International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Review Article

Reducing Harm of Passive Smoking Exposure among Children

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ABSTRACT

Passive smoking is a curse for the children. Every year almost 600,000 premature deaths occur due to passive smoking. Almost 63% of ischemic heart disease is a consequence of passive smoking. There are different initiatives have been taken across the world to reduce the harm of this exposure. The objective of this review article is to present different approaches of reducing the harmful effect of passive smoking exposure focused on children. Most of the initiatives are almost same in nature and work well in the developed countries. Counseling is the key component of reducing exposures. A Different form of counseling such as personal counseling, motivational interview or group session counseling can help to reduce the exposure. Along with counseling regulations, technologies, health education and the use of pharmacotherapy, different forms of methods have been taken by different countries. The clinic-based setting is another important method to reduce this exposure across the world. Mutual understanding among the parents to avoid smoking in front of their children can help to lessen the burden, as child's health is always the primary concern of the parents. Particularly, mother's awareness is necessary to reduce the exposure as well.

Key words: Passive Smoking, Exposure, Reducing Harm, Children

INTRODUCTION

Tobacco is a devastating word which is related to millions of death every year. In fact, it is the highest cause of preventable death. At present, more than 1.1 billion people smoke different forms of tobacco. 80% of them are from low and middle-income countries. Each year tobacco-related diseases cause 6 million deaths and if this pattern persists, it will reach up to 8 million by 2030. Currently, half of the tobacco-related deaths take place within the age of 35 to 69 years. [1,2] In every socio-economical context, smoking is a burden for all the countries around the world. For the high-income countries, smoking is the number one cause of death; while for middle income countries, it follows number two, and in case of low income countries, it is ranked as number seven. [3]

Tobacco has been used in different forms. It can be inhaled as smoke or can be taken in other forms like chewing or sniff. Everyone knows that active or direct smoking of tobacco is dangerous, but the indirect smoking or passive smoking is also a health concern. Passive smoke or second hand smoke is formed by burning of different tobacco products such as cigarettes, cigars or pipes. It is the smoke which has been breathed out and exhaled by the smokers. [4] Worldwide every year 600,000 premature deaths are caused by passive smoking. Almost half of the total children around the world are exposed to tobacco smoking in open or public places. [5]

Almost 63% of ischemic heart disease is a consequence of passive smoking followed by the lower respiratory infection which is 27%. [6]

Children are at the greatest risk of passive smoking. Honestly, they are the worst sufferer of passive smoking. In every corner of the globe, there are passive smoking affected children. Turkey is the top in the world of overall exposure of passive smoking scenario among the children. Almost 89% children of the country are exposed to passive smoking. 49.2% children of United Kingdom are exposed to passive smoking; whereas, in Australia, it is 43%, 35% in the United States of America and the lowest is in Canada which is 33%. [7] In Indonesia, almost 80% children who are younger than 15 years are affected by passive smoking at home. In Vietnam, it is almost 75% which is second in the row and in China, it is around 67%. In the case of the restaurant, almost 90% of the Chinese below 15 years of age are exposed to passive smoking. In Vietnam and Indonesia, the percentage is almost 85%. China is also leading in workplace smoking where 65% of 15 children are exposed to it. Bangladesh comes after China where 62% exposure is visible and the third in the row is Egypt where 60% of 15 children are exposed to passive smoking. [5]

In developed countries, 90% of lung cancers in men and up to 86% of cases in women are caused by smoking. [1,2] But the scenario of passive smoking is also not minor. The harmful health effect of passive smoking is enormous as more than 7000 different chemicals are found in tobacco smoke; out of which many of them are responsible for cancer. Passive smoke causes ear infections, asthma attack, coughing, sneezing, shortness of breath, bronchitis and pneumonia and the risk for sudden infant death syndrome among children. For adults, it causes different kinds of cancer and cardiovascular diseases (CVD) such as heart attack and stroke. [4]

Tobacco is a curse for everyone. Although it seems tough, every country wants to get rid of tobacco. World Health Organization has a framework to control tobacco and almost all the countries' law and regulation of tobacco control follow this guideline. In the United States of America, United Kingdom and Australia, the rules and regulations are almost same. In these countries, smoking is not allowed in public places, no retailer can sell cigarettes to minors, tobacco companies do not have permission to sponsor any programs, no visual advertisement is allowed, a warning sign with the picture should be clearly mentioned over every package and implementation of tobacco tax are common laws. [8-10] In India, along with the regular laws guided by WHO framework; there is a significant regulation for the ban of smoking within the 100 yards of any kind of educational institutions. Also, in Nigeria, smoking is restricted within five meters of doorways and windows of any public places and also within five meters of queues of any public transport. [11,12]

There were different types of initiatives that have been taken across the world to reduce the burden of passive smoking exposure. The aim of this article is to present different methods of reducing the harmful effect of passive smoking exposure that will be focused on children. Though the nature of approaches will be almost the same and most of the interventions are taking place in the developed country, the public health consequence of passive smoking exposure is huge and this burden is affecting the developed, developing and underdeveloped countries. The diverse methods used to reduce the harmful effect of passive smoking among the healthy child as well as the sick child will be reflected in this article.

Counseling the finest way to reduce passive smoking harm:

Almost all around the globe, counseling is used as an effective way to reduce the harm of passive smoking mainly among children. Effective and proper counseling is proved to reduce the burden throughout the world from east to the west.

In-person counseling can help to make the parents or caregivers understand the risk of passive smoking exposure. Long-term counseling can be more effective other than short-term counseling. Counseling mainly focuses on practicing outdoor smoking habits, reducing indoor smoking, fixing some rooms of the house as a non-smoking area, stopping smoking while accompanied by children in any vehicle and requesting grandparents not to smoke at home when children are visiting. [13] In-person counseling also focuses on the importance of healthy environment at home, the danger of health related to active and passive smoking exposure, the positive effect of quitting smoking and the process of making the house air smoke-free. [14] Though counseling helps mostly short-term smoking cessation, it may be considered as the foundation for quitting smoking. [15]

Group support session is a relatively new way of counseling where the smoker parent/caregiver can discuss together with the help of a counselor and can make plans on how effectively they can make their home tobacco smoke-free. [16] Like group support session, collaborative learning is another way where a group of people with common aim adapt an intervention, spread their knowledge in a common platform for a long time with a certain interval which may reduce the harmful health behavior such as smoking. [17] In-person counseling at participants' houses can allow the researcher to support the home environment and to make it passive smoking exposure free. Counseling has not only significantly worked for the healthy child, but it works perfectly well with the parents who have a sick child who might be suffering from cancer. [18] Smoking hygiene intervention (SHI) is another counseling method which is delivered through in-person and telephonic counseling as well as self-help education material. [19]

Motivational Interview (MI) is an effective way:

Motivation Interview was first described by William Miller in the year of 1983 which was mainly used for addiction treatment, but nowadays it is widely used to change human behavior. The main goal of MI is to help the participants to recognize as well as change their behaviors and to prevent them from developing risky health problems. The important principles of MI are empathy, roll with resistance and the development of discrepancy. In empathy, the researcher should see the problem or scenario through the participant's point of view or perspective. It is very important that the researcher must comprehend the participant's inner thoughts. In the second principle- roll with resistance- the researcher should understand the common characteristics of resistance of the participants and he or she should not impose anything on the participants. In developing a discrepancy, the researcher should influence the participants to change their unhealthy behaviors indirectly. [20] In the view of these principles, intervention can be designed to support the caregivers/parents by preparing them to take initiatives to reduce the passive smoking exposure effect, building confidence and motivating them when they feel hesitant about the change or quit smoking and also to give brief personalized smoking cessation counseling if the caregiver is ready to quit. The intervention can be carried out by personal and telephonic interviews. [21]

For successful completion of MI, adequate training can help the researchers to explain the behavioral change among the parents and can also help to reduce exposure. Smoking in Children's Environment Test (SiCET) is a process which helps to get motivational interview implantation successfully. SiCET is basically a self-reported questionnaire which is supposed to be answered by the caregivers/parents and then, the outcome will be useful in the research to further initiate a dialog with the participating members. The combination of MI and SiCET can help the participants to improve their self-efficacy which will allow them to

believe that they can modify their harmful health behaviors. [17]

Communication can play a vital role:

Communication is another effective process to reduce passive smoking exposure burden. Several telephonic interviews with psychologists regarding the consequences of the exposure and the possible health risk can help to reduce the passive smoking exposure. [22] Telephonic calls can also help to evaluate the development of the goal, different counseling barriers and also to help the participants to set new goals to reduce exposure. [14] Along with telephonic calls, postal mail and email can help to convey the knowledge. [23] Telephonic counseling with pediatricians can also significantly change the parents' mind and can help to take necessary steps to reduce the risk of the exposure for the children. [24]

Technology and Media also can act as a part:

Different technologies and media products can help to reduce passive smoking exposure. Website can be used where the smoker parents or caregivers can share their ideas and can also participate in the discussion sessions to exchange their views. [16] Also, governmental websites on smoking control can be a good source to increase knowledge about the harmful effect of passive smoking. [17] Video games aiming at dissemination of knowledge can reduce passive smoking at home and in the car. It can be used as a process to develop awareness about the harmful effect of passive smoking. [16] Clinical counseling video can help pediatrician to address a patient within their limited counseling time. [25,26] Motivational video helps the parents to understand the risk and encourage them to reduce exposure. [27] Smart-phone is the most useable gadget nowadays. Mobile-phone-based smoking session intervention or mHealth based intervention can also involve parents to reduce smoking and can make an exposure free environment for the children. Different text massages focusing on the health effects of smoking, the motivation of quitting and the consequence of passive smoking exposure can encourage the parents to take steps for reducing exposure. [28] Smart devices such as smart-phones or Tabs are widely used devices nowadays. Mobile app focusing on real-time self-monitoring smoking, trigger factors, tracing of health progress as well as information on tobacco session and passive smoking exposure protection, is potentially an effective way to reduce exposure. Mobile app can also integrate to a web link counselor portal where a counselor can see the progress of proper use of an app which allows the counselor to give supportive feedback to the participants. It is comparatively a new approach. [29]

Real time audio-visual feedback by monitoring the air particle level is an exclusive technology to reduce exposure. An airborne particle monitor and a feedback device with visual graphical display play the role to reduce exposure. The air particle monitor may be kept at different places of the house where the possibility of children's smoke exposure is higher. A visual graphics monitor with an audio system needs to be placed in a common area. While smoking, the air particle monitor will get the signal and will also show the real-time rate of air pollution on the visual monitor along with activating the alarm system. It will warn the parents about the home environment and will give immediate mitigation of air pollution by opening the windows, smoking near windows or outdoor. [30] Electronic health records are also used in clinic-based intervention where a physician can record and follow-up the data of child smoking exposure and can take necessary steps to protect them. [31]

Postcard, [32] booklets, [17] brochures, posters, [28,31] leaflets [25,33], pamphlets, [29] table tents, manuals, [28] signs, stickers, [34] refrigerator magnets, mug [26] act as reminder of the exposure. Quit cards which are business cards that also include quitting information and press release to inform the parents or caregivers to join a community intervention program, are another approach to reduce exposure effect. [25]

Total smoking ban in the home can reduce exposure:

Most of the children experience passive smoking exposure in their own house. Smoking banning in the house is a positive way to reduce exposure. As there is no safe limit for the exposure; that is why, the implementation of a total smoking ban can bring significant outcomes. Although the nonsmoker families are more concerned about smoking ban in their house, the knowledge and benefits of the complete smoking ban can be successfully transferred to the smoker parents with telephonic coaching calls and different informative materials that facilitate the smoker family to introduce the smoking ban. [34] Child health is a significant motivational factor for ban because every parent wants to see their child as a healthy kid and no one wants to be the cause of their child's illness.

Thus, there are different barriers to make the home smoke free such as living with extended family especially grandparents, lack of social support to make the home smoke free, weather such as winter which is a barrier to let the smoke go outside or to open the window, safety of the neighborhood and also some of the embarrassing situations of requesting others to avoid smoking at home. [35,43] Occasionally, the child himself acts as a barrier because the parents do not want to leave their child alone in a room and cannot go outside for smoking. But, it was also true that some of these barriers also act as positive factors for the total home ban on smoking such as living with extended family and social network. Grandparents are often the most concern persons for their grandchildren's exposure to smoke and also some of the societies take initiatives to implement the ban on smoking. [35]

Exposure can be reduced by Pharmacotherapy:

Noncombustible products with nicotine contain Nicotine Replacement Therapy (NRT) like nicotine inhaler, lozenge, gum and also Potentially Reduced Exposure Tobacco Products (PREPs) such as camel snus, taboka work effectively to reduce the smoker's craving for smoking. [36] Smoking cessation is certainly a difficult task especially when there is no scope to avoid children while smoking; NRT is helpful to stop smoking. [13,15] It also encourages a smoker to quit smoking. [33] NRT acts as a temporary absence from smoking, but in long run, it helps in complete smoke cessation. [37] During counseling, if the participants get logistic support for nicotine replacement therapy and medication for cessation that can truly reduce the smoking rate which can further reduce the passive smoking exposure. [31] Those who are less interested in quitting smoking, can get benefit from PREPs to help reduce their child's exposure to it while smoking. This method is not an optimal choice, but it helps to get substantial health benefits. [38]

Awareness among mother is more effective:

There is no doubt that children are closer to their mother than anybody else. That is why, parental smoking; mainly, mother's smoking directly makes a child a passive smoker. Dropping in the rate of mother's smoking per day significantly reduces the effect of passive smoking on children. [39] Whatever the home condition is; the willingness of the mother can save her child's health. Mother's views to save her child's health are incremental in nature and these can overcome the barriers of behavioral change. [40] By taking the child away from the smoker, and placing no smoking sign also increase the intensity of requesting father/partner to stop smoking to reduce the exposure. [42] A nonsmoker mother can also play a vital role to reduce exposure to smoking. They can help to motivate their smoker spouses to quit smoking. Mutual support of both parents always plays a significant role in reducing smoking exposure. [23,33]

Clinic-based intervention is a noble approach:

To reduce the harm of passive smoking exposure, clinic-based intervention

or intervention in a pediatric setting is helpful. The Clinical Effort against Secondhand Smoke Exposure (CEASE) is a process addressing through pediatric office intervention. This intervention is flexible in design and adaptable with pediatrics office individual resources. [25] Massachusetts General Hospital has developed the program. The three main elements of the program are Ask, Assist and Referred (AAR). AAR reflects asking about child exposer of passive smoking, assisting about the harmful effect of the exposure and referring to smoking cessation. [41] The focus of CEASE is the regular screening of tobacco use for parents by CEASE action sheet to help the clinic staff identify the smoker family and record the information. It also includes individual inspirational message emphasizing on child's illness and possible recommendation for nicotine patch and gum by the pediatricians. [25]

The Kids Safe and Smoke Free (KiSS) is a program that focuses on intensive individual-level counseling as well as community-based service in a clinic-based setting. KiSS adapts the guideline principle of CEASE. But KiSS includes behavior intervention by counselor instead of the clinician that includes intensive family-centered counseling along with personalizing counseling and smoking quitting coping skill training. Like the CEASE program, KiSS also provides community and social support by using nicotine replacement therapy and cessation medication. The goals of KiSS are to identify smoker parents with a child, tobacco use counseling, no smoking policy establishment, different smoking interventions, medication to quit smoking and the use of health record of the clinic for follow-up. [31]

Health Education can develop knowledge:

Passive smoking exposure can be reduced through health education. Community worker can play a vital role in this as they are considered as a trusted mouthpiece of the neighborhoods and can effectively deliver the knowledge to the community members. [19,32] Sending several educational mails to the smoker parents is also helpful to reduce exposure. [32] Also, the presence of an expert in tobacco field acts as a motivating factor in the smoking cessation related health program. [17]

Incentive is always fruitful:

Incentive in the form of money or any other gifts also acts as an effective way to reduce the harm. It motivates the parents to participate in different intervention sessions such as counseling or interviews. [13] Monetary incentive can attract the participants to maintain their goal. [27,33] Incentive like gift cards attracts the participants to get involved with the research. [21,34] Even providing lunch improves the number of attendants in a session. [25]

CONCLUSION

There is no doubt that the risk burden of passive smoking exposure is tremendous. To mitigate this huge public health burden, different incentives have been taken across the world. Though the approaches are more or less same in nature, but unfortunately, there were very few initiatives for a low socio-economic condition in the underdeveloped country. For smoking cessation and reduce exposer, counseling acted as the key factors through motivation, knowledge sharing and group activities. Changing behavior is a very complex task, but one can get success by influencing one's inner desire that can be activated by proper motivational counseling. As 21stcentury is the era of technology, the effective use of these technologies can also help to reduce the burden. Due to the busy life schedule, in-person meeting seems to be a difficult job, but this can be dealt with by using telephonic counseling, sending text messages or email. A cellular phone is available almost everywhere; even low-income population uses cellular phone regularly. Utilizing these phone features such as SMS or Short Message Service can be an efficient way to deliver knowledge. A

toll-free call to the counselor or any other smoking cession activities can also help. Mobile network can also be found in a remote area where road communication is very difficult. As the cellular phone has internet facilities, which can be used by government or non-government agencies for setting up a video conference instruments in the remote area, it will add value to reduce the exposure. Clinic-based counseling is also effective for both healthy and sick children. Clinic setting is an excellent way, but it should be remembered that doctors are very busy and they may not have enough time to participate in the program. Here, the counselor or other health care professionals can act as key person to help the parents. Health education can also be effective in a clinic setting as well as in a community setting through organizing discussion session by an expert in the smoking field. Also, educational institutes can disseminate the knowledge to the young students to motivate their parents not to smoke in front of them as child is considered to be the biggest motivating factor. Mother's awareness and knowledge is another important factor in influencing the spouse not to smoke which can be effective as well as in low socio-economic condition. Smoking ban at home and vehicle can reduce exposer, but this does not always give positive results as there are different barriers present in this process. To protect the future generation, this is high time to raise awareness about passive smoking exposure. As passive smoking is a global problem, there should be different methods to reduce the harm for developing and underdeveloped country as well as for their low socio-economic population. Unfortunately, this kind of method is very rare and further research is necessary in this field.

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How to cite this article: Robin RC, Noosorn N. Reducing harm of passive smoking exposure among children. Int J Health Sci Res. 2018; 8(2):288-296.

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