

Relationship between
obesity and asthma –
special reference to
paediatric patient...



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The industrialization and technological advancement around the world has led to many changes in the lifestyle of people. The electronic advancements have led to decreased physical activity which has increased complications regarding health. There are now increased incidences of chronic morbid conditions and cardiovascular conditions.

With time, there is an increased prevalence of obesity among the populations around the world. This prevalence is even more common in developed countries, where sedentary life styles are becoming all the more common. America has the most prevalent incidence of obesity in all age groups. America is followed by countries such as the UK and European countries. There is a constant increase in the BMI ratios which is related to many medical conditions. Obesity has been related to the onset of many medical conditions, including diabetes etc. Now there is increased evidence that obesity may also be contributing towards increasing the risk and incidence of asthma adult as well as the younger population. These theories have been supported by the fact that various dietary restriction methods such as gastric bypass or dieting etc. help in improving asthma symptoms. Other relationships have also been established. These will be discussed along the length of the paper. However, asthma is a condition that is multifactor in etiology and therefore, the role of obesity as a possible contributory factor is a topic worth pursuing.[1] There are however, contradictory reports that are looking into the possible role of obesity in asthma and only time will tell the true relation between the two conditions.

Asthma can be defined as the condition marked with airflow obstruction, increased airway responsiveness and airway inflammation characterized by <https://assignbuster.com/relationship-between-obesity-and-asthma-special-reference-to-peadiatric-pateints-essay-sample/>

infiltration with eosinophils and T lymphocytes. Histologically, there are many identifying features of this condition. These include “ denudation of the airway epithelium, thickening of the basement membrane, mucus production, and airway smooth muscle hypertrophy. Asthma is prevalent in all ages of life, however, certain ages have more prevalence of onset and activity. Half of the total males affected by asthma are diagnosed by the age 3 years, while half of the women are done so by the age 8 years. The later decades of life also are characterized by respiratory complications. These may include various sleep disturbances too. Certain populations also have an increased prevalence of the condition, such as Peurto Rico Hispanics and African American communities.(2) However, the prevalence is increasing in many areas of the world; therefore an increase is expected in all types of ethnic communities.

There are many risk factors that contribute towards asthma. These include among others males in young age, females in older age, socioeconomic status, unfavorable living conditions, and race.(2) Among this list, the presence of obesity is now understood as one of the most significant contributors to the condition. It is now claimed that overweight and obese patients have a 50% higher risk of developing asthma. These studies also point out that asthma does not induce the gain in weight, as thought so due to a decrease in the activity. Studies have shown that an increase in weight correspondingly increases the risk of developing asthma, with BMI as a significant factor in the determination. A dose response relationship has been established, but no sex predilection was seen. There was however a slightly lower odds ratio seen for overweight men and asthma compared to

women. However, this difference is very small. The research however, questioned its findings due to the variability that may be found naturally in the BMI. BMI thought to be an indicator of body fat, is not an accurate one. And therefore, to consider it as an accurate assessment tool may be erroneous. Therefore, the researchers claim that more about the nature of BMI and its variations must be known before directly associating its relationship with asthma. (3)

Studying the results of various studies has established that there is a strong correlation between asthma and BMI. These researches started to take place in the 90s, and recently have increased pace due to many positive findings received. Initially these researches were carried out on the prevalence of obesity and relation with asthma; however, recently, these researches have started to study the same relation in adults.(3) Sex specific effects have been also been seen. (4)Why asthma is found more specifically in the obese population may be due to the fact that there is more accumulation of subcutaneous fat in the obese person than in normal weight people. Obesity has been shown to affect bronchial hyperactivity in children with or without asthma as well. Therefore, again, the questions arise about what causes what. Is it obesity that leads to asthma or is it asthma that leads to obesity. (3)

Obesity in children is a growing cause of concern among clinicians for many reasons. Firstly, it reflects the sedentary lifestyle in children, where there is less physical activity and more intake of refined foods such as junk food and refined carbohydrates. Secondly the chances of a child to grow up into an obese adult are also very high, which increases the risk for many morbid

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conditions. These may vary from heart conditions and complications to hypertension, diabetes and cancer. Asthma is also a prominent feature in such populations, which may be difficult for the children to handle due to inexperience and lack of knowledge about their condition. Consistent evidence shows that there is a definite positive relationship between asthma and obesity in both children and adults. With around one fourth of the child and adolescent population obese, the risk of development of asthma increases significantly. Current statistics show that asthma affects 10 to 15% of boys and 7 to 10% of the girls. This ratio however, changes with the advancement of age, which equalizes as the person grows in to adulthood.

(3)

A child with obesity is more likely to suffer from asthma as compared to one who is not obese. This overweight measure was 1.9 times more than the controls. Causes proposed for occurrence of such findings include the decrease in the expenditure of energy in children due to reduced physical activity in asthmatic children. However, since the energy intake of asthmatic children is not so different from controls, these may not be the sole factor for obesity. This is supported with the fact that those children with asthma who can moderately control their symptoms can carry out most of the physical activities and therefore, may not be completely absolved from physical energy expenditure. (3)

Atopy has also been shown to increase in the recent years in prevalence globally; however, some have shown increase while others have shown a regression. Asthma and atopy have been found to occur both simultaneously as well as independently. In the UK the prevalence of both conditions has <https://assignbuster.com/relationship-between-obesity-and-asthma-special-reference-to-pediatric-patients-essay-sample/>

increased over time. In Australia too, this trend is increasing. This may be attributed to the environmental factors that promote allergic reactions. Exposure to tobacco smoke, air pollution and allergens, obesity and diet, exposure to infections, microbial substances can also promote allergy and asthmatic reactions. The genetic constitution mainly determines if a person is likely to develop allergies and asthma. Western world in particular are finding an increase in the prevalence of asthma and allergic reactions.(3)

PREVALENCE OF ASTHMA IN THE UK

The prevalence of asthma among children in the UK continues to increase. Asthma and related allergic conditions are more prevalent conditions are found in countries such as United Kingdom, Australia, New Zealand, Chile, and southern regions of Europe, since the environmental triggers are usually high.(3) Many researches have been carried out to ascertain whether there is any positive association between asthma and obesity in the UK children. The study conducted by Rona and Munoz studies a very large sample of Scottish and English primary school children, and aimed to identify any potential role of obesity in aggravating asthma. The total subjects included were 18 218 in number between the ages 4 and 11 years. For the analysis, the symptoms used were asthma attacks, and wheezing of occasional or persistent kind. The body mass index and the sum of triceps and subscapular skinfolds converted to standard deviation scored for the analysis. The results showed that obesity levels were strong predictors of asthma and asthma related symptoms without any ethnic differences. The results were more significant for the BMI rather than the skin folds, attributed to the advanced stages of

development in the obese children compared to controls. This association is even stronger for the girls than boys. (3)

Researches have shown a high association of asthma and obesity between urban Hispanic populations, especially those belonging to the poor socioeconomic status.(3)

With obesity increasing at alarming levels among the children, it is the responsibility of the various UK health providers to ensure that proper interventions be taken. NHS and local authorities and their partners are now making sure that obesity is handled and managed quickly and strategically. The UK governments are also introducing various social services such as playgrounds, walking areas etc. to help increase physical activity levels in the children as well as in the adults. Even workplaces are now being introduced with in office physical activity areas to help motivate weight reduction in the people. (14)

CLINICAL FEATURES IN ASTHMA

Asthmatic patients may present with many signs and symptoms depending upon their severity of the condition and the type of asthmatic illness that they have obtained. In children as well, the presence of asthma can lead to significant clinical findings. For example, such children display a lower endurance performance, compared with the children of the same age, which may indicate a lesser degree of physical exercise. Also, these children show increased skin fold thickness when compared to normal children. There are studies that contraindicate these claims, stating that in good asthmatic

control achievers, the level of physical activity and consequently, the level of physical endurance are comparable to normal.(3)

The process of asthma developing in the obese patients is likely for many reasons. Firstly, the lung capacity in obese patients is reduced due to under-expanded lungs and smaller size of breaths taken by the patient. This narrows the airways considerably. The fat in the body is the primary source of low grade inflammation in the body of an obese person, which may be responsible for low grade inflammation in the airways as well. Obesity also affects the various hormones of the body by changing their concentrations. For example, leptin levels are considerably increased in the obese patients, which increase their inflammatory responses. On the other hand, there is a decrease in the adipopectin levels, which are anti inflammatory in nature, and therefore, asthma propagation becomes increased.(3)

Obesity has been found to increase the risk of gastro esophageal reflux, which is also associated with airway hyper responsiveness in asthmatic individuals.(4) This may be the association that has been found with the improvement in the asthma symptoms after various forms of weight reduction procedures.

RELATION BETWEEN ASTHMA AND OBESITY

The relation between asthma and obesity is confusing as to what leads to the other. There are however, certain findings that point strongly towards their association. Firstly, children with wheezing have been found to have larger BMIs than controls. This may be because children with asthma are unable to take active part in physical activities, which may increase their problems
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with weight gain. Again, here the question arises that whether it is the gain of weight that leads to asthma, or is it asthma that leads to weight gain. The fact of the matter remains that asthma continues to increase globally among children.(3)In this regard the role of sleep disturbances is also being investigated for possible contribution to the disease.

Part of the reason why the relation between obesity and asthma is difficult to assess is that the exact definition of asthma is not present. Asthma is a collection of symptoms and signs that are associated with airway hypersensitivity, therefore, even small incidences of wheezing may be included in the definition of asthma. In many of the trials that are conducted, the patients are selected based on the GPs diagnosis of the asthma, and may include many varying symptoms. Airway hyper responsiveness is another issue that must be assessed for both sexes individually. (4)While relation between asthma and obesity is found to be higher in women, the association of airway hyper responsiveness and obesity is higher in men. AHR may or may not reflect asthma in individuals, putting into question the validity of the various trials that are carried out with such subjects. There are many supports to this argument. For example, association between the BMI and asthma was different only in the lowest weight category. Both extremes of weight have shown higher prevalence of asthma. (3)

Studies now show that obesity and asthma display both a dose response relationship as well as a temporal relationship among each other. Obesity has shown a positive prevalence in the development of asthma in children as well as in adults, and this finding has been seen more in females than in male counterparts. This effect of the development of asthma is seen to <https://assignbuster.com/relationship-between-obesity-and-asthma-special-reference-to-peadiatric-pateints-essay-sample/>

persist even after reduction of weight following diet and exercise; however, the symptoms are considerably improved. (3)

BMI and asthma hold a very strong relationship with each other as well as with airway hyper responsiveness or AHR. This is especially true when the development of new symptoms of asthma or AHR take place following weight gain. Norwegian studies have demonstrated that with the increase in age and BMI, the risk of development of asthma and AHR also increase correspondingly. (11)

OBESITY IN CHILDREN

Obesity in childhood is raising increased concern about the complications that can take place in early stages. Some of these risks include high blood pressure, increased serum cholesterol levels, and insulin results among the few. Sleep difficulties are also increased, with asthma aggravated by them. Such children may be psychologically affected, and depression may be a prominent feature. These children also experience some sort of teasing, social exclusion, discrimination and prejudice. The effects of obesity can affect many areas of their life, and can affect their studies and socioeconomic outcomes. Therefore, understanding the factors that cause obesity and the associated medical and psychological problems is very important for the future outcome of these children. (3)

In the UK, obesity among children is increasing considerably. There is about 6% of the 6 year old and less population that is in the definition of obese children. The contributing factors to this increase in the obesity include environmental changes that are making access to food easier and the <https://assignbuster.com/relationship-between-obesity-and-asthma-special-reference-to-peadiatric-pateints-essay-sample/>

commoner use of refined food. alongside, there is now reduced physical activity due to technical advancements. Such factors have made obesity a common issue in children when in the past it was a rare finding.

The history of the family is very decisive in predicting the obesity tendency in a child. Family environment and habits are also indicative of weight gaining tendencies, since the family members usually follow the same eating patterns. The influence of leptin and increasing levels of it in the body are another strong factor that contribute to childhood obesity. With obesity come the risk of increased health problems such as asthma, and blood pressure issues. Without controlling the body weight, other medical problems associated with obesity cannot be addressed. (11)

OBESITY, AGE AND ASTHMA

Studies have shown a strong correlation between obesity, age and the severity of asthma. Age changes lead to variable changes in the lung development and the development of lung capacities. Hormones and changes during adolescence before and after puberty are very strong indicators of asthma development. Other factors that may contribute towards asthmatic tendencies include birth weight, ponderal index, and low gestational age. (4)

As till now, the research studying the relation between asthma and obesity are very few. However, there are many theoretical models that clarify as to how; obesity can play a role in the causation of asthma among patients.

Epidemiological data has shown a positive relation between obesity and

asthma. With increase in the weight, there is a progressive decrease in the airway caliber due to chest wall constriction.(3)

The role of gestational age, as well as fetal weight also has been shown to have a strong impact on the allergenic response of a child. Low normal gestational age and its correlation with asthma has been aptly demonstrated at six years of age. Lower birth weight can lead to lower adult lung function, and small lung size is a very strong factor in the development of asthma. Therefore, the genetic component in the fetal development holds any keys in understanding whether a person has the tendency to develop asthma or other airway tendencies in the future. (11)

ASTHMA, OBESITY AND SLEEP DISTURBANCES

Sleep disorders are characterized by recurrent episodes of upper airway obstructions. Included in these are various forms of apneas and hypopneas. In such disorders there is fault in the gas exchange mechanism of the body, snoring and sleep disruption. The sleep disturbances usually increase in prevalence with advancing age. In children this condition may be seen in only 1 to 3% of the population, in middle aged people, it increases to 2 to 10% and in elderly up to 25%. Sleep disorders are more likely to be found in people who suffer from asthma and methods that help asthma conditions are usually successful in sleep disorder cases as well. Both of these conditions have overlapping factors that are associated with them, which include allergy and lower respiratory tract infections. (2)

In children, the association between sleep disturbances, asthma and obesity are also being studied. One research has shown that wheezing disorders are <https://assignbuster.com/relationship-between-obesity-and-asthma-special-reference-to-peadiatric-pateints-essay-sample/>

usually found in male children (ages 8-11 yrs), who are black and obese and have a maternal history of asthma. Further adjustments in the study continue to point to the association between wheezing and obesity. This study pointed towards the possible role of sleep disordered breathing in the cause of wheezing in asthmatic and obese children.(1, 3) Obesity was found to increase the risk of asthma by 1.8 times in children and raised the risk of wheezing by 1.6 times respectively. Only 14% of the children without asthma or wheeze constituted the obese children.

Studies conducted by Redline and colleagues in 1999 were carried out to identify the risk factors of various sleep disorders. The results showed that sleep disordered breathing was found to be moderately high in patients who were obese and those belonging to African American race. The study was not able to prove any correlation with age or sex of the patient. Upper and lower tract infections are also considered important factors in the presence of sleep disorders. (3)

There are however, researchers who claim that the question of correct identification of patients with or without asthma is wrong in the first place. Many claim that asthma is diagnosed after a series of diagnostic evaluation, and patients with sleep disorders are usually diagnosed as such. This is true however, that sleep disorders are more likely to be found in obese patients along side asthma or without it. However, obesity has a more severe effect on asthma and asthma symptoms compared to other sleep disorders. Understanding how exactly obesity causes or leads to asthma can be done by looking at the effects caused by obesity.

EFFECT ON THE LUNG FUNCTIONING AND CHANGES IN THE RESPIRATORY VOLUMES

Obesity causes a direct decrease in the lung tidal volume, and a decrease in the functional residual capacity. These two changes cause a decrease in the stretching ability of the smooth muscles of the lungs. The result is the formation of small tidal breaths which are unable to sustain the demand required during physical exercise, thereby causing difficulty in breathing. The cycling rates of the smooth muscles are also reduced in such patients, which aggravates the condition of asthma. While no dose response relationship between extent of obesity and level of asthma have been found, researches are looking to find any such relationship between the two. (11)

Obesity hypoventilation syndrome is another condition that can arise in obese children. However, this condition is independent from obstructive sleep apnea. OHS is characterized with obesity, hypercapnia, hypoxemia, excessive sleepiness in the morning without the presence of any intrinsic pulmonary pathology. The sleep mechanism in these children is very severely disturbed leading to alternate cycles of wakefulness during the day time. Stress and carbon dioxide level responses can also affect the outcomes in such children as well as the severity of OHS. It is OHS that increases the possibility of cardiovascular and other metabolic conditions. Combined with variations in the levels of hormones such as leptin and adiponectin, the diet center as well as the sleep centers are severely disturbed, which further contribute to the obesity levels. (17)

BIOCHEMICAL CHANGES AND THEIR RELATION TO OBESITY AND ASTHMA

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There are many biochemical changes that show that a person may be suffering from obesity. For example, the levels of leptin in the body may be raised considerably. It is able to signal satiety responses as well as increase the basal metabolic rates in the body. Leptin is responsible for many functions in the body. It acts as the stimulant for the formation of surfactant in the fetal lung cells. It also helps in the proliferation of the tracheal epithelium cells. This analogy may be associated with the possibility of asthma development in young children.(2)

The female sex hormones are also considered adjuvant to the development of asthma among the female patients in obesity. This is because aromatase, the enzyme produced in the adipose tissue is responsible for converting androgens in to estrogens. This finding explains why obese children may experience early menarche than thin girls. Estrogen increase lead to an increase in the basal metabolic rate as well. Estrogen and progesterone have been seen to increase IL-4 and IL-13 production, which increases inflammatory response in the body and therefore, may contribute to asthmatic response. Alongside, the smooth muscle activity changes can also contribute to the increase in the asthmatic incidences. Factors that influence the smooth muscle activity and therefore the sympathetic nerve stimulation include maternal diet during pregnancy, physical activity, any kind of retardation during the fetus development and the amount of child exercise respectively. (2)

CHANGES DUE TO ASTHMA AND OBESITY

The co-existence of asthma and obesity lead to multiple changes in the body of the person. While no direct relation have been seen, obesity and asthma do play a role in the development of other disease conditions. Among these are the gastro-esophageal reflux disease and the sleep disordered breathing. Recent studies however, are claiming that while SED and GERD may be present in obese individuals, curing any of these does not significantly alter any asthmatic symptoms in the patients. There are studies which contradict this claim, stating that reducing weight can improve the above two conditions as well as asthmatic symptoms experienced by the patient. Only more research on this topic will be able to conclude whether these two conditions are independent from asthma and obesity or if there is any relationship between the two.

Other studies have shown that weight loss surgeries and weight control have shown improvements in the asthma symptoms of patients studied. The minimum effect, according to the researches claimed that there was minimization in the severity of the asthma episodes, with one third of the patients having no symptoms at all. Such patients also showed an improvement in other sleep disorders such as obstructive sleep apnea. OSA patients with asthma have more frequent and complicated episodes of respiratory distress compared to asthma patients alone. Not only this but other improvements in death include reduction in the risk of sudden death and cardiac arrhythmias. Overall energy levels and quality of life is improved considerably.(11)

Asthmatic patients usually demonstrate a chronic inflammatory state in their bodies due to an increase in the blood proinflammatory substances. For <https://assignbuster.com/relationship-between-obesity-and-asthma-special-reference-to-peadiatric-pateints-essay-sample/>

example, TNF or tumor necrosis factor is found to be considerably increased in patients with asthma, which is expressed by the adipocytes. In obese patients, the origin of these proinflammatory mediators and effects on asthma therefore can be correlated. Other findings are an increase in the lymphocytes, especially the eosinophil concentration, serum increase of cytokines, chemokines and acute phase proteins. Again the adipocytes are seen to be the cause of it, since the macrophage cellular activity is found to be high in the adipose tissue, where inflammatory expression is high. Adiponectin levels fall in the obese patients and start to rise when the weight is lost. This is of significance since adiponectin is essentially an anti-inflammatory enzyme. It inhibits the proliferation and migration of cultured vascular smooth muscle cells which are induced by mitogens. The consequent increase in the airway muscle mass is also contributory to the AHR and asthma in humans. (11)

EFFECTS OF ASTHMA AND OBESITY ON THE CHILD

Asthma conditions considerably reduce the child's ability to participate in various physical activities. This is because exercise is a common trigger for asthmatic episode in a child. Conflicting studies have shown that asthma may or may not affect the physical activity levels of the child. There are consequently many changes in the children suffering from asthma. Apart from low tolerance for physical activity, such children will demonstrate increased skin fold thickness than the controls. The ethnic minorities are more likely to demonstrate children with obesity and asthma, and more so in girls than in boys. The medical outcomes in such children are poorer, and in such cases, the remission of asthma in the later years may become difficult <https://assignbuster.com/relationship-between-obesity-and-asthma-special-reference-to-pediatric-patients-essay-sample/>

to achieve. Since proinflammatory tendencies increase in such children, researchers now question whether both obesity and asthma have an additive effect on the condition of the child. If looked at from this perspective, it would mean that obesity and asthma contribute at worsening the other disease condition. The UK studies have shown very poor outcomes of children who suffer from both asthma as well as obesity. Such children have been found to have poorer mental health. Physicians attribute this change in children as a result of lack of exercise, showing that exercise has effects on all aspects of the personality. Many children may not exercise simply to avoid having an asthma attack. (3)

The concept behind the role of obesity in the conductance of asthma is that fat deposition occurs around the larynx which starts to cause restriction in the area, thereby leading to asthmatic symptoms. Obstructive sleep apnea may also ensue due to the following mechanism. Obese children have been documented to have a 4.6 fold increase of experiencing sleep apnea than non obese children. Similarly, a one percent increase in the BMI is reported to increase the risk of apnea hypopneic index by three percent. The increase in the pediatric asthma and various other symptoms occurs primarily due to the presence of enlarged tonsils, allergies, asthma, and craniofacial abnormalities and syndromes. Dento facial misalignments can also affect the breathing patterns such as class II division of malocclusion and various habits such as thumb sucking can also contribute to various facial features making airway difficult. The presence of these problems is found more in concentration among the blacks, Hispanics, premature children and children belonging to poor socioeconomic status.(3)

Obese children higher risk of developing various heart conditions, and this puts them second in the list of children after children with cardiovascular defects at birth. Elevated blood pressure, left ventricular hypertrophy, increased thickness of the heart, and atherosclerosis are all to be expected if the child is obese. Similarly metabolic changes can also take place which are dependant on factors such as increased waist circumference, increased VLDL, and insulin resistance, leading to type II diabetes. Type II diabetes can present as early as in eight years of age in children who are obese. While metabolic syndromes are found in only 4% of the children who are non obese, this percentage can rise to 30% in children who are obese. (3)

Fat deposition may increase around the liver, and various reflux diseases can also take place in obese children. Fat deposition in children may be present in a large proportion of obese children. Orthopedic problems also take place with the increase in weight. Blount disease and abnormal rotation of bone in the upper leg and hip may occur. Depression is very common in children which can lead to depressive behaviors such as bulimia nervosa. There is likely to be an impaired quality of life in such children, and their mental development may be affected.(18)

CLINICAL INFERENCES FROM THIS LITERATURE

Current clinicians come across more obese children than did the clinicians in the past. With the increase in the industrialization and air pollution, there is also an increase in the number of asthma patients, including children.

Therefore, clinicians must be able to correlate the relation between obesity as well as asthma and use their clinical knowledge to address the problem

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accordingly. History of family obesity and obesity among siblings is very significant, and in such cases, the entire family must be advised to take active part in physical activities to improve their condition. In pediatric patients, interventions such as physical activities increase their potential of vigorous activity and help them prevent weight gain in adulthood by maintaining their physical activity. Lifestyle modification is also another component in the treatment of an asthmatic child.(3)

Weight reduction is currently being considered an option for the reduction of intensity of asthma in obese patients. With weight reduction programs there is improvement in body weight, morning peak expiratory flow, forced vital capacity, forced expiratory volume in one second, asthma symptoms, and number of acute episodes, courses of oral steroids and overall quality and health status of life. Weight reduction programs are therefore becoming a very important component in the reduction of patient's asthmatic conditions. (3)

Understanding the cause of weight gain in the children as well as the adults is important if they are to be motivated to reduce weight. It is important to understand if the person in question has the necessary motivation to undergo treatment and the will to reduce weight. There can be many reasons why losing weight may be a very difficult issue for the patient. These may include the lack of knowledge about cooking food, and how diet affects the health of the person. Others include the availability of the healthy foods and opportunities for exercising, safety concerns, lack of time, personal tastes, the views of family and community members, low levels of fitness or disability of any kind, low self esteem and lack of assertiveness.(21) In <https://assignbuster.com/relationship-between-obesity-and-asthma-special-reference-to-pediatric-patients-essay-sample/>

children, reducing weight can be taken negatively in children and may stigmatize them; therefore, proper methodology should be taken into deciding how to carry out such interventions in such patients. These children must be educated about healthy diet, about keeping physically active and helping them with body image and self esteem.(14)

In children, it is essential to understand their age group and therefore their mental development, and thereby carry out the intervention. While the younger children may require the full involvement of the parents or the parent figures, the older children must be given sufficient autonomy so that they do not lose interest in the treatment.(14)

For children with sleep disturbance with asthma, the intervention comprises of multiple specialty of physicians. These may include pediatricians, endocrinologists, sleep physicians, parents, and media respectively. The best method to reduce obesity is to prevent it altogether. Obesity in such children can lead to conditions such as atherosclerosis and hypertension, previously unknown in the pediatric populations.(17)

CONCLUSION:

Current researches are increasing evidence about how obesity may be a contributing factor in the causation of asthma. Both of these conditions are now increasing in prevalence around the world, and both contribute towards the worsening of the condition. There is more research required in order to understand the role of obesity in the causation of asthma and vice versa. In children there is increase in the prevalence of obesity with time, which is

increasing health risks. Therefore understanding and treating obesity as well as asthma is very important.

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