



# Prevalence and Correlates of Second-hand Smoke Exposure Among Malaysian Adults



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## INTRODUCTION

Second-hand smoke (SHS) contains more than 7,000 chemicals and at least 70 of them can cause cancers<sup>1</sup>. Globally, more than 600,000 deaths are attributable to SHS annually<sup>2</sup>. Our study aims to determine the prevalence and correlates of SHS exposure among adults in Malaysia.



## METHODOLOGY

1. Data was obtained from the National Health and Morbidity Survey (NHMS) 2019, a cross-sectional study which utilized a two-stage stratified cluster sampling design to select a nationally representative sample of adults in Malaysia.
2. Data was collected using a short version of Global Adult Tobacco Surveillance (GATS) questionnaire.
3. Multiple logistic regression analysis was performed to identify correlates of SHS exposure among adults in Malaysia.

## RESULTS

1. Overall, 53.0% of Malaysian adults were exposed to SHS either at home, at work or at restaurant.
2. Our study found that male adults (AOR 1.76; 95% CI: 1.60, 1.93), those aged 15-24 years (AOR 2.53; 95% CI: 2.11, 3.02), those who had no formal education (AOR 1.48; 95% CI: 1.17, 1.88) and those who were working (AOR 1.53; 95% CI: 1.38, 1.69) were more likely to be exposed to SHS.
3. However, Indian (AOR 0.61; 95% CI: 0.51, 0.73) and those who have not noticed information about danger of smoking in newspaper/television/magazine (AOR 0.54; 95% CI: 0.49, 0.59) were less likely to be exposed to SHS as compared with their respective counterparts



Table 1 Prevalence of second-hand smoke exposure among Malaysian adults by sociodemographic characteristics

Sociodemographic Characteristics	At Home			At Work			At restaurant			Overall		
	%	95% CI	95% CI	%	95% CI	95% CI	%	95% CI	95% CI	%	95% CI	95% CI
<b>Total</b>	31.0	29.15	32.82	27.2	24.29	30.28	47.6	45.43	49.79	53.0	51.27	54.63
<b>Gender</b>												
Male	37.3	34.78	39.97	36.3	31.81	41.04	51.8	48.97	54.64	60.8	58.61	62.96
Female	24.3	22.40	26.23	17.5	14.60	20.82	42.6	39.64	45.56	44.7	42.60	46.87
<b>Age Group</b>												
15-24 years	34.4	30.90	38.11	33.3	24.34	43.77	52.3	47.62	56.86	56.0	52.71	59.27
25-44 years	33.9	31.32	36.50	26.5	23.38	29.92	48.3	45.26	51.38	59.2	56.77	61.65
45-64 years	27.1	24.69	29.66	24.0	20.11	28.29	43.4	40.18	46.75	46.9	44.19	49.55
65 years & above	17.9	15.18	20.99	15.4	6.72	31.41	39.0	33.30	45.10	30.6	27.28	34.21
<b>Locality</b>												
Urban	28.3	26.17	30.48	26.6	23.45	30.01	47.7	45.18	50.18	52.7	50.71	54.69
Rural	40.3	37.21	43.43	31.6	25.69	38.10	47.3	43.23	51.44	53.8	50.80	56.82
<b>Ethnicity</b>												
Malay	33.7	31.88	35.65	28.2	25.07	31.64	50.4	47.99	52.91	54.8	52.85	56.72
Chinese	15.5	11.69	20.18	23.4	18.48	29.18	46.9	41.48	52.45	47.2	42.43	52.05
Indian	15.0	11.20	19.69	17.8	11.20	27.08	42.3	36.67	48.10	41.5	36.72	46.53
Indigenous people of Sabah & Sarawak	39.9	35.11	44.97	32.0	22.87	42.80	43.9	38.19	49.84	57.0	52.36	61.60
Others	47.2	40.60	53.92	33.8	18.23	53.98	40.8	30.88	51.56	57.4	50.72	63.73
<b>Marital Status</b>												
Married	30.2	28.14	32.45	27.4	23.72	31.51	46.2	43.80	48.69	52.3	50.17	54.47
Not married	34.1	31.16	37.10	26.5	21.91	31.64	51.1	47.46	54.75	57.5	54.87	60.02
Widow/ Widower/ Divorcee	21.2	17.67	25.14	29.7	19.12	43.01	39.2	32.60	46.15	35.2	31.13	39.45
<b>Education</b>												
No formal education	28.7	22.58	35.61	29.8	8.23	66.78	47.9	36.07	59.91	39.2	31.96	46.97
Primary education	33.4	29.50	37.44	42.2	27.03	58.94	42.8	37.02	48.84	47.0	43.14	50.88
Secondary education	34.7	32.41	37.15	29.9	25.64	34.51	48.7	45.91	51.52	56.7	54.61	58.77
Tertiary education	21.5	18.87	24.36	21.5	18.26	25.03	48.3	44.82	51.81	53.0	49.77	56.11
<b>Work status</b>												
Not working	26.6	24.35	28.92	36.7	19.75	57.68	44.2	40.80	47.65	43.2	40.73	45.64
Working	34.0	31.69	36.36	26.9	24.00	29.96	49.4	46.83	51.93	59.7	57.81	61.65
<b>Noticed information about danger of smoking in newspaper/ TV/ magazine</b>												
No	31.9	28.74	35.20	25.4	20.14	31.52	49.9	45.35	54.37	48.4	44.77	51.98
Yes	36.2	33.74	38.65	29.2	25.15	33.57	49.5	46.76	52.21	60.4	58.11	62.73

Table 2 Factors associated with overall second-hand smoke exposure among adults in Malaysia

Associated factors	Simple logistic regression		Multiple logistic regression	
	Crude OR (95% CI)	p value	Adjusted OR (95% CI)	p value
<b>Gender</b>				
Male	1.78 (1.65, 1.92)	<0.001	1.76 (1.60, 1.93)	<0.001
Female	1		1	
<b>Age Group</b>				
15-24 years	2.69 (2.34, 3.09)	<0.001	2.53 (2.11, 3.02)	<0.001
25-44 years	3.08 (2.73, 3.49)	<0.001	2.51 (2.11, 2.98)	<0.001
45-64 years	1.89 (1.67, 2.13)	<0.001	1.58 (1.35, 1.84)	<0.001
65 years & above	1		1	
<b>Locality</b>				
Urban	1		-	-
Rural	1.03 (0.95, 1.11)	0.530	-	-
<b>Ethnicity</b>				
Malay	1		1	
Chinese	0.58 (0.51, 0.65)	<0.001	0.66 (0.57, 0.76)	<0.001
Indian	0.61 (0.52, 0.71)	<0.001	0.61 (0.51, 0.73)	<0.001
Indigenous people of Sabah & Sarawak	0.92 (0.82, 1.05)	0.212	0.94 (0.80, 1.09)	0.382
Others	0.87 (0.74, 1.03)	0.100	0.80 (0.65, 0.98)	0.032
<b>Marital Status</b>				
Married	1		-	-
Not Married	1.21 (1.11, 1.32)	<0.001	-	-
Widow/ Widower/ Divorcee	0.50 (0.44, 0.57)	<0.001	-	-
<b>Education</b>				
No formal education	0.52 (0.44, 0.62)	<0.001	1.48 (1.17, 1.88)	0.001
Primary education	0.66 (0.59, 0.74)	<0.001	1.25 (1.08, 1.44)	0.003
Secondary education	1.02 (0.92, 1.12)	0.749	1.23 (1.10, 1.38)	<0.001
Tertiary education	1		1	
<b>Work status</b>				
Not working	1		1	
Working	2.06 (1.91, 2.22)	<0.001	1.53 (1.38, 1.69)	<0.001
<b>Noticed information about danger of smoking in newspaper/TV/magazine</b>				
No	0.55 (0.50, 0.60)	<0.001	0.54 (0.49, 0.59)	<0.001
Yes	1		1	

\*Backward LR Multiple Logistic regression was applied. Multicollinearity and interactions were checked and not found. Hosmer Lameshow test p value = 0.359, Classification Table (overall correctly classified percentage = 63.0%) and ROC curve (area under ROC curve= 67.2%) were accepted to check model fitness.

## DISCUSSION

- 1) Our findings that male adults and those of younger age group were at higher risk of SHS exposure were in line with other local studies<sup>3,4</sup>.
- 2) Consistent with other studies among adults in India and Vietnam, our study reported that those who had no formal education were more likely to be exposed to SHS compared with those with higher education attainment<sup>5,6</sup>.
- 3) Our study found that working adults were at higher risk of SHS exposure while Indian adults were less likely to be exposed to SHS. In contrast, other local study reported higher likelihood of SHS exposure among unemployed adults and lower likelihood of SHS exposure among Chinese adults<sup>3</sup>.
- 4) Our study reported that those who have not noticed information about the danger of smoking in newspaper/television/magazine were less likely to be exposed to SHS which was similar to other study<sup>6</sup>.

## CONCLUSION

SHS exposure among Malaysian adults was high. Tobacco control measures should be strengthened to protect Malaysian adults from SHS exposure. Health promotion and educational programmes should be tailored to those at risk of SHS exposure.

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