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Relation between Women's Knowledge and their Exposure to Second Hand Smoking

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Abstract
Background: Second Hand Smoking is a significant public health problem that may be associated with serious health problems. Exposure to Second hand smoking may increase the risk of developing lung cancer, heart disease, intrauterine growth retardation and childhood asthma. **Aim of the study:** investigate the relation between women's knowledge and their exposure to second hand smoking in outpatient clinics at Woman Health Hospital. **Subjects and methods:** Descriptive Cross-sectional design was used. Quota sample of 700 women was participated**. Tool:** an interview questionnaire was used it included three parts**: part one:** socio- demographic characteristics, **part two** History of exposure to second hand smoking. **Part three:** Second hand smoking knowledge questionnaire**. Results** 73.3% of studied women were exposed to second hand smoking, 45.7% of them had poor knowledge about second hand smoking. **Conclusion:** The majority of participated women are exposed to second hand smoking at their homes also; more than one - third of them have poor knowledge regarding second hand smoking. **Recommendations**: Regular programs should be conducted to increase public awareness regarding effects of second-hand smoking through different mass media especially T.V.

Keywords: Exposure, Knowledge, Second Hand Smoking & Women.

Introduction
Second Hand Smoking (SHS) refers to the involuntary inhalation of smoke from cigarettes or other tobacco products smoked by others. It also known as exposure to second hand smoke **(Khoramdad et al., 2020).** Second hand smoking is a common indoor air pollutant; it is a combination of smoke emitted from the end of the burning of tobacco or other tobacco products and smoke emitted by smokers **(Brandt, 2018).**

People exposure to SHS occurs in various settings include workplaces, public places (such as restaurants and recreational settings) and homes (**National Cancer Institute, 2018).** Several studies conducted on SHS among women in different countries and mentioned that the place of exposure to SHS was predominantly inside the house **(Suriani et al., 2015, Lin et al., 2010)**. In 2016, an estimated 33% of non-smoking women and 20% of non-smoking men were exposed to SHS and the harmful effects of regular cigarette smoke worldwide (**Drope et al., 2018).**

Second hand smokers have a high risk of smoking-associated non-communicable diseases. In adult exposure to tobacco smoke in the environment contributes to athero-thrombosis that leads to cardiovascular disease-related morbidity and mortality **(DiGiacomo et al., 2019).** Furthermore, exposure to tobacco smoke contributes to cancer risk, especially lung and colorectal cancers among men and breast and cervix cancers among women **(Poirier et al., 2019).**

Exposure to SHS is one of the biggest health hazards **(Zahra and Park., 2018).** Although the prevalence of smoking among women is relatively low, women and children still have health risks as a second-hand smokers due to men smoking at home or elsewhere (**Zahra et al., 2016).** So, it is important to improve understanding of the association between maternal and child health outcomes and maternal smoke exposure across various social groups **(Baron et al., 2015).**

Significance of the study
Second hand smoking contributes to 1% of world-wide mortality, with the majority of the deaths in women (47%) and children (28%), being female is major risk factor for SHS exposure **(Wynne & Boesky., 2018).**

In Egypt and according to national stepwise survey of noncommunicable disease (NCD) and their risk factors in 2017, it was found that (47.8 %) of adult females were exposed to second hand smoke at home and (17.8 %) were exposed in their workplace **(WHO, 2017).** Egypt has a heavy burden of tobacco-related ill health and tobacco control is a major challenge **(WHO, 2017a).** Since non-smoker female population is continuously exposed to tobacco smoke in the environment.

In this background we want to assess the knowledge of women on their exposure to second hand smoking.

Aims of study

1. To investigate the relation between women's knowledge and their exposure to second hand smoking**.**
2. To assess the Knowledge of women attending outpatient clinics about the effect of second-hand smoking.
3. To identify the percentage of women exposure to second hand smoking.

Research question

1. Is there a relation between women's knowledge and their exposure to second hand smoking?
2. What is the level of knowledge of studied women regarding to the effect of second-hand smoking?
3. What is the percentage of women exposure to second hand smoking?

Subjects & Method

Research design

A descriptive Cross-sectional research design was used in current study.

Setting

The present study was conducted in three outpatient clinics (Antenatal clinic, Family planning and Gynecological clinics) at Woman Health Hospital which is the first specialized center in Upper Egypt designed to provide services for women from Assiut and other governorates of Upper Egypt, including Red Sea areas and New Valley. The hospital situated in the main University Campus. Outpatient clinics located in ground floor and starts from 8 am to 1 pm every day except Friday and Saturday.

Sample

Quota sample was used in this study. The target population of the study involved women from all previous mentioned setting aged 18 till 45 years.

Sample size

Sample size was calculated through using Epi/Info Version 3, 3 with 99% confidence interval (CI) according to the prevalence rate of women attending outpatient clinics during one year (2018). The total number of women was 16,783, the sample size was 700 women taken from 3 clinics as the following: Antenatal clinic (300 women), Gynecology Clinic (300 women) and family Planning Clinic (100 women).

Inclusion Criteria

Women over the age of 18 and accept to participate in the study.

Tool of the study

A structured interview questionnaire developed by the researchers after reviewing the relevant literature which included three parts as the following.

Part 1: Socio- economic scale which developed by **(Abd El-Tawab 2012)** was used to assess socio-demographic characteristics of the women such as, age, sex**,** residence, occupation, level of education, family income, number of family members and number of rooms.

Part 2: It includes women's' exposure to Second hand smoking such as number of smokers at home, place of exposure to second hand smoking, number of cigarettes exposed, duration of exposure every day and number of days / weeks which they were exposed to second hand smoking.

Part 3: A modified Second-Hand Smoking Exposure Knowledge Questionnaire which developed by **(Kurtz et al., 2003, Suriani et al., 2017, Lin et al., 2010, Wipfli et al., 2008)** was used to assess women's knowledge regarding second hand smoking. It included 11 questions to assess women's knowledge regarding second hand smoking. The responses were given the response choices "Yes, No and do not know".

Scoring system for knowledge

Total grades of knowledge were (11), grade one was given for each correct answer and Zero was given for each incorrect answer and don't know. Total score was calculated by summing up and converted into a percent score as the following:

Poor < 50 %, **Fair** 50 – 70%, **Good** > 70 % **(Kamel, 2019).**

Validity of tool

The tool was designed in English form and reviewed to ascertain their content validity by Jory of 5 expertise in Community Health Nursing who reviewed the tool for clarity, relevance, comprehensiveness, understanding and applicability. According to the opinions of experts the modifications were done.

Reliability of tool

Reliability was applied by the researchers for testing the internal consistency of the tool. Alpha reliability was 0.863 for knowledge implying that the instrument was consistent and reliable in achieving the study objectives.

Methodology

I- Administrative design

An official letter approval was obtained from the Dean of the Faculty of Nursing, Assiut University to the director of woman health hospital. This letter includes a permission to carry out the study and explained the aim and nature of the study.

Pilot study

A pilot study was carried out before starting data collection on 10% (70 women) of women were excluded from the sample for the presence of some modification in the clarity of statements. The aim of pilot study is to test the clarity, feasibility and

estimate the time required to fill the questionnaire. According to the opinions of experts and the results of pilot study the modification was done.

II- Data collection

Ethical consideration

The study was approved by the ethical committee in the Faculty of Nursing, Assiut University. Verbal consent was obtained from all participants. Study participants' privacy and confidentiality were considered during collection of the data. Participants had the right to withdraw from the study at any time and without any rational.

Field work

The data collection was started from the first of April to the end of September, 2019. The researchers introduce themselves and explain the purpose of the study for the study participants. The average of time taken for completing each sheet took about (15-20) minutes depending on the women's response to questions. The data was collected two days weekly about (14 – 15) sheets / day.

Statistical analysis

The collected data were tabulated and analyzed by computer using the "Statistical Package for Social Science" (SPSS) version 22. Data were presented as number, percentage, mean, standard deviation. Chi-square test was used to compare between qualitative variables. P-value considered statistically significant when its value $\leq$ 0.05.

Results

Table (1): Distribution of Studied Women in Outpatient Clinics at Woman Health Hospital, according to their Socio-demographic Characteristics, 2019. (No= 700).

Socio-demographic characteristics	No. (700)	%
Age		
< 30	289	41.3
30 – 35	247	35.3
≥ 35	164	23.4
Mean ± SD (Range)	31.31±6.40(18.0-45.0)	
Wife educational level		
Illiterate	124	17.7
Read and write	104	14.9
Basic education	77	11.0
Secondary	222	31.7
University	173	24.7
Occupational status:		
Employed	234	33.4
Housewife	466	66.6
Husband educational level		
Illiterate	103	14.7
Read and write	112	16.0
Basic education	48	6.9
Secondary	254	36.3
University	183	26.1
Husband occupational status		
Governmental employee	187	26.7
Private working	160	22.9
Laborer	165	23.6
Farmer	110	15.7
Skilled	65	9.3
Not working	13	1.9

Table (2): Distribution of Studied Women in Outpatient Clinics at Woman Health Hospital according to their Exposure to Second hand smoking, 2019. (N0=700).

Items	No. (700)	%
Exposure to Cigarettes smoking:		
Exposed	513	73.3
Non- Exposed	187	26.7
Place of exposure to Second hand smoking: ≠		
Home	371	72.3
Workplace	106	20.7
Public place	163	31.8
Person who smoked at home: #		
Husband	253	68.2
Husband and his family	69	18.6
Husband's family	49	13.2
Number of smokers at home: #		
1 - 2	312	84.1
3 - 5	59	15.9
No. of cigarettes per day at home: #		
< 5	92	24.8
5 – 10	144	38.8
> 10	40	10.8
Don't know	95	25.6
No. of exposure hours per day at home: #		
<1hour	189	50.9
1 - 2hours	113	30.5
>2 hours	69	18.6
Number of smokers in work place: ##		
1 - 2	78	73.6
3 - 5	28	26.4
No. of exposure hours per day in work place: ##		
<1hour	88	83.0
> 2 hours	18	17.0
No. of exposure to cigarettes smoke per day: ≠		
1 – 2 times	256	49.9
3 – 5 times	174	33.9
More than 5 times	83	16.2

(■) More than one answer. (≠) n=513 (#) n=371 (##) n=106

Table (3): Relationship between Studied Women Exposure to Second hand smoking and their Socio-demographic Characteristics, who attend in Outpatient Clinics at Woman Health Hospital, 2019(N0 = 700).

Socio-demographic characteristics	Exposure to Second Hand Smoking				P-value
	Exposed (n=513)		Non-exposed (n=187)		
	No.	%	No.	%	
Age: (years)					0.851
< 30	209	72.3	80	27.7	
30 - 35	184	74.5	63	25.5	
> 35	120	73.2	44	26.8	
Wife educational level:					0.895
Illiterate	92	74.2	32	25.8	
Read and write	79	76.0	25	24.0	
Basic education	54	70.1	23	29.9	
Secondary	164	73.9	58	26.1	
University	124	71.7	49	28.3	
Occupational status:					0.037*
Employed	183	78.2	51	21.8	
Housewife	330	70.8	136	29.2	
Husband educational level:					0.458
Illiterate	76	73.8	27	26.2	
Read and write	82	73.2	30	26.8	
Basic education	37	77.1	11	22.9	
Secondary	193	76.0	61	24.0	
University	125	68.3	58	31.7	
Residence:					0.010*
Rural	299	69.9	129	30.1	
Urban	214	78.7	58	21.3	
Social class:					0.902
Low	117	72.7	44	27.3	
Middle	264	72.9	98	27.1	
High	132	74.6	45	25.4	

** Statistical significant difference (P < 0.05).*

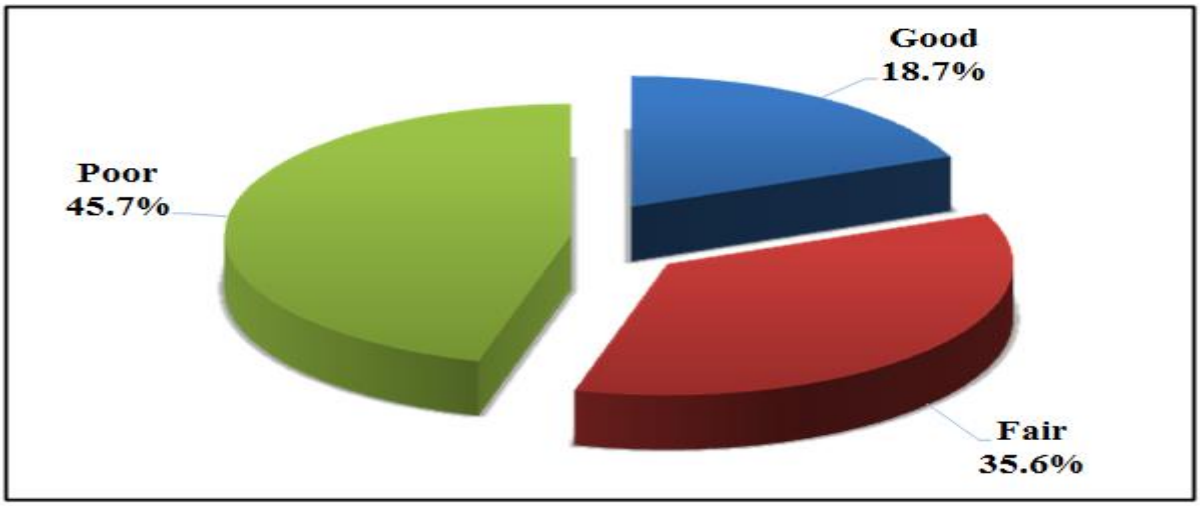

Fig (1): Distribution of the Studied Women regarding to their total score of Knowledge about Second hand smoking, outpatient clinics of Woman Health Hospital, 2019.

Table (4): Relationship between total score of Studied Women Knowledge about Second hand smoking and their Socio-demographic Characteristics, Outpatient Clinics at Woman Health Hospital, 2019 (N0 = 700).

	Knowledge level						P-value
	Poor n= (320)		Fair n= (249)		Good n= (131)		
	No.	%	No.	%	No.	%	
Age: (years)							
< 30	131	45.3	104	36.0	54	18.7	0.999
30 - 35	114	46.2	86	34.8	47	19.0	
> 35	75	45.7	59	36.0	30	18.3	
Wife educational level							
Illiterate	97	78.2	21	16.9	6	4.8	
Read and write	59	56.7	35	33.7	10	9.6	<0.001*
Basic education	41	53.2	27	35.1	9	11.7	
Secondary	79	35.6	84	37.8	59	26.6	
University	44	25.4	82	47.4	47	27.2	
Occupational status							
Employed	61	26.1	95	40.6	78	33.3	<0.001*
Housewife	259	55.6	154	33.0	53	11.4	
Husband educational level							
Illiterate	70	68.0	25	24.3	8	7.8	
Read and write	69	61.6	33	29.5	10	8.9	<0.001*
Basic education	29	60.4	14	29.2	5	10.4	
Secondary	95	37.4	96	37.8	63	24.8	
University	57	31.1	81	44.3	45	24.6	
Residence:							
Rural	217	50.7	141	32.9	70	16.4	0.003*
Urban	103	37.9	108	39.7	61	22.4	
Social class:							
Low	113	70.2	36	22.4	12	7.5	
Middle	167	46.1	136	37.6	59	16.3	<0.001*
High	40	22.6	77	43.5	60	33.9	

** Statistical significant difference (P < 0.05).*

Table (1): Illustrated the distribution of the studied women according to their socio-demographic characteristics. It was founded that 41.3 % of the studied sample aged < 30 year. According to their educational level, it was observed that 14.7% were illiterate.

Table (2): Distribution of the studied women regarding to their exposure to second hand smoking. It was observed that 73.3 % were exposed to second hand smoking, 72.3% of them exposed at home. Regarding to smoker person at home 68.2% of the studied women reported that their husband was the smoker while 13.2% reported husbands' family. According to the women's reports about duration of daily exposure to second hand smoking 50.9 % and 83.0 % respectively were exposed to second hand smoking for < 1 hour daily at home and work place.

Table (3): Showed that there was statistical significance difference between studied women Exposure to second hand smoking and some sociodemographic characteristics such as their occupational status and residence at p-value < (0.037* and 0.010*) respectively.

Figure (1): Presented that 35.6 % of studied women had fair knowledge, while 45.7 % of them had poor knowledge and only 18.7 of them had good knowledge.

Table (4): Showed that there was statistical significance difference between total scores of studied women knowledge about second hand smoking and some sociodemographic characteristics such as their educational level, occupation, husband education, social class and residence at p-value < (0.001*, 0.001*, 0.001*, 0.001*and 0.003*) respectively.

Discussion

Second Hand Smoking is a significant public health issue, and is associated with serious health problems

(Cao et al., 2015). People are exposed to SHS in their daily life in different places **(Faysal, 2016).**

The present study illustrated that about three quarters of studied women were exposed to second hand smoking in different places. From the researcher's point of view, this result may be due to deficit of different mass media to address hazards of SHS on maternal and child health. Also, large proportion of studied women were from rural areas, where men were smoke more than one type of smoking, such as cigarettes and hookahs which resulting in high prevalence of SHS exposure.

This result in the same line with **Onunkwor et al., (2020)** who conducted study on Second Hand Smoke Exposure among Pregnant Women in Nigeria**,** and reported that less than three quarter of respondents were exposed to SHS. Also, this result similar to study by **Annadani et al., (2020)** to assess magnitude of exposure to secondhand smoke among antenatal mothers in an urban slum of central Karnataka, Indian, and mentioned that nearly two thirds of the study participant were exposed to secondhand smoke.

On the other hand, this result disagrees with **Mahmoodabad et al., (2019)** who study Exposure to secondhand smoke in Iranian pregnant women at home, and reported that slightly less than one quarter of pregnant women exposed to SHS. Also, inconsistent with Arikrishnan et al., 2020 who carried out study on Prevalence, knowledge and education level associated with secondhand smoke exposure among never-smoking women in Inner Mongolia, Northern China and found that nearly half of young women exposed to SHS.

As regard to location of exposure to second hand smoking, the present study revealed that less than three quarters of studied women exposed to SHS inside their house compared to outside the house. Also, regarding to the smoker person in the house, slightly more than two-thirds reported that the smoker person was their husband. This result may be attributed to low educational level of studied women whereas just only one quarter had university education. Also, this finding reflects the social and cultural aspects of Egyptian society where male smokers in Egypt are culturally and physically resistant to smoking restrictions.

This supported the result of study conducted by **Ragab, (2017**) to assess Neonatal Outcomes among passive smokers' pregnant women, Egypt and reported that more than three quarter of women were exposed to second hand smoking in their homes and more than half of them the smokers were their husbands.

On the other hand, this result differs with study conducted by **Ahmed & Neyaz (2015)** to assess Exposure to environmental tobacco smoke among non-smoker adult females in urban households of Aligarh, India, and showed that one third of participants were exposed to SHS in their households.

The current study illustrated that there was no statistically significant relation between studied women age and their Exposure to second hand smoking (p=0.851). This result in the same line with **Mahmoodabad et al., (2019)** who concluded that the pregnant woman's age had no significant association with the prevalence of SHS exposure (P=0.552).

The findings of the current study contraindicated with **Farshidi et al., (2019)** who study Exposure to Environmental Tobacco Smoke in Hormozgan province Residents' Southern Iran and found a statistically significant correlation between exposure to SHS and age (p<0.001).

The current study demonstrated that there was no statistical significance difference between Exposure to second hand smoking and studied women social class (p = 0.902) .From the researcher's point of view, this result may be due to high prevalence of cigarette smoking among men and presence of smoker person in all socio economic levels as more than two thirds of studied women mentioned that they had smoker husband, exposes women to more SHS .Therefore this finding indicate that women in all social class are equally at risk and interventions should be implemented to address this problem in all socio economic levels .

This come in accordance with **Mahmoodabad et al., (2019**) who found that the economic condition had no significant relationship with the prevalence of SHS exposure (P = 0.099). Also, agrees with **Alghamdi et al., (2016)** who found no significant association between level of monthly income and exposure to SHS (P = 0.543).

On the other hand, the result of the present study differ from that recorded by **Ahmed & Neyaz, (2015)** who study Exposure to environmental tobacco smoke among non-smoker adult females in urban households of Aligarh, India, and found that females with lower socio-economic status had higher exposure to SHS than their counterparts with the difference being statistically significant (P = 0.03).

The present study demonstrated that there was statistical significance difference between studied women's Exposure to second hand smoking and their occupation (P=0.037*). This finding can be explained as, Firstly; employed women come in contact with many smokers coworkers in the workplace. Secondly being outside the house increases the possibility of exposure to SHS in public places and in transportation .Thirdly, women in our society do not have the strength and courage to prevent their co-workers from smoking around them to avoid conflict

and problems at work; they are less likely to express disapproval with SHS owing to others' smoking.

This consistent with **Ngo et al., (2019)** who study prevalence and sources of SHS exposure among non-smoking pregnant women in an urban setting of Vietnam, and documented that going to the workplace was associated with a significant increase in SHS exposure in non-smoking pregnant women (P=0.03).

Also, contraindicated with **Mahmoodabad et al., (2019)** who confirmed that the employment status of women did not show any significant relationship with the prevalence of SHS exposure (P = 0.371).

The present study showed that there was statistical significance difference between studied women's Exposure to second hand smoking and their residence (P=0.010*). From the researcher's opinion, this may be due to, high rate of employee female in urban areas compared with rural areas whereas women exposed to SHS in different places as house hold, transportation and work place setting opposite to women living in rural area and the only source of SHS exposure at home setting.

The same finding concluded by **Petersen et al., (2016)** who study Factors associated with secondhand tobacco smoke in the home, Ethiopia and observed a higher exposure to tobacco smoke in urban residents than the rural. While this finding contraindicated **(Farshidi et al., 2019** & **Ngo et al., 2019)** who mentioned that there was no statistically significant difference between SHS in rural and urban regions.

According to total score of knowledge of studied women about second hand smoking, this study revealed that less than one fifth of women had good knowledge. This result agrees with **Rahman et al., (2019)** who found that nearly one fifth of participants had higher levels of knowledge towards the risks of SHS. Also, with **Annadani et al., (2020)** who reported that the awareness regarding the harmful effects of SHS on the health of the mother and fetus among the participants was poor.

Also, this finding in disagreement with **bin et al., (2020)** who study Preventive practice on secondhand smoke and its associated factors among adults in a suburban community in Kuala Terengganu**,** and stated that the majority of the respondents has good knowledge on SHS. Also, inconsistent with **Arikrishnan et al., (2020**) who was found that less than three quarter had adequate knowledge about SHS and its harmful effects**.**

The current study showed that there was statistically significant relation between studied women education and their knowledge (p< 0.001*). This finding can be explained as well-educated persons have the ability to obtain information and how to search for it through different social media.

This result agreed with **Al-Shaikh et al., (2014)** who reported statistically significant between women education and SHS knowledge. Also, **Cheah et al., (2018)** who reported that less-educated individuals are less likely to be aware of SHS than well-educated individuals. while the findings of the present study in contrast with **Nurul Izzat et al., (2016)** who conducted study in Malaysia to assess Knowledge, Attitude and Practice towards Smoking among International Islamic University, and reported that there was no statistically significant differences between knowledge towards smoking and different levels of education (P = 0.940).

Also, the present study revealed that there was statistically significant difference between studied women's level of knowledge and their occupation (p<0.001*). This may be attributed to an employee woman can get an awareness campaigns about health risks of SHS in their work place and they have greater chances to discuss different health issues with others.

The present study in agreement with **Saldanha et al., 2017** who carried out a study on Knowledge of Mothers on the effect of passive smoking in Children in a selected Hospital at Mangalore, and reported significant association between the knowledge and occupation of the mothers (P < 0.05*).

The current study concluded that there was statistically significant difference between studied women's knowledge with their socio-economic status and residence (p<0.001*, p = 0.003*) respectively. This finding can be explained as, women in rural areas, may have a lower educational level than that of urban areas, also urban areas often receive tobacco control education which resulting in better knowledge and more information toward the risks of SHS.

This result is similar to study by **Rahman et al., (2019**) who reported that participants with low Socio-economic status were less likely to have high levels of knowledge towards the risks of SHS, compared with individuals in the high Socio-Economic Status and also, showed that rural respondents were less likely to have higher levels of knowledge. While, this result inconsistent with **Nurul 'Izzat et al., (2016)** who showed no statistically significant differences between knowledge towards smoking and income (P= 0.743).

Conclusion

The majority of participated women are exposed to second hand smoking at their homes also; more than one - third of them have poor knowledge regarding second hand smoking.

Recommendations

1. Regular programs should be conducted to increase public awareness regarding effects of second-hand smoking through different mass media especially T.V.
2. Development of effective interventions to create smoke-free homes alongside smoking cessation.

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