

## Second Hand Smoking and Pediatric Mental Disorders; is there a Link? A Commentary

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### Commentary

"Non smoking restaurant, non smoking hospital, non smoking area!!!!!!!!!!!!!! what is this all about??? I am a free man, I can do whatever I want, wherever I want, whenever I want. What do you say?? I am hurting myself and others!!!!!!!!!!!!!! none of your business!!!!!!!!!!!!!!". "With all my respect Sir; hurting yourself is not your free personal choice especially if you are going to hurt others as well".

Unfortunately, this kind of conversation could occur anywhere in the world whether in developed or developing countries so long as the personal motivation of living a healthy life and the sense of public responsibility are lacking. The lack of enough public awareness about the potential hazards of second hand smoking (SHS) was a vital issue behind our decision as a research team to conduct a study investigating the association between SHS and mental disorders in children [1].

The US Surgeon General has concluded that there is no risk-free level of secondhand smoke (SHS) exposure and estimated that approximately 66% of children aged 3 to 11 years are exposed to SHS [2]. It is well established that SHS exposure causes adverse physical health conditions (e.g. respiratory and cardiovascular) [3-5] and there is increasing evidence suggesting that it may also adversely affect mental health [6,7].

Because many mental disorders have an onset in youth at a time when SHS exposure is high, it is critical to consider how SHS may be affecting the mental health of children and adolescents. Studies indicated that prenatal tobacco and childhood SHS exposure are associated with child behavioral problems, including internalizing and externalizing behaviors, ADHD, and conduct disorder [8]. It was reported that primate postnatal tobacco smoke exposure leads to changes in brain cell development similar to prenatal nicotine exposure [9]. Accordingly, Zaky et al., study [1] aimed at investigating the potential association between SHS exposure and emotional, behavioral, and or psychiatric problems in a group of Egyptian children as such an association was not explored in our country prior to our study

Zaky et al., study [1] included forty five SHS exposed Egyptian children as group I; all of them had at least one smoking parent and or were exposed to environmental tobacco smoke while group II included thirty age and sex well matched controls, with neither history of parental smoking nor exposures to environmental tobacco smoke. For all studied children, complete history taking, thorough clinical examination, psychometric assessment using Pediatric Symptom Checklist (PSC), Strengths and Difficulties Questionnaire (SDQ), and IQ measurement were done. DSM IV TR criteria were used to confirm any suspected behavioral and or psychiatric disorder. Laboratory

assessment of second hand smoke was carried out measuring urinary cotinine levels.

All the studied SHS children (group I) were exposed to their fathers' cigarette smoke during both pre and postnatal periods. Twenty - eight percent of their parents smoked 11-20 cigarettes per day. Only 3 fathers smoked outdoor with their children rarely exposed to their smoke and 42 fathers smoked both indoor and outdoor with their children exposed everyday to their smoke. Sixty two percent of SHS children lived nearby smoking areas (baking shops, gas station and coffee shops). Concerning psychometric assessment, two short screening tests have been used to evaluate the enrolled children in the present study, strength and difficulties questionnaire (SDQ) and Pediatric Symptom Check List (PSC). Reviewing the literature, no researches have used the PSC in evaluation of mental health among children exposed to SHS. So, the combination of SDQ & PSC screening tools seemed worthy of investigation comparing them concerning their specificity and sensitivity in diagnosing behavioural and or psychiatric disorders in our studied sample [1].

Urinary cotinine was considered by the Surgeon General Report [10] to have several advantages over blood or saliva assays such as the availability of large volume that usually can be collected, easily obtainable, and its level average is usually 5-6 times higher than serum levels for unconjugated cotinine. Also, the levels of urinary cotinine reflect more accurately the amount of environmental tobacco smoke (ETS) exposure [11]. So, urinary cotinine has been chosen in the Zaky et al., study as a biomarker of passive smoking.

The results of our study [1] showed that SHS exposed children had significantly higher mean value of urinary cotinine level, total PSC, and SDQ scores compared to controls ( $p < 0.001$ ,  $p < 0.001$ ,  $p < 0.05$  respectively). Mean values of Attention Deficit Hyperactivity Disorder (ADHD), internalization, and externalization behaviors' sub-scores of PSC were significantly higher in SHS children compared to controls. Meanwhile, mean values of emotion, conduct, ADHD, and peer problem SDQ sub- scores were higher in SHS children compared to controls but the comparison was only statistically significant for ADHD sub-score while prosocial problem sub-score was significantly lower in SHS children compared to controls. In studied SHS children, degree of smoking significantly positively correlated with PSC internalization behavior subscore and emotion subscore of SDQ while smoking index significantly positively correlated with ADHD subscore of SDQ. Meanwhile, prosocial subscore of SDQ and urinary cotinine level were significantly negatively correlated. In conclusion, SHS exposure significantly compromised mental health of the studied sample of Egyptian SHS exposed children.

In conclusion, a significant association between secondhand smoke (SHS) exposure and emotional, behavioral, and or psychiatric problems in the studied sample of Egyptian children was proved. Also,

the combination of SDQ & PSC screening tools seemed worthy as together they detected the behavioral and or child psychiatric disorders among studied children more accurately improving their individual diagnostic specificity and sensitivity [1].

The results of our study and other studies showed the importance of taking firm measures to decrease SHS exposure including prohibiting all forms of tobacco smoke promotion together with raising public awareness about the potential hazards of SHS especially its impact on mental health of children. Also, it seems wise to use psychometric screening for SHS exposed children aiming at early detection and prompt management of any behavioral or psychiatric disorders among them. Lastly but by no means least, further Egyptian studies on a nationwide scale are needed to define the actual magnitude of the problem in our country as well as the utilization of basic neuro-psycho-biological investigations to explore the pathogenesis of the impact of SHS exposure on the normal neurodevelopment and its link to future occurrence of childhood mental disorders.

## References

1. Zaky EA, Fouda EM, Nabih ES, Youssef OI, Mohamed NH (2015) Association of Second Hand Smoking with Mental Disorders in Children-An Egyptian Study. *J Psychol Abnorm Child* 4: 140.
2. US Department of Health and Human Services. Children and secondhand smoke exposure.
3. Glantz SA, Parmley WW (1995) Passive smoking and heart disease: mechanisms and risk. *JAMA* 273: 1047–1053.
4. Lai HK, Ho SY, Wang MP, Lam TH (2009) Secondhand smoke and respiratory symptoms among adolescent current smokers. *Pediatrics*. 124: 1306–1310.
5. Wang C, Salam MT, Islam T, Wenten M, Gauderman WJ, et al. (2008) Effects of in utero and childhood tobacco smoke exposure and  $\beta$ 2-adrenergic receptor geno-type on childhood asthma and wheezing. *Pediatrics* 122: e107-e114
6. Bandiera FC, Arheart KL, Caban-Martinez AJ, Fleming LE, McCollister K, et al. Secondhand smoke exposure and depressive symptoms. *Psychosom Med* 72: 68–72.
7. Hamer M, Stamatakis E, Batty GD (2010) Objectively assessed secondhand smoke exposure and mental health in adults: cross-sectional and prospective evidence from the Scottish Health Survey. *Arch Gen Psychiatry* 67: 850–855.
8. Bandiera FC, Richardson AK, Lee DJ, He JP, Merikangas KR (2011) Secondhand smoke exposure and mental health among children and adolescents. *Arch Pediatr Adolesc* 165 :332-338
9. Poole ED, Ying-Hua L, Samantha B, Michael W (2010) Adult household smoking is associated with increased child emotional and behavioral. *Environ Health Perspect* 118:150-154
10. Surgeon General Report (2006) Health consequences of involuntary exposure to tobacco smoke: Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
11. Fahmy AA (2010) Study of cord serum cotinine as a biomarker of fetal exposure to nicotine by active and passive maternal smoking. Thesis submitted for partial fulfillment of in MD in Pediatrics, Faculty of Medicine, Ain Sham University.