

**A STUDY ON LUNG DISEASES AMONG CHILDREN**

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**INTRODUCTION**

Second-hand smoking is an act done by person unintentionally, in which he or she inhales smoke emitted during cigarette smoking. The smoke emitted by cigarette smoking pollutes the air around a person who is smoking cigarette and people who breathe in the same environment inhale smoke. It is a serious concern because most of the individuals do not know what they are inhaling? Many individuals think if they are not actively smoking a cigarette, there will be no harm standing nearby active smoker. Cigarette smoke contains thousands of known harmful chemicals (CDC, 2018). These chemicals are responsible for respiratory diseases, auditory malfunction and affect the mental health of a person.

Second-hand smoking becomes a challenge for children health because of the sensitivity of their tissues. Children are at their growing stage moreover some of the tissues are not even functional to their full potential. Breathing in the polluted environment directly affects the respiratory system. The respiratory system comprises Nasal openings, nostrils, windpipe, and lungs. During childhood, each tissue is undergrowth period. Meanwhile, if the child does second-hand smoke, the tissues get irritated by the smoke. As children, immunity relies on what kind of pathogens or foreign bodies goes inside the body.

Immune system takes chemicals in smoke as a serious threat and actively lead to destroying these particles. The immune system does not only destroy the chemicals but also affect the tissues in which these chemicals are trapped or causing irritation. As a result, it leads to inflammation and chronic exposure to chemicals may lead to many diseases that are responsible for serious morbidity for children (Jing et al, 2015).

As smoking is addictive in nature and many parents do not have enough information on what health implications are of second-hand smoke on their children. With the help of a comprehensive literature review, the research will be done in order to prove how Second-Hand Smoke is affecting the health of young ones. Furthermore, this research will be done to provide enough evidence that second-hand smoking is the real cause of respiratory diseases among children, mental health and their behavior changes.

**Description of Problem**

Second-hand smoke or involuntary smoking is smoking without intention or breathing in cigarette smoke

environment. Second-hand smoke is responsible for causing asthma in children that are the leading cause of respiratory problem among children (Center for Disease control and prevention {CDC}, 2018). Cigarette smoke has over hundreds of carcinogens and harmful chemicals that cause damage to tissue (CDC, 2018).

Most of the children who are affected by second-hand smoke develop respiratory problems in their lives (CDC, 2018). These problems can be nasal irritation, asthma, emphysema, bronchitis and in some chronic cases, this leads to lung cancer. (CDC, 2018).

According to the US Department of health and services, there are 7300 deaths each year in the US among non-smokers (CDC, 2018). According to the Center for Disease Control and Prevention (CDC) in the year 2011–2012 in the United States, out of 100 non-smokers, 25 have a measurable amount of cotinine in the blood. According to the CDC, there were 58 million people who are non-smokers were exposed to second-hand smoke (CDC, 2018).

There are about 7000 known chemicals in cigarette smoke and about 69 of them are causing cancer (American Lung Association, 2018). Tissues of children are under developing stage, these tissues include respiratory mucosa, the lining of the lungs, bronchi, and alveoli of lungs. During any inhalation of any foreign particle inside the body leads to inflammation of developing tissues that may cause damage to these tissues (Jing. et al, 2015). If the irritation is chronic then it leads to chronic conditions like asthma and chronic obstructive pulmonary disease (Jing, et al. 2015). It is inhumane to let children to be affected by second-hand smoke.

### Preliminary Literature Review

Many studies have done that prove the fact that second-hand smoking has deleterious effects on children. Second-hand smoking does not only affect the respiratory system of the children but also its ill-effects are on mental development, the auditory system of the body (Homa et al, 2015). Children who mostly exposed to second-hand smoking are living in urban areas. Furthermore, children who are living in close apartments are more likely to be affected by second-hand smoking and develop respiratory problems later in their lives (Butz et al. 2011).

Children living in low socio-economic standards are more prone to second-hand smoke than children living in higher living standards (Schwarz et al. 2012). As compare to whites, blacks are more prone to be affected by second-hand smoke even they smoke less than whites. (Reimer et al, 2010).

**Goal-** The goal is to collect enough data that proves that second-hand smoking is the main cause of respiratory disease, mental disturbance, and hyperactivity among children. Also, find out the possible way to limit smoking in the presence of children to avoid SHS among children.

### METHODOLOGY

The comprehensive literature review will be done in order to do research. The data will be collected from the ongoing research and research which had been done in the past. With qualitative data, interpretation and analysis will be done to provide enough evidence. To illustrate second-hand smoking have deleterious effects on child health.

### LITERATURE REVIEW

The literature review included the maternal health, SHS among children at home, economic status relation with second-hand smoke, effects of second-hand smoke on children, outcomes of SHS, cancer due to SHS and control of SHS among for health of children. In the literature review, the databases accessed through Monroe college Online Library were useful, particularly EBSCOhost and CINHAL.

The literature review involved a comprehensive exploration of the relevant articles on the topic. The search for terminology related to Smoking and respiratory problems. The following keywords were the terms used for searching- second-hand smoke among children, pregnant women, and smoking, effects of SHS on children and possible ways to restrict SHS in the community.

**The literature review includes sources of original data, primary sources, and secondary sources. Summary of Literature Searched by Categories.**

Searched Categories	Scholarly Journals	Books	Total
1. Effects of Harmful chemicals	4		21
2. Smoking at home	4		
3. Maternal health	2		
4. Income impact.			
5. Effect on oral tissues.	1		
6. Cancer risk	3		
7. Adolescent mental health.	2		
8. Indoor pollution.	2		
9. Plans to control smoking.	1		
	2		
Total	21		21

Second-hand smoke is injurious to health is known before a decade and been proved by many researchers. Impacts of SHS is on all age groups but, in children, the effect is more permanent (Weaver et al. 2012). Even small exposure may result in the inflammatory response and prolonged exposure to smoke results in chronic diseases like asthma, tuberculosis, bronchitis, and more severe cases may result in lung cancer in children case (Fell et al. 2018).

SHS is responsible for the hyperactivity of children due to an increased level of cotinine (Cho et al, 2010). Children have a low neurological response and act hyperactive due to diffusion of cotinine in the blood of children by SHS (Cho et al. 2010). This results in a lack of attention and interest in studies. Children response for any tasks delayed due to the effect on the neurological system of their body (Cho et al 2010). This includes bad implications for their physical and intellectual activities. It was found that children whose parents are active smokers tend to have less responsive behavior in class and have a low GPA as compared to children with non-smoker parents (Cho et al. 2010).

SHS is responsible for changing children behavior, they tend to be more reluctant. Children feel irritated and unable to focus on a particular task. The reasons behind irritation described by scientists are lack of sleep, chronic irritation and smoke chemicals affecting the mental health of children (Morioka et al. 2018). Parents who smoke inside the home, unintentionally create an unhealthy breathing environment for a child to breathe, as a result, children feel suffocated and lack of freedom (Morioka et al. 2018). Most likely affect their behavior.

The ill-effects of second-hand smoke had been known before as public health workers and researchers have done extensive research on second-hand smoke. Research has been done to find out the relationship between second-hand smoke and cancer by Weaver. It

was found that there is a direct relation between the second hand and cancer (Weaver et al, 2012).

Cancer mostly results from chronic irritation and chemicals in cigarette smoke are enough to irritate the cells of the respiratory system. It starts with irritation with time it becomes a chronic cough with sputum and at the last stage, it becomes a cough with hemoptysis (blood in sputum).

In China, research had been done to evaluate the cause of autism in children and it was found that maternal secondhand smoke is one of the key factors that are responsible for second-hand smoking (Zhang et al. 2010). Pregnant women are responsible for providing a healthy diet to the fetus (Khader et al. 2011). Whatever women breathe or eat during pregnancy affects the fetus in a positive or negative way (Khader et al. 2011).

In case pregnant women smoke, the chemicals will dissolve in blood and carry to the fetus, as the result unhealthy environment causes many problems for developing fetus (Khader et al. 2011). Even pregnant women inhale smoke unintentionally the smoke will affect the fetus in many ways (Khader et al. 2011). The effect during this period of time is irreversible. There is a need to educate women about SHS and effects on a fetus.

The exposure of SHS among teens primarily affects their respiratory system. The exposure to SHS leads to a dry cough, sneezing, nasal irritations, asthma, tuberculosis and bronchitis (Butz et al. 2011). It has been found that exposure to SHS by teens for one hour in week result in twice time harder to perform physical activity (SHS. 2018). Also, some of the teens found sneezing and coughing during exercise (SHS. 2018). If the exposure remains for a long time that outcome will be chronic diseases (Butz et al. 2018).

Second-hand smoke affects pregnant women too. Among pregnant women, SHS results in low birth weight or stillbirth (Khader et al. 2011). This is a serious concern as low birth weight further affects the health of children during their developmental years. Mostly pregnant women exposed to second-hand smoke were of low socio-economic status (Khader et al. 2011).

Second-hand smoke not only affects the health of children it also made them smoke in the future (Harakeh et al. 2010). Parents are role models for children, if they smoke in the presence of children, it affects the behavior of children (Harakeh et al. 2010). Children find smoking as a normal habit and find smoking as normal activity (Harakeh et al. 2010). Those parents who are smoker their children will more likely to smoke in the future. It is important for parents to teach good behavior and educate children about the ill effects of smoking (Harakeh et al. 2010).

SHS among children leads to lack of attention among children. As the mental health of children is affected by it (Leung et al. 2015). The low birth weight further affects the development of the brain and decrease the optimum development of children (Leung et al. 2015). As a result, children affected by SHS do not perform best academically. The intellectual skills are affected by SHS (Leung et al. 2015).

SHS is affecting children everywhere, but I was found that SHS affects 23 times more in a car. Mostly children inhale harmful chemicals when they are in a car with their parents (Macanzee et al. 2010). With the increase in the number of smokers in a car the exposure increases (Macanzee et al. 2010). Furthermore, smoking in small rooms in presence of children, double the effect of SHS on children (Macanzee et al. 2010). There should be a strict law against smoking in cars especially in the presence of children to safeguard them.

Children living in low socio-economic status are more likely to be affected by second-hand smoke than children who belong to high socio-economic status (Pisinger. 2010). Male gender is more affected by second-hand smoking than females (Pisinger. 2011). Furthermore, it has been found that the children whose parents are not educated affect their child health by second-hand smoke and parent who are educated protect their child from second-hand smoke (Pisinger. 2011). Therefore, parent education plays a crucial role to protect children from second-hand smoke.

SHS among children also leads to affect the development of oral-facial tissues. Sometimes these may lead to cleft (Rankin. 2018). The tissues of the nasal cavity, windpipe, and lungs are very delicate in children. With the exposure to chemicals, tissue shows an inflammatory response that hinders the development of tissue (Rankin et al. 2018). Children with oral-facial cleft unable to chew food in a proper manner and unable to breathe. This led to the morbidity of children. Surgical procedures are done to treat children with such problems.

Children living with parents that smoke more often is more likely to be affected by second-hand smoke than children whose parents are smoke very rare. Children most affected by second-hand smoke whose families are unaware of ill-effects second-hand smoking (Abdullah et al. 2012). Furthermore, it has been found that children are mostly affected by second-hand smoke at home rather than outside (Abdullah et al, 2012).

Furthermore, studies had been done to find out body response to cigarette smoke. It was found that after SHS, there is an increase in White Blood Cells (WBC) in our body (Dinas et al, 2014). The study shows there is an increase in the level of WBC's for four hours if a person visits any restaurant where smoking is allowed (Dinas et al. 2014). If the duration to stay increase, there will be a

greater number of WBC's in the body for a longer period of time (Dinas et al. 2014).

These WBC's are mostly required for phagocytosis and their presence predominantly shows the inflammatory response of the body. The chemicals of smoke entrapped to any tissue of the body during SHS (Dinas et al. 2014). These blood cells will destroy the chemical as well as tissue, as a result, there will be acute irritation due to injury due to WBC's. The injury results in chronic disease if the exposure stays for a long period of time (Dinas et al. 2014).

By controlling and banning smoking at home it has been noticed an increase in proficiency of children in schools and doing physical activities (Paulik et al. 2013). There are fewer mood swings and irritative behavior during eating and playing (Paulik et al. 2013). The attention and response to particular task increase as the neurological network tend to be more active with a decrease in cotinine level in the blood (Cho at al. 2010).

Children act responsibly and getting closer to parents as they don't smell the smoke from the clothes of their parents (Paulik et al. 2013). There is an increase in GPA, attendance and sports activity among children. Children get sick less often as immunity increases with time and stronger physically than before (Paulik at al. 2013).

To control and protect children from SHS, there is a need for educating parents. Educating parents about ill-effects of SHS is very important, as most parents do not understand what smoke form of cigarette is causing to their children (Butler et al. 2014). Educating parents is challenging in some communities, as there are language barriers and sometimes parents do not want to listen to what they are doing and how they are doing. Parents who are active smokers need counseling and discussion of case studies should be done to educate them about ill-effects of SHS on children. Imposing strict laws in the community for banning smoking in presence of children (Ballbe et al. 2013). When there will be high penalties and imprisonment, most people will quit smoking in presence of children and this will safeguard many lives of children.

The best way to control second-hand smoking is to implement a strict rule. These strict rules can be This approach was used by the university in Australia, where students were allowed to smoke only in designated areas (Sun et al. 2012). This not only decreases second-hand smoke practice on campus but also help some students to quit smoking (Sun et al. 2012).

At last, there should television broadcasting for the better understanding of ill-effects of second-hand smoking among children. Therefore, with the implementation of rule and regulations in a serious manner can bring a huge change in society to safeguard the health of young ones.

### Description of the project

This intensive research in the literature review is done to disclose the ill-effects of smoking among children. The research provides enough knowledge about harmful chemicals emits during cigarette smoke. The nature of chemicals and how these chemicals are responsible to cause tissue irritation and do mood swings. For this project, comprehensive literature had been done. The effect of second-hand smoke is due to many factors. These factors are parent behavior, socio-economic status of the person, type of house child is living in, a frequency of smoking by parents and religion of parent.

The research provides enough evidence the second-hand smoke effect is mostly due to the behavior of the parent. If a parent is educated, they are more likely to smoke in absence of children and parent who are careless and uneducated are the one does not care about the health of children. Furthermore, this research has many examples that prove people with low socioeconomic status tend to smoke more as compare to parent with high socioeconomic status.

In the project, there are enough shreds of evidence that make it clear how SHS able to impact the lives of children. The impact can be on the respiratory system, neurological behavior, development of child and behavior of a child. There are enough pieces of evidence in the project that link SHS with a low GPA and less physical activity of children.

Furthermore, the research had been done to find out possible solutions to limit the impact of second-hand smoke on children. Strict bans on smoking, parent counseling, educating people and warning labels on cigarette packages will help to reduce SHS among children. With the implication of permanent and strict laws against smokers will be the best scenario to limit the SHS among children.

### DISCUSSION

Solutions- the research mostly provides enough pieces of evidence, how SHS is affecting the health of young ones. Following are the best solutions to safeguard the health of children.

1. Parent counseling- providing parents enough evidence of how SHS had impacted the lives of young ones and how the impact is irreversible.
2. A strict implication of laws against cigarette smoking- by strict laws and heavy fines, parents will feel bounded with the sense of law regulations and responsibility. This will help them to quit smoking.
3. Educating people- Educating people through television advertisement and newspaper will help them to understand the causative nature of smoke.
4. Providing enough evidence illustrating how bad is SHS for children- this is for stubborn people who do not realize their responsibilities. Providing statistical data of how many children got cancer and health problems will help them to understand facts.



5. Smoke detectors at home.
6. Routine child check-up to investigate cotinine level in their body. This will be done to investigate if parents are smoking at home and by what percent child is been exposed to SHS.
7. For children who are already underexposure of SHS-
  - Medical checkup to understand the extent to which damage has been done by SHS.
  - Strict regulations for the parent, do not smoke in front of children and at home.
  - Medications to decrease the inflammatory response of the body.
  - Providing enough products for children to boost natural immunity.
  - Regular screening on monthly basis.

Limitations- there is a number of limitations to this research and SHS.

1. Densely populated areas and polluted areas- sometimes population living in urban areas have another causative factor like air pollution, dust, and allergies. This does not illustrate the "gold standard" data. Sometimes there is a need to collect data from actual population affecting by only SHS.
2. Rural areas where parents are not curious about health- People living in rural areas have less access to healthcare as resources can be far away.
3. Genetically affected children- children with the genetical defect for lung disease and parents smoking will show additive interaction with SHS.
4. Research mainly done through literature reviews and gold standard data is sometimes unavailable.
5. Law implication- For successfully terminate SHS from society the law strict law is the must. But. Lack of human resources and surveillance the results are difficult to achieve.

An implication for further research-

### Leadership

Leadership is an important characteristic for dealing with a particular situation and leading public health officials in the right direction. In public health, there is a need of a leader that will help the organization to follow to safeguard the community. The leadership involves as-

1. Convince and inform a greater number of people about SHS.
2. Create a definite plan to do a gold standard project with true results.
3. Make sure the sensitivity and specificity of the project are not affected by secondary data.
4. Limit confounding in the project and research work.
5. Evaluate the validity and reliability of instruments used in the literature review.
6. Motivate and inspire co-workers and people around to overcome the challenge of SHS among children.
7. Evaluating a greater number of cases been exposed to SHS.
8. Creating a volunteer group to educate people in the community.

9. Great responsibility for changing the future of children.

### Public health

Second-hand smoking among children is a public health concern. Children are the future of any community, state, and country. If their child is affected then it will be a great loss for the country when they will grow up. This project has enough evidence that will help us to understand how SHS is poisoning the life of children. Following are public health. Implications of SHS among children

1. With SHS increase the number of children affected by respiratory diseases.
2. Mothers of newly born who smoke during pregnancy found some type of birth defects after childbirth and sometimes stillbirth due to excessive smoking.
3. Due to SHS children feel hyperactive and their neurological balance is disturbed.
4. Children are not able to focus on studies due to SHS, results in low GPS.
5. Increase in a number of absentees due to sickness from SHS.
6. Affecting the behavior of children- under influence of parent's children tend to copy their parents and children whose parents are smokers they will likely to smoke in the future.
7. With time passage the acute conditions turn into chronic conditions like chronic bronchitis and lung cancer.
8. Less physical activity by children, as the result of affected lungs.
9. With more exposure to SHS among children, their immunity is affected.
10. Children tend to be less socialized.

### CONCLUSION

With overall research, the SHS among children is like indirect poisoning. There is a need for correction of human practices (cigarette smoking). Fresh and clean air is human right and children should enjoy this right. As proved in this research SHS is causing huge harm to children health. There is a need for expanding information in the field of Second-hand smoke. There is a need for implementation of strict laws for control of smoking in presence of children. Furthermore, the government should ban cigarette smoking as it is really a threat to health for all individuals either one who is actively smoking, family members and friends.

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