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Prevalence on Exposure to Secondhand Smoke and Its Associated Factors among Adults Residing in the Low Income Residence, Kuala Terengganu, Malaysia

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Abstract

Second-hand smoke (SHS) is one of the most important and most widespread exposures in the indoor environment. The link between SHS and several health outcomes, such as respiratory infections, ischemic heart disease, lung cancer and asthma have long been established. According to the World Health Organization, about 600,000 people die every year from exposure to SHS. The practice to avoid SHS at home are mostly individual-driven although in public places SHS can be executed by laws and policies such as gazetted smoke-free zones. A cross sectional study was conducted at Flat Bukit Kecil, Kuala Terengganu involving 211 respondents. Self-administered questionnaire was used and data were analysed. Descriptive statistics and Pearson chi square were employed. Findings revealed significant associations between socio demographic factors; gender (p=0.002), ethnicity (p=0.006), and occupational status (p=0.014) with SHS exposure. SHS exposure was also found to be significantly associated with respondents' vaping (p=0.035) and smoking status (p<0.001), and respondents with existing tobacco related morbidity (p=0.040). In conclusion, the prevalence of SHS among adult residents in Flat Bukit Kecil, Kuala Terengganu (57.8%) was higher in comparison with other local studies. Restaurants were found to be the most common place of SHS exposure followed by workplace and home. In general, the residents demonstrated poor attitude and practice towards SHS whilst knowledge was good on SHS. Malay smoker residents, aged above 40 years old, employed, allowed guests smoking inside the house and had a family history of tobacco related diseases were more likely to be exposed to SHS than its counterpart.

Keywords: adults, KAP, low income residence, SHS

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Introduction

Second-hand smoke (SHS) refers to the smoke exhaled by the smokers and smoke from the burning of tobacco products [1]. Exposure to SHS was reported to increase risk of coronary heart disease [2], tuberculosis [3], lung cancer [4], asthma and respiratory illness-related [5] and also causing development and behavioural problems among children [6,7]. SHS contains mixture of complex toxic chemicals and it was estimated about 50, 000 deaths per year in US associated with SHS [8].

The sites of exposure of SHS include public buildings [9,10], workplace settings [11], inside the cars [12] as well as at home [9,13,14]. The victims of SHS are usually women and children as there is no enactment for smoke-free home to protect households from smoking family members. As mostly smoking is banned in enclosed space such as office and air-conditioned restaurants, the habit of smoking has shifted from these places to smoke at home [15]. Thus, housewives and children became the victims of SHS. The level of nicotine due to SHS was found to be higher in children living in the apartments compared to the detached house by 45% [13].

The measurements of nicotine level were found to be significant with the total number of family members that smoke and the total number of cigarette that smoked on daily basis [16]. SHS exposure was also reported to be higher among low-income families [17] and women were reported to be most affected by SHS exposure in low and middle income citizens [18]. The hazards of SHS not only contributed by the smoking family members who resided in the same house but also who paid for a visit in low income housing. In addition, SHS from the neighbourhood units increased the risks of tobacco related diseases among the residences in the low income housing [16]. Thus, the need to determine the common site of SHS and factors associated with SHS smoke in low income residence are compulsory to eradicate the hazards of SHS.

Methodology

Study design and subjects

A cross sectional study was conducted from 22nd April 2018 until 4th June 2018 at Flat Bukit Kecil, Kuala Terengganu. All available and consented residents aged 18 years and above were included in the study.

Research tool.

A set of self-administered questionnaire was used to obtain variables of interest. The questionnaire consists of socio-demographic and smoking factors, family history, existing tobacco related morbidity, knowledge, attitude, and preventive practice on SHS. Those who are exposed to SHS is measured by self-reported based on the inhalation of the tobacco smoke that exhaled by a nearby smoker of at least more than 15 minutes at least two days in a week.

Data analysis

The data was analyzed using SPSS version 22.0 software. Descriptive analysis was employed to obtain means and standard deviations (SDs) for continuous variables and frequency and percentage for categorical variables. Pearson chi square was applied to determine associated factors of SHS among residents. The level of significance was set at 0.05.

Ethical approval

Ethical approval was obtained from UniSZA Human Research Ethics Committee (UHREC).

Results

Socio-demographic characteristics of participants in Flat Bukit Kecil

Data from 211 participants were collected. Majority of the participants were Malay and from low socioeconomic group. Table 1 shows the socio-demographic characteristics of the participants whereby both genders were almost equal in proportions. The age of the participants ranged from 18 to 40 years old (59.7%), and the rest were over 40 years old with (40.3%). Majority of the participants were Malay (86.3%). More than half of the participants received formal education up to secondary school (64.4%). Half of the total participants were employed (55.9%), whereas the remaining consisted of housewives, retired individuals or students. More than three quarter of the participants had monthly household income of less than RM 3,000. Non-smokers were dominant among the participants (82.0%) with quarter of them consumed electronic cigarette (vape). Total number of 38 (27.3%) married participants admitted that their husband smoke and more than half smoked inside the house (57.9%). About 59 of respondents admitted having smokers among household with 14.2% of them smoked inside the house and 30% of them allowed guests to smoke inside their house.

Regarding the morbidity status, majority of the participants denied having any existing tobacco-related morbidity (87.2%), but about one-third of the participants had history of tobacco-related diseases (12.8%). Total of 107 participants had children less than 12 years old (see Table 2).

Table 1 Socio-demographic characteristics of participants (n =211)

Variables	n (%)		Median (IQR)
Age of respondent			34.0 (24.0)
18-40	126	(59.7)	
>40	85	(40.3)	
Gender			
Female	113	(53.6)	
Male	98	(46.4)	
Ethnicity			
Malay	182	(86.3)	
Non-Malay	29	(13.7)	
Education level			
Up to secondary school level	138	(65.4)	

Tertiary education and above	73	(34.6)	
Occupation			
Employed	118	(55.9)	
Unemployed	93	(44.1)	
Marital status			
Single/Divorced/Widowed	72	(34.1)	
Married	139	(65.9)	
No. of children			1.0 (3.0)
≤3	159	(75.4)	
>3	52	(24.6)	
Monthly household income			
≤ RM 2999	164	(77.7)	
> RM 3000	47	(22.3)	
Participant's Smoking Status			
Non-smoker	173	(82.0)	
Smoker	38	(18.0)	
Smokers among household			
No	152	(72.0)	
Yes	59	(28.0)	
Participant's vaping status			
No	188	(89.1)	
Yes	23	(10.9)	
Spouse smoking status (n=139)			
No	101	(72.7)	
Yes	38	(27.3)	
Spouse smoking inside house (n=38)			
No	16	(42.1)	
Yes	22	(57.9)	
Smokers inside house			
No	51	(24.2)	
Yes	30	(14.2)	
Guest smoking inside house			
No	148	(70.1)	
Yes	63	(29.9)	

Table 2 Morbidity status among research participants (n=211)

Variables	n (%)	
Family history of tobacco disease		
No	140	(66.4)
Yes	71	(33.6)
Respondent's tobacco related disease		
No	184	(87.2)
Yes	27	(12.8)
Having child under 12 years old		
No	104	(49.3)
Yes	107	(50.7)
Pregnant household member		
No	192	(91.0)
Yes	19	(9.0)

Access to mobile phones and internet among subjects. Table 2 shows that 453 (94.0%) owns a mobile phone with access to internet, 446 (92.5%). Total of 310 (64.3%) students have a computer in their homes with an access to the internet. Most of them spent 5 hours or less than that duration surfing the internet through their mobile phones or computers daily.

Table 2 Access to mobile phones and internet among Form 2 and Form 4 secondary school students (n = 482)

Variables	Frequency (%)
Do you have a cell phone?	
No	29 (6.0)
Yes	453 (94.0)
If you have a mobile phone, do you have access to the internet?	
No	36 (7.5)
Yes	446 (92.5)
Do you have a computer in your home?	
No	172 (35.7)
Yes	310 (64.3)
How long do you spend your time surfing internet through mobile phone or computer daily?	
≤ 5 hours	396 (82.2)
> 5 hours	86 (17.8)

Level of Knowledge, Attitude and Preventive Practice of Second-hand Smoke among participants

Almost all of the participants agreed that cigarette smoke contributed to the adverse effects on health towards passive smokers (98.1%) and the risks of cigarette smoke on passive smoker's health were the same as smokers (87.7%). Majority of the respondents also agreed that continuous exposure to cigarette smoke was related to miscarriage and cancers of the lungs and oral cavity with more than 90% of participants knew that cigarette contains a lot of toxic substances. Most of the participants were aware about anti-smoking policy that prohibited smoking activity in places such as religious houses (75.8%), and air-conditioned restaurants (91.9%).

Regarding the attitude on SHS, 96.2% of the participants believed non-smokers deserved not to be exposed to cigarette smoke. About 95% felt angry when people smoked at the smoke free areas and felt disturbed when someone smoked near them. More than 50% of the participants strongly despised the act of people smoking in the presence of children or pregnant women, followed by 40.0% who disagreed, and the remaining 1% who accepted. About 90% of the participants felt responsible to stop people from smoking in the public places and 90.5%

of them claimed that they paid more respect towards people who did not smoke. Smoking was a waste of money as thought by 94.5% of the participants. More than 90% agreed smokers to be fined for smoking in public places. Among the 38 active smokers, 92.1% of them showed intention to quit smoking, whereas only 3 of them (7.9%) did not consider quitting the habit.

In terms of preventive practice, 38.4% of the participants walked away every time they noticed someone smoking nearby, whereas 41.7% walked away few times and 23.2% showed the courage to always ask to stop smoking near them. While dining at the restaurants, about 38.9% of the participants chose to sit in the smoke-free zone every time, followed by 32.7% who practiced sometimes. About one-fifth of the sample population had never advised anyone to quit smoking (26.5%). Almost half of them did not allow anyone to smoke in their house at any time (44.1%), followed by those who did so sometimes (21.8%), then 9% who only practiced it once, and 25.1% who did not bother. 40.3% of the respondents never tried to search for information regarding the danger of passive smoking, while only 11.4% of them put in their effort most of the time. Among the 38 active smokers, most of them abided by the rules in smoke-free areas every time, while 10.5% went by the rules sometimes, 10.5% often breaking the rules and 7.9% who never followed the rules.

Factors Associated with Second-hand Smoke among participants

Based on the results of Pearson's Chi-square test, only gender, ethnicity and occupational status under socio-demographic characteristics showed significant associations with the SHS exposure (p<0.05). This could be due to the status of employment among male participants who are working when compared to the female participants who are fulltime housewives. This is parallel to the finding that workplace was found to be the second common place for SHS exposure. The findings also revealed that smoking status (p< 0.001, vaping status (p=0.035) and guest smoking inside the house (p<0.001) were found to be significantly associated with SHS exposure. The percentage of smokers who exposed to SHS (84.2%) was much higher than non-smokers (52.0%). Existing tobacco-related morbidity was shown to be significantly associated with SHS exposure (p=0.040) whereas family history of tobacco-related morbidity did not show significant association with the SHS exposure. However, level of perceived harm was significant to SHS exposure.

Table 3 Factors associated with SHS exposure (n =211)

Variables	SHS exposure				X^2 (df)		p value
	No n (%)		Yes (n %)				
Socio-demographic Factors							
Age of respondent							
18-40	50	(39.7)	76	(60.3)	0.80	(1)	0.371
>40	39	(45.9)	46	(54.1)			
Gender							
Female	59	(52.2)	**54**	**(47.8)**	10.04	(1)	**0.002***
Male	30	(30.6)	**68**	**(69.4)**			
Ethnicity							
Malay	70	(38.5)	**112**	**(61.5)**	7.51	(1)	**0.006***
Non-Malay	19	(65.5)	**10**	**(34.5)**			
Education level							
Up to secondary school level	59		79		0.05	(1)	0.817
Tertiary education and above	30	(42.8) (41.1)	43	(57.2) (58.9)			
Occupation							
Employed	41	(34.7)	**77**	**(65.3)**	6.07	(1)	**0.014***
Unemployed	48	(51.6)	**45**	**(48.4)**			
Marital status							
Single/Divorced/Widowed	32	(44.4)	40	(55.6)	0.23	(1)	0.632
Married	57	(41.0)	82	(59.0)			
No. of children							
≤3	69	(43.4)	90	(56.6)	0.39	(1)	0.532
>3	20	(38.5)	32	(61.5)			
Monthly household income							
≤ RM 2999	71	(43.3)	93	(56.7)	0.37	(1)	0.541
> RM 3000	18	(38.3)	29	(61.7)			
Smoking Status							
Respondent's smoking status	83	(48.0)	**90**	**(52.0)**	13.24	(1)	**<0.001***
Non-smoking	6	(15.8)	**32**	**(84.2)**			
Smoking							
Respondent's vaping status							
No	84	(44.7)	**104**	**(55.3)**	4.42	(1)	**0.035***
Yes	5	(21.7)	**18**	**(78.3)**			
Spouse smoking status (n=139)	43	(42.6)	58	(57.4)	0.38	(1)	0.540
No	14	(36.8)	24	(63.2)			
Yes							
Spouse smoking inside house (n=38)							
No	7	(43.8)	9	(56.3)	0.57	(1)	0.452
Yes	7	(31.8)	15	(68.2)			
Smokers among household members							
No	64	(42.1)	88	(57.9)	0.00	(1)	0.972
Yes	25	(42.4)	34	(57.6)			
Smokers inside house							
No	15	(46.9)	17		0.58	(1)	0.446
Yes	10	(37.0)	17	(53.1) (63.0)			
Guest smoking inside house							
No	74	(50.0)	**74**	**(50.0)**	12.43	(1)	**<0.001***
Yes	15	(23.8)	**48**	**(76.2)**			
Susceptibility Status							
Family history of tobacco related disease							
No	66	(47.1)	**74**	**(52.9)**	4.	(1)	**0.040***
Yes	23	(32.4)	**48**	**(67.6)**	20		
Respondent with tobacco related disease							
No	80	(43.5)	104	(56.5)	0.	(1)	0.319
Yes	9	(33.3)	18	(66.7)	99		
Children <12 years old in household							
	44	(41.1)	63	(58.9)	0.	(1)	0.752
No	45	(43.3)	59	(56.7)	10		
Yes							
Pregnant women in household	8	(42.1)	11	(57.9)	0.	(1)	0.994
Yes	81	(42.2)	111	(57.8)	00		
No							
Knowledge							
Level of knowledge of SHS exposure							
Poor	12	(60.0)	8	(40.0)	2.	(1)	0.090
Good	77	(40.3)	114	(59.7)	88		
Attitude							
Level of attitude towards SHS exposure							
Poor	38	(39.6)	58	(60.4)	0.	(1)	0.485
Good	51	(44.3)	64	(55.7)	49		
Practice							
Level of practice of SHS exposure	60	(40.0)	90	(60.0)	1.	(1)	0.315
Poor	29	(47.5)	32	(52.5)	01		
Good							
Perceive harm							
Level of perceive harm of SHS exposure							
Poor	2	(28.6)	5	(71.4)	0.	(1)	0.458
Good	87	(42.6)	117	(57.4)	55		

Discussion

This study revealed that the prevalence of exposure to second hand smoke (SHS) was high, more than half of the respondents with the most common exposure occurred at the restaurants. In agreement, Lim and colleagues also stated that majority of the Malaysian adolescent and adults were exposed to SHS at least at one public area [19] with similar results also reported from other localities [20,21] . Besides public places, home and workplace were also recorded as places with high exposure to SHS [22].

Exposure to SHS has widely been reported and discussed for its adverse effects especially to those who are continuously being exposed consistently over a period of time. Thus, self-awareness and practice to avoid SHS exposure is crucial. In line with this, good level of knowledge, attitude and perception towards SHS are very important as these factors have been found to correlate to the avoidance of SHS exposure[23,24]. To iterate, the current study found that the level of knowledge towards SHS exposure among adults in low income residence was good whilst attitude and practice were poor. Study conducted by Lim and colleagues also reported that knowledge towards smoking and its health risks was good among Malaysian adults aged 18 years old and above [25]. Another study conducted in a suburban community in Kuala Terengganu also reported similar results whereby the selected community showed good knowledge on SHS despite poor attitude and preventive practices towards SHS [26]. Additionally, better level of knowledge usually found among those who were not smoking thus had better attitude to avoid SHS [23].

This study also discovered a number of factors significantly associated with the exposure to SHS. The susceptibility to SHS exposure was higher among males, Malay residents, employed, who smoke or vape, and those who allowed guests to smoke in the house. The SHS exposure was higher among males which is consistent with another studies in Malaysia [19,27] and abroad [28]. Looking at the perspective of cultural and habit, being male and smoke or vape was commonly seen in the public, thus exposed others to second hand smoke. Not only in the public, they were also reported to regularly expose SHS to their wife [29] and children [27] at home. Umami and colleagues also stated that higher exposure of SHS was found among respondents who smoke, and who had parents who smoked at home. Home should be a safe place to live, especially to a pregnant wife and small children. In order to make a rule for smoke free home, head of the family, which is usually the husband should lead and become a good example. The SHS exposure not only caused by the family members who smoke, but also from relatives or friends who visited the house. If the head of the family has failed to stop smoking inside the house, the courage to not allow the guests to smoke in the house will be absent, thus increase the risk of the SHS exposure to his family members.

The higher prevalence of SHS were also reported among low income population [30] especially those who resided in the multi-unit housing [16]. One can control his home to become a smoke free area, but not outside the house. For instance, living in a multi-unit housing or an apartment, SHS could come from the house next door or neighbours who smoke in the hallways. Level of nicotine concentration was found to increase in non-smoking houses due to the residential exposure to tobacco smoke from adjacent units [16,31].

Implementing smoke free area in selected public places are challenging, and if to have a smoke free home policy to instigate in order to reduce SHS exposure in public housing, that would be even tougher. It is not a simple task to change community mind setting with one policy but rather to plan tailored health education or intervention to instil awareness on SHS. The content should also provide the practical strategies to avoid exposure to SHS. Adequate knowledge on SHS and its hazards towards health could improve one's attitude and courage to voice out to smokers to not smoke near them.

Conclusion

In conclusion, the prevalence of second hand smoke exposure was found to be high among adult residents in low income multi-unit residence. The level of knowledge was good but attitude and practice towards SHS were poor. Factors that significantly associated with SHS exposure were males, Malay residents, employed, who smoke or vape, and those who allowed guests to smoke in the house. Proper planning of intervention to capture this target group is necessary as non-smokers who are living in the same residence are at risk of the SHS exposure which in long term will affect their health and quality of life.

Conflict of Interest

The authors would like to declare that there was no conflict of interest in this study. The study did not receive any source of funding.

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