevent this disease.

The vast majority of those affected have diabetes that is linked to obesity and lack of exercise, and the epidemic is spreading particularly rapidly in poorer countries as people adopt western diets and urban lifestyles.

The total number of diabetics is now 451 million and is expected to reach 693 million by 2045 if current trends continue.

The high cost of dealing with the disease reflects not only the cost of medicines, but also the management of a number of complications such as limb amputations and eye problems.

2.5 Legal framework

FAO, Food and Agriculture Organization of the United Nations.

Diet, nutrition and prevention of life-long chronic diseases. - The rapidly growing burden of chronic diseases is a key determinant of global public health. 79 per cent of deaths attributable to chronic diseases already occur in developing countries, especially among middle-aged men. There is increasing evidence that the risks of chronic disease begin in fetal life and persist into old age. Chronic diseases in adults therefore reflect different lifetime exposures to harmful physical and social environments.

Identifies as causes of disease: unhealthy lifestyles, in particular excessive intake of total and saturated fats, cholesterol and salt, insufficient potassium intake and decreased physical activity, In addition to this, there are often many hours of television.

Huge increase in the consumption of fast food, ready-to-eat meals and carbonated drinks, the amount of physical activity at home and at school has been significantly reduced, and mechanized transportation has spread. In developed countries, low socio-economic status is associated with an increased risk of cardiovascular disease and diabetes.

The interaction between early and later factors throughout life has shown that low birth weight, when combined with the subsequent onset of obesity in adulthood, generates a particularly high risk of coronary heart disease as well as diabetes. It has been observed that the greatest risk of decreased glucose tolerance occurs among individuals who were low weight at birth and became obese as adults. There is also fairly consistent evidence that the lower the height, the higher the risk of coronary heart disease, stroke and probably adult diabetes.

It is well established that hypertension, obesity and dyslipidemia are risk factors for coronary heart disease, stroke and diabetes. (WHO/FAO/s/F)

Good nutrition is the first defense against disease and our source of energy to live and be active. While young children are the most vulnerable to malnutrition, the right to adequate food is universal and good nutrition is essential for all. The FAO Nutrition Strategy seeks to improve diets and increase nutritional levels through a people-centred approach:

Art.50

The State shall guarantee to all persons suffering from catastrophic or highly complex diseases the right to specialized and free care at all levels in a timely and preferential manner.

UNICEF

It is the driving force that contributes to the creation of a world where the rights of every child are respected, is governed by the Convention on the Rights of the Child with the objective that these rights become enduring ethical principles and international codes of conduct for children. Its objectives focus on child survival and development, education and gender equality, health services, child abuse nutrition, children and HIV. In relation to the subject investigated he states the following:

Malnourished children "do not perform well in school, will not be able to perform well when they are adults and, even worse, their health as adults may be impaired," Schultink said. "They are more likely to suffer from chronic diseases such as heart disease or diabetes". (UNICEF, 2016)

Nutrition-related health problems can also be life-long harms. For example, diarrhea can impair physical fitness, growth and cognitive development and thus hinder later school performance. Also, diseases such as hypertension, diabetes and cardiovascular and pulmonary conditions often occur in early life experiences, even before birth. (UNICEF, 2017)

The national development plan 2017-2021

Axis 1: Rights for all throughout life

Goal 1: Ensure a decent life with equal opportunities for all people

This Axis deals in a general way with the rights of Ecuadorians, including infants, for life, in the case of them refers to health, as expressed in the Goals of the same document. It has as Policy 1.3. - Combat malnutrition and promote healthy living habits and practices, generating mechanisms of co-responsibility among all levels of government, citizens, the private sector and actors in the popular economy and solidarity; and, as Targets to 2021: Reduce the infant mortality rate by 9.1 to 8.1 deaths per 1,000 live births. (SENPLADES, 2017)

2. UNESCO

(United Nations Educational, Scientific and Cultural Organization)

The United Nations Educational, Scientific and Cultural Organization is a specialized agency of the United Nations. It was founded on 16 November 1945 with the aim of contributing to peace and security in the world through education, science, culture and communication. With regard to the subject under analysis, its objectives include:

Goal 2. Improving nutrition: The harmful consequences of child malnutrition can be avoided through education. (UNESCO)

Goal 3. Health and well-being: through education, women can recognize the first symptoms of a disease in their children, seek advice and take action to cure it. If all women in poor countries completed primary school, infant mortality would be reduced by one sixth, saving nearly a million lives each year. If they all had secondary education, it would be cut in half, saving three million lives. (UNESCO)

The WHO tells us about good nutrition

3. WHO (World Health Organization)

Food according to WHO.-

This United Nations organization specialized in managing policies for prevention, promotion and intervention in health at a global level, promotes healthy eating habits starting in the first years of life. Breastfeeding promotes healthy growth and improves cognitive development; It can also provide long-term benefits, such as reducing the risk of overweight and obesity and suffering from non-communicable diseases like diabetes. (WHO, 2015)

Among the Millennium Development Goals, WHO highlights:

MDG 4: Reduce child mortality

Target 4.A: Reduce by two thirds, between 1990 and 2015, the mortality of children under 5 years

Achieving the MDG on reducing child mortality will require more rapid expansion of key interventions that are effective and affordable.

WHO strategy, related to our research:

4.-Breastfeeding has long-term benefits, such as preventing type 2 diabetes, overweight or obesity, and better results in intelligence tests.

2.6 Research methods and techniques

Among the scientific methods used in this research we note: bibliographic, documentary and statistical mathematical because a bibliographical research is carried out for the theoretical framework through the search in various primary and secondary sources, International figures and data are then analysed and interpreted.

3.- Conclusions and recommendations

Because diabetes is related not only to heredity but also to nutrition, poor eating habits and obesity of students it is important to know this topic and give the following conclusions for their growth, physical development, good health and academic performance:

- Follow the international recommendations of WHO, UNICEF, accepted by the Ministry of Public Health.
- At the beginning of life you should feed with breast milk because in the long term associated with fewer chances of allergies and diabetes. (Mundo, 2013) (Reza, Franco, Cayambe, & Calderón, Eumed, 2018)
- Inform school authorities if the child has diabetes as soon as possible by providing a medical report signed by the responsible doctor, with their phones and directions to use if necessary.

- Provide the school with carbohydrate-rich products to cope with the child’s possible low sugar.
- Update the medical report and renew treatment-related material as necessary, at least once a year.
- Pay attention to whether the child is going to eat at school as they must monitor glucose or administer insulin before doing so.
- Prevention of the disease, which involves awareness in the population about exercise and healthy eating.
- Do not eat foods high in calories and low in micronutrients.
- Enhancing physical activity.
- Reduce the consumption of extra salt to the natural one that contains each food.
- Reduce intake of sugary drinks, especially children.
- Consume natural products that contain potassium.
- Decrease the number of hours spent watching TV to avoid being sedentary.
- Skip fast food.
- Encourage groups of mothers to share their experiences and educate the younger ones on how to manage a child with diabetes.
- Check school bars for appropriate food for children.
- Publicize this issue and disseminate recommendations on the benefits of proper nutrition for children to prevent diabetes so that their academic performance is not affected.

Glossary:

Anamnesis: Set of data provided by the patient, directed by the professional to arrive at a diagnosis.

Angiopathy: It is vascular damage, specifically multicausal endothelial.

Asthenia: Inability to perform routine tasks due to fatigue or tiredness.

Anorexia: eating disorder manifested by abnormally low weight.

Edema: accumulation of fluid that manifests as swelling and turgor in the extremities

Sclerosis: Tissue that adopts a state of abnormal stiffness or hardening.

Carbohydrates: Provides immediate energy.

Hemoglucotest: A variety of rapid methods for measuring blood glucose.

Hyperglycemia: Presence of glucose in the blood above reference values.

Hypoglycemia: Presence of blood glucose below reference values.

Insulin: A pancreatic hormone, responsible for the introduction of glucose into cells with its consequent reduction in blood glucose.

Marasmo: Malnutrition due to energy deficiency, result of deficit of carbohydrate intake.

Nephropathy: renal injury secondary to various noxas.

Polydipsia: A distressing feeling from excessive drinking.

Polyphagia: Urgent need to eat food

Polyuria: excessive urinary excretion.

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