Research Article

Socio-demographic Criteria of Children Exposed Versus Non-exposed to Passive Smoking

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Abstract
Introduction: Exposure to passive smoking contributes to a worldwide burden of disease, not only in adults but also in children. Children exposed to passive smoking have a major risk factor on their health, as tobacco smoke contains more than 4000 chemical substances. **Patients and methods:** The medical records of 150 children were reviewed for a full history taking and clinical examination with special concern to blood pressure measurements. **Results:** There was insignificant statistical differences between exposed and non-exposed children regarding sociodemographic and clinical data ($p>0.05$). **Conclusion:** The socio-demographic data did not show significant differences between children exposed to passive smoking when compared to children who were not-exposed to passive smoking.
Key words: Passive smoking; children, sociodemographic data and BMI.

Introduction
Passive smoking is a major risk factor on children health, as tobacco smoke contains more than 4000 chemical substances [1]. Children, in particular those ages 3–11 years old, have the highest exposure to environmental tobacco smoke (ETS**)** [2]**.**

Despite the recent measures adopted in different countries to eliminate indoor smoking, 700 million children globally are still exposed to environmental tobacco smoke wall [3]. The prevalence of exposure to second-hand smoke was 37% reported in the Kingdom of Cambodia, South-east Asia [4], 54.4% in Egypt [5], 68% in Seoul, Korea [6], and 69.7% in Spain [7].

The most important source of ETS exposure among the pediatric population is parental and family smoking [8].

Aim of the study
The aim of this study was assessing the socio-demographic criteria of the children exposed to passive smoking versus the children not exposed to passive smoking.

Subjects and Methods
The present study was carried out at the Pediatric Department, Faculty of Medicine, Minia University. It was conducted on 150 children who were selected from the attendants of Minia University Hospital Pediatric Out-patients Clinics, through the period from September 2016 till September 2017. They were divided into two groups:

- **Group 1 (Exposed group):** included 75 second-hand smoke children. They were 32 males, 43 females, with a mean age of 6.6 y.
- **Group 2 (Non-exposed group):** included 75 children not exposed to passive smoking. They were 40 males and 35 females, with a mean age of 6.4 y. They were age and sex matched with the previous group.

➢ **Calculation of the sample size was done by this equation:**
➢

$$\mathbf{n} = \frac{\mathbf{1}}{\mathbf{1}-f} \times \left\{\frac{\mathbf{2} \times (z_\alpha + z_\beta)\mathbf{2} \times \boldsymbol{P} \times (\mathbf{1}-\boldsymbol{P})}{(\boldsymbol{P_0} - \boldsymbol{P_1})\mathbf{2}}\right\}$$ [9].

- **f** = proportion of subject suspected to drop out = 0
- $\mathbf{Z_\alpha}$ = determined from specific table based on the level of significance.
  $\mathbf{Z_\alpha}$ = 1.65
- $\mathbf{Z_\beta}$ = determined from specific table based on the power of the study.
  $\mathbf{Z_\beta}$ = 1.65 power of the study = 95%
- **P** = prevalence of the disease = 54.4% [5].
- $\mathbf{P_0}$ = proportion of expected success rate of this study = 87%
- $\mathbf{P_1}$ = proportion of success rate of another study = 60%

So, n $= \frac{\mathbf{1}}{\mathbf{1}-\mathbf{0}} \times \left\{\frac{\mathbf{2} \times (\mathbf{1.65}+\mathbf{1.65})\mathbf{2} \times \mathbf{0.544} \times \mathbf{0.456}}{(\mathbf{0.87}-\mathbf{0.6})\mathbf{2}}\right\} \approx 74$ case/group

Exclusion criteria: We excluded children aged below 3y or above 12 years, children with any systemic disease (e.g. cardiac patient, renal impairment ..., etc.) and those who refusal to be enrolled in the study.

All the study subjects were submitted to the following:

1) Thorough History Taking:

- Considering Personal history with special attention to name, age, sex, residence, socioeconomic status, parental education and occupation, family income and special habits of medical importance as smoking exposure (exposed to passive smoking or not exposed).

2) Smoking index determination for exposed children:

✓ **Definition of Smoking index:**

Quantification of smoking was done using the smoking index (SI). SI is defined as the number of bidis/cigarettes smoked per day multiplied by the number of years smoked [10].

Based upon SI, patients were categorized into the following groups:

I. Never-smokers [SI = 0]
II. Light smokers [SI = 1-100]
III. Moderate smokers [SI = 101-300]
IV. Heavy smokers [SI ≥ 301]

✓ **Significance and usage:**

It is a quantification of cigarette smoking. It's used in a clinical context to measure a person's exposure to tobacco and assess their risk of developing lung cancer or other pathologies related to tobacco use, and it is important in clinical care, where degree of tobacco exposure is correlated to risk of disease such as lung cancer [11].

✓ **Quantification of smoking**

The concept of using SI for quantification of smoke exposure is based on this fact that the number of bidis in a given pack is variable in contrast to cigarettes since the former is a cottage industry with much less standardization in its manufacturing process. Bidis and cigarettes are associated with similar risks in relation to lung cancer and that for calculating time-intensity tobacco smoke exposure, one bidi should be considered to be equivalent to one cigarette [12].

3) Clinical Examination:

Thorough clinical examination:

- Body systems were examined to exclude any associated disease.
- Measurement of weight & height to calculate body mass index (BMI) according to the equation of [13]:

$$\text{BMI} = \frac{\text{Body weight in kilograms}}{(\text{Body height in meters})^2}$$

BMI was calculated for all subjects and data was interpreted according to CDC growth charts of **BMI**-for-age percentiles. BMI-for-age weight status categories are shown in the following table:

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Normal or Healthy Weight	5 th percentile to less than the 85th percentile
Overweight	85 th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

Statistical analysis:

- The collected data were coded, tabulated, and statistically analyzed using SPSS program (Statistical Package for Social Sciences) software version 20. Descriptive statistics were done for numerical data by mean and standard deviation, while they were done for categorical data by number and percentage.
- Qualitative data were analyzed by Chi square (χ^2) test. Comparisons between groups for normally distributed quantitative data were performed by Student's t-test.

Results

We found insignificant statistical differences between exposed and non-exposed children regarding sociodemographic and clinical data ($p>0.05$).

Sociodemographic, BMI and blood pressure of exposed and non-exposed children

Variable	Exposed children N=75	Non-exposed children N=75	p-value
Age (year) Mean ± SD	6.7±2.9	6.4±2.5	0.594
Sex			
Male	32(42.7%)	40(53.3%)	0.191
Female	43(57.3%)	35(46.7%)	
BMI of children (kg/m^2) Mean ± SD	15.4±3.5	14.6±3	0.185
SBP (mmHg)			
Range	(80-120)	(80-115)	0.339
Mean ±SD	97.4±9.3	96.1±7.6	
DBP (mmHg)			
Range	(50-80)	(50-75)	0.393
Mean ±SD	64.5±6.2	63.7±5.2	
Residence			
Urban	29(38.7%)	30(40%)	0.867
Rural	46(61.3%)	45(60%)	
Parent education			
Educated	52(69.3%)	54(72%)	0.720
Illiterate	23(30.7%)	21(28%)	
Parent occupation			
Sedentary work	36(48%)	35(46.7%)	0.870
Hard worker	39(52%)	40(53.3%)	
Monthly income (EGP)			
<850 L.E	22(29.3%)	13(17.3%)	0.173
850-1250 L.E	35(46.7%)	37(49.3%)	
>1250 L.E	18(24%)	25(33.3%)	
PSI Median / (IQR)	200 / (96-340)	--------	--------

Abbreviations: BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; PSI, parental smoking index .

- **Independent samples t test for parametric quantitative data between the two groups**
- **Chi square test for qualitative data between the two groups (if number per cell >5)**
- **($)Fisher exact test for qualitative data between the two groups (if number per cell <5)**
- **Mann Whitney U test for non-parametric quantitative data between the two groups**
- ***: Significant level at p value < 0.05**

Discussion

The aim of this study was assessing the socio-demographic criteria of the children exposed to passive smoking versus the children not exposed to passive smoking.

Our study included 150 children aged from 3 - 12 years. They were divided into two groups; (1) Exposed group; they were 32 (42.7%) males and 43 (57.3%) females, with a mean age of 6.7±2.9 years. All children in this group had a definite history of SHS exposure and (2) Non-exposed group; they were 40 (53.3%) males and 35 (46.7%) females, with a mean age of 6.4±2.5 years.

Regarding the demographic and clinical data of the exposed and non-exposed children, this study showed that there were insignificant differences between them as regard age, sex, residence, socioeconomic standard, BMI blood pressure as (p> 0.05). Our result agreed with [15] about BMI, as body mass index were not different between cigarette smoke exposed and non-exposed children. [16] Found that BMI was not affected if the exposed children had only one smoker parent, but the effect was only present when both parents smoked, suggesting the level of exposure is important. Those with both parents smoking were more likely to be overweight.

Conclusions

In conclusion, The socio-demographic data did not show significant differences between children exposed to passive smoking when compared to children who were not-exposed to passive smoking.

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