



Women's Awareness regarding Exposure to Passive Smoking Hazards at Motobis Hospital

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ABSTRACT

Background: Passive smoking, known as secondhand smoking, refers to the condition in which a person involuntarily inhales smoke from other people's cigarettes, hookahs and other tobacco substances. **Aim:** Is to assess women's awareness regarding exposure to passive smoking hazards at Motobis hospital. **Design:** A descriptive research design was utilized in this study. **Sample:** A purposive sample of 148 women was used. **Setting:** This study was conducted in gynecology outpatient clinic at Motobis hospital, Kafr-El Sheikh governorate. **Tool:** A structured interview questionnaire included 5 parts: Demographic characteristics of woman and husband, women's history of exposure to passive smoking, women's knowledge about passive smoking exposure hazards, women's attitude toward passive smoking exposure hazards and women's reported practices regarding exposure to passive smoking hazards. **Results:** 72.3% of the studied women had unsatisfactory level of total knowledge, 52.7% had negative attitude and 79.1% had inadequate level of total reported practices regarding exposure to passive smoking hazards. **Conclusion:** There was highly statistically significant positive correlation between total knowledge, total attitude and total reported practices regarding exposure to passive smoking hazards among the studied women. **Recommendations:** Health educational programs should be directed to improve women's awareness regarding hazards of exposure to passive smoking.

Keywords: Passive Smoking Hazards, Women Awareness.

INTRODUCTION

Passive smoking (PS), known as secondhand smoking and environmental tobacco smoke, refers to the condition in which a person involuntarily inhale smoke from other people's cigarettes, hookahs, and other tobacco substances. Passive smokers, comparable to active smokers, are also at high risk of developing health problems related to their exposure to tobacco smoke, which imposes a high financial burden on health care system ⁽¹⁾. Scientists found that there are more than 7000 components in passive smoke. Hundreds of them are toxic and nearly 70 substances are able to cause cancer ⁽²⁾.

Passive smoking has two types: Mainstream smoke, which is the smoke breathed out by smokers and sidestream

smoke, which is the smoke produced from the burning end of a cigarette. The compositions of sidestream and mainstream smoke are qualitatively similar, but there are some quantitative differences in as chemicals emitted from tobacco change with temperature, oxygen concentration, and the extent of burning. Sidestream smoke burns at a lower temperature, causing incomplete burning of tobacco and most components emitted in sidestream smoke at much higher concentrations than in mainstream smoke. The side stream smoke is potentially more dangerous than mainstream smoke ⁽³⁾.

Symptoms related to passive smoking exposure include respiratory symptoms such as: Wheezing, breathlessness, coughing, dyspnea, reduced lung function, shortness of

breath, phlegm, rapid breathing. Other symptoms include: Pain and ear inflammation, eye irritation, headache, sneezing, runny nose and nasal irritation ⁽⁴⁾. The most prevalent sources of passive smoke are traditional cigarettes, e-cigarettes and heat-not-burn tobacco products. Exposure to passive smoking is not restricted to a definite place, it can occur anywhere, at homes, in workplace, and in public settings ⁽⁵⁾.

Health hazards of passive smoking exposure include: Obstructive pulmonary disease (COPD), respiratory tract infection, asthma, lung cancer, ischemic heart diseases, coronary heart disease, elevated blood pressure, heart attacks and angina. Also, passive smoking has an immunosuppressive effect in children which put them at higher risk of acquiring common cold, asthma, otitis media, and respiratory complications like pneumonia ⁽⁴⁾. Also in women, PS exposure can cause Infertility, variable menstrual cycle length and cervical and breast cancer as it affects estrogen levels in a woman's body over the course of her life ⁽⁶⁾.

Women are part of the disadvantaged group of population as they are exposed to passive smoking and their awareness regarding exposure to passive smoking hazards is affected by many factors such as; women's low educational level, low socioeconomic status and cultural and social barriers, inability of women to ask their husbands to stop smoking at home, inadequate knowledge among family members about the harmful effects of passive smoking exposure and women are not being supported by other family members to establish smoke-free homes ⁽⁷⁾.

Community health nurses have vital role regarding passive smoking exposure management and prevention because of being the first line of contact with the public. The community health nurse performs the initial assessment and takes the exposure history to passive smoking that will then help in

formulating the management plan. Health education performed by the community health nurse about the hazards related to passive smoking exposure is a top priority tool used to control passive smoking exposure ⁽⁸⁾. This health education can be done through educating women not to allow anyone to smoke inside home, office, or car. Also, educating women on how to advise smoking family members to stop smoking ⁽⁹⁾.

Significance of the study:

Globally, 8 million people die each year from exposure to tobacco smoke, of which about 7 million of these deaths are caused by active tobacco smoking and about 1.2 million deaths are caused by exposure to passive smoking ⁽¹⁰⁾. Exposure to passive smoking in never smoking individuals increases their risk of developing coronary heart disease by 25 – 30% and increases the risk of stroke by 20 – 30%, while the risk of lung cancer is increases by 20 – 30% in non-smokers who are exposed to passive smoking compared to the non-smokers who are not exposed to passive smoking ⁽¹¹⁾.

In Egypt, the prevalence of active smoking among women in reproductive age (15 to 49 years) is 0.4%, while in men is 37.6 %. Accordingly, almost 70% of adults including women and 63% of children are exposed to passive smoking in public places, while 71% of adults including women and 35% of children are exposed to passive smoking at home ⁽¹²⁾. Therefore, the current study aimed to assess women's awareness regarding exposure to passive smoking hazards.

AIM OF THE STUDY

The aim of the study was to assess women's awareness regarding exposure to passive smoking hazards at Motobis hospital and the aim was achieved through the following objectives:

1. Assessing women's knowledge about exposure to passive smoking hazards.

2. Assessing women's attitude toward exposure to passive smoking hazards.
3. Assessing women's reported practices regarding exposure to passive smoking hazards.

Research questions:

1. What is the women knowledge about exposure to passive smoking hazards?
2. What is women attitude toward exposure to passive smoking hazards?
3. What is women's reported practices regarding exposure to passive smoking hazards?
4. Is there a relation between women knowledge, attitude and reported practices regarding exposure to passive smoking hazards?

SUBJECT AND METHODS

Research design: A descriptive research design was utilized to achieve the aim of this study.

Setting: This study was conducted in gynecology outpatient clinic at Motobis hospital, Kafr-Elsheikh Governorate.

Sampling: A purposive sample included 148 woman was used in this study according to:

Inclusion criteria:

1. Women above 18 years.
2. Women exposed to passive smoking.

Exclusion criteria:

1. Women with mental disorders.

Tools for data collection:

Data was collected through using the following tool:

Tool: A structured interview questionnaire: Was used in this study, it was developed by the investigator after reviewing the national and international related literature to collect the required data. It was written in simple Arabic language and refilled by the investigator. It was divided into five parts.

Part I: Demographic characteristics of woman and husband: It consisted of 6

questions including: Age, women's educational level, women's occupational status, husband's educational level ...etc.

Part II: Women's history of exposure to passive smoking: It consisted of 6 questions including: Place of exposure to passive smoking, person who smokes at home, number of smokers at home ...etc.

Part III: Women's knowledge about exposure to passive smoking hazards: It consisted of 8 questions including: Meaning of passive smoking, types, symptoms, risk factors, hazards of passive smoking on women health ...etc.

Scoring system for knowledge items:

The total score of women's knowledge = 16 grades, the complete correct answer = 2 points, the incomplete correct answer = 1 point and the wrong answer / don't know = zero.

These scores were summed and were converted into a percent score. It was classified into 2 categories:

- **Satisfactory** level of knowledge if score $\geq 60\%$ (≥ 9.6 grades).
- **Unsatisfactory** level of knowledge if score $< 60\%$ (< 9.6 grades).

Part IV: Women's attitude toward passive smoking hazards: Consisted of 12 questions including; smoking should not be allowed at home, smoke from other people's cigarettes is harmful, cigarette smoke affects the health of children, I think smoking should be banned in all public places ...etc.

Scoring system for attitude items:

The total score of women's attitude = 24 grades, agree = 2 points, undecided = 1 point and disagree = zero.

These scores were summed up and were converted into a percentage score. It was classified into 2 categories:

- **Positive** attitude if score $\geq 60\%$ (≥ 14.4 grades).

- Negative attitude if score < 60% (< 14.4 grades).

Part V: Women's reported practices regarding exposure to passive smoking hazards: Consisted of 11 questions including: I prevent family members from smoking in the house, I teach children about passive smoking and how to avoid it, visitors are not allowed to smoke in house ...etc.

Scoring system for reported practices

The total score of women's reported practices = 22 grades, always = 2 points, sometimes = 1 point and never = zero.

These scores were summed up and were converted into a percentage score. It was classified into 2 categories:

- **Adequate** level of reported practices if score $\geq 60\%$ (≥ 13.2 grades).
- **Inadequate** level of reported practices if score < 60% (< 13.2 grades).

Pilot study:

RESULTS

Table (1): Frequency Distribution of the Studied Women according to their Demographic Characteristics (n=148).

Demographic characteristics	No.	%
Age (year)		
<20	10	6.7
20-<30	62	41.9
30-<40	51	34.5
40-<50	17	11.5
≥ 50	8	5.4
Mean \pm SD	30.78 \pm 9.26	
Women's educational level		
Not read and write	27	18.2
Read and write	30	20.3
Basic education	22	14.9
Secondary education	35	23.6
University & above	34	23.0
Women's occupational status		
Employed	30	20.3
Housewife	118	79.7
Husband's educational level		
Not read and write	18	12.2
Read and write	18	12.2

The pilot study was done on 10% (15) of the sample to examine the clarity of questions and time needed to complete the study tools. Based on the results, no modification has been done and the sample of the pilot study was included in the total sample of the study.

Statistical Analysis:

Data collected from the studied nurses was revised, coded, and entered using a Personal Computer (PC). Computerized data entry and statistical analysis were completed using the Statistical Package for Social Sciences (SPSS) version 24. Data were presented using descriptive statistics in the form of frequencies, and percentages. The Chi-square test (X^2) was used for comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between three ranked variables.

Basic education	33	22.3
Secondary education	43	29.0
University & above	36	24.3
Husband's occupational status		
Governmental employee	32	21.6
Private working	41	27.7
Farmer	67	45.3
Not working	8	5.4
Women's source of information about passive smoking		
Doctor	60	40.5
Nurse	5	3.4
Internet	12	8.1
Television	6	4.1
Never heard of passive smoking	65	43.9

Table (1) showed that, 41.9% of the studied women their age ranged between 20- < 30 years, the Mean \pm SD of age was 30.78 ± 9.26 years. As regard to women's educational level, 23.6% of them had secondary education, and 79.7% of them were housewives. Related to the husband's educational level, 29.0% of them

had secondary education, and 45.3% of them were farmers. Additionally, 40.5% of the studied women their source of information about passive smoking was from doctor. While, 43.9% of them never heard about passive smoking.

Table (2): Frequency Distribution of the Studied Women according to their History of Exposure to Passive Smoking (n=148).

Exposure history	No.	%
Place of exposure to passive smoking*		
Home	125	84.5
Workplace	13	8.8
Public transportation	67	45.3
Person who smokes at home		
Husband	107	72.3
Other member of the family	10	6.8
Visitors	8	5.4
No smokers at home	23	15.5
Number of smokers at home		
1 – 2	115	77.7
3 – 5	10	6.8
No smokers at home	23	15.5
Number of smokers in work place		
1 – 2	78	52.7
3 – 5	60	40.5
>5	10	6.8
Expected number of exposure days per week		
1-3 days	20	13.5
4-5 days	21	14.2
6-7 days	107	72.3
Symptoms appeared during exposure*		
Nose and eye irritation	19	12.8
Chest tightness	28	18.9
Cough	96	64.9
Shortness of breath	43	29.1

* Mutual response more than 100% (women had more than one answers)

Table (2) displayed that, 84.5% of the studied women were exposed to passive smoking at home. Also, 72.3% of them were exposed to passive smoking at home from husband. Moreover, 77.7% of the studied women were exposed to passive smoking at

home from 1-2 person and 52.7% of them were exposed to passive smoking at work place from 1-2 person. Furthermore, 72.3% of the studied women were exposed to passive smoking 6- 7 days per week, and 64.9% of them had cough due to smoking.

Table (3): Frequency Distribution of the Studied Women according to their Knowledge about Passive Smoking Hazards (n=148).

Answer research question NO. (1): What is the women knowledge regarding exposure to passive smoking hazards?

Knowledge items	Complete correct answer		Incomplete correct answer		Don't know / wrong answer	
	No.	%	No.	%	No.	%
The meaning of passive smoking	3	2.0	5	3.4	140	94.6
Types of passive smoking	22	14.9	123	83.1	3	2.0
Symptoms related to passive smoking	17	11.5	79	53.4	52	35.1
Risk factors of passive smoking exposure	57	38.5	85	57.4	6	4.1
People at higher risk from passive smoking	7	4.7	114	77.0	27	18.3
Hazards of passive smoking on women health	9	6.1	122	82.4	17	11.5
Complications of passive smoking on women health	50	33.8	85	57.4	13	8.8
Ways to prevent exposure to passive smoking hazards	130	87.8	6	4.1	12	8.1

Table (3) presented that, 87.8% of the studied women had complete correct answer about ways of preventing exposure to passive smoking hazards. While, 83.1% and 82.4% of them had incomplete correct answer about the

types of passive smoking and hazards of passive smoking on women's health, respectively. Also, 94.6% of them didn't know the meaning of passive smoking.

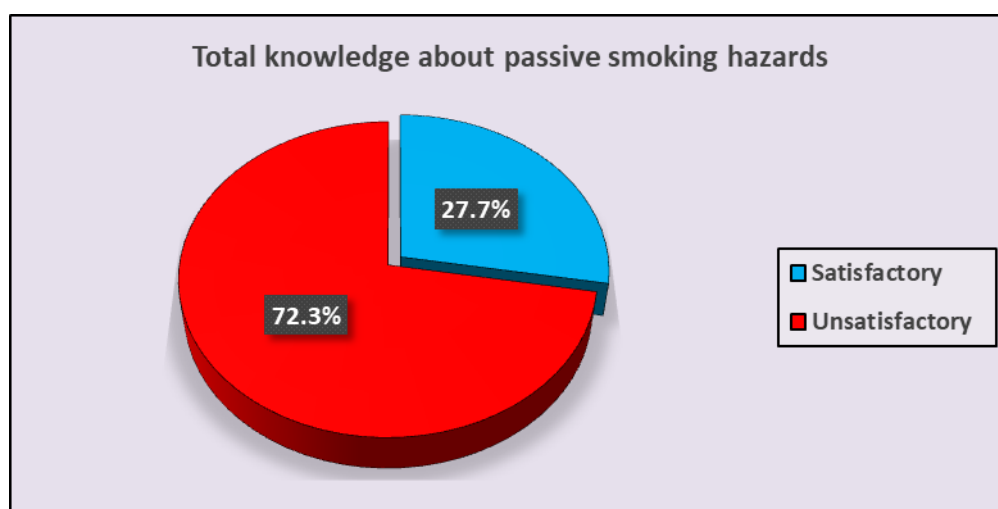


Figure (1): Percentage Distribution of the Studied Women according to their Total Knowledge about Passive Smoking Hazards (n=148).

Figure (1) showed that, 72.3% of the studied women had unsatisfactory level of total knowledge about passive smoking

hazards. While, 27.7% of them had satisfactory level of total knowledge.

Table (4): Frequency Distribution of the Studied Women according to their Attitude regarding Passive Smoking Hazards (n=148).

Answer research question NO. (2): What is the women attitude regarding exposure to passive smoking hazards?

Attitude items	Agree		Neutral		Disagree	
	No.	%	No.	%	No.	%
I believe that smoking shouldn't be allowed at home.	98	66.2	50	33.8	0	0.0
Smoke from other people's cigarettes is harmful for me.	136	91.9	5	3.4	7	4.7
Cigarette smoke affects the health of my children.	135	91.2	11	7.4	2	1.4
I think smoking should be banned in all public places.	76	51.4	70	47.3	2	1.4
Smoking regulations should be applied firmly.	49	33.1	62	41.9	37	25.0
I don't feel comfortable when a smoker smokes near me.	108	73.0	29	19.6	11	7.4
I think preventing husband from smoking at home could cause problems at home.	16	10.8	37	25.0	95	64.2
I think preventing a co-worker from smoking could cause problems at work environment.	26	17.6	27	18.2	95	64.2
Anti-smoking campaign is not enough to face the problem of smoking and passive smoking.	50	33.8	68	45.9	30	20.3
Parents or adults should not smoke near children.	127	85.8	17	11.5	4	2.7
I think presence of passive smoking encourages young people to begin to smoke.	40	27.0	70	47.3	38	25.7
I believe that allowing passive smoking at home discourages smokers from quitting.	15	10.1	72	48.7	61	41.2

Table (4) demonstrated that, 91.9% & 91.2% of the studied women agreed that, smoke from other people's cigarettes is harmful for them and affects the health of their children health, respectively. Also, 47.3% & 48.7% of them are neutral regarding presence of passive smoking encourages young people to begin to smoke and allowing

passive smoking at home discourages smokers from quitting, respectively. While, 64.2% of them disagreed that, preventing husband from smoking at home could cause problems at home and preventing a co-worker from smoking could cause problems at work environment, respectively.

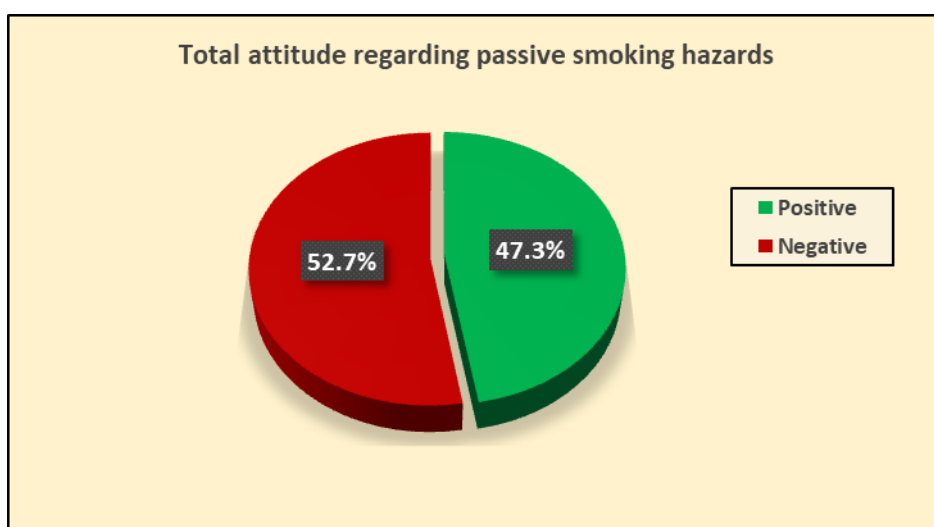


Figure (2): Percentage Distribution of the Studied Women according to their Total Attitude regarding Passive Smoking Hazards (n=148).

Figure (2) revealed that, 52.7% of the studied women had negative attitude

regarding passive smoking hazards. While, 47.3% of them had positive attitude.

Table (5): Frequency Distribution of the Studied Women according to their Reported Practices regarding Exposure to Passive Smoking Hazards (n=148).

Answer research question NO. (3): What is the women's reported practices regarding exposure to passive smoking hazards?

Reported practices items	Always		Sometimes		Never	
	No.	%	No.	%	No.	%
I prevent my family members from smoking in the house.	14	9.4	17	11.5	117	79.1
I teach my children about passive smoking and how to avoid it.	0	0.0	13	8.8	135	91.2
Visitors are not allowed to smoke in my house.	39	26.4	95	64.2	14	9.4
When I meet someone who is smoking, I distance myself to ensure that I will not be exposed to smoke.	7	4.7	41	27.7	100	67.6
When I am in public place such as restaurant or offices or clinics, I will leave it if I am unable to set in the nonsmoking section.	50	33.8	57	38.5	41	27.7
When I trip by bus or any other public transportations, I ask the people around me not to smoke	62	41.9	81	54.7	5	3.4
I try to spend as little time as possible in places where smoking is prevalent.	52	35.1	93	62.9	3	2.0
I avoid being part of a group of persons who are smoking.	19	12.8	99	66.9	30	20.3
If I am with people who are smoking and I cannot leave, I will ask them to postpone smoking.	62	41.9	81	54.7	5	3.4
If I am with people who are smoking, I will open the window to dilute the smoke and improve ventilation.	136	91.9	10	6.8	2	1.3
When exposed to passive smoke, I wash my clothes solely to remove the smell of smoke from them even if they are otherwise clean.	16	10.8	26	17.6	106	71.6

Table (5) displayed that, 91.9% of the studied women always open the window to dilute the smoke and improve ventilation if they are with smokers. Also, 62.9% & 66.9% of them sometimes spent as little time as possible in places where smoking is prevalent

and avoided being part of a smoking group, respectively. While, 79.1% & 91.2% of them never prevented their family members from smoking in the house and never taught their children about passive smoking and how to avoid it, respectively.



Figure (3): Percentage Distribution of the Studied Women according to their Total Reported Practices regarding Exposure to Passive Smoking Hazards (n=148).

Figure (3) showed that, 79.1% of the studied women had inadequate level of total reported practices regarding exposure to

passive smoking hazards. While, 20.9% of them had adequate level of total reported practices.

Table (6): Correlation between Knowledge, Attitude and Reported Practices regarding exposure to Passive Smoking Hazards (n=148).**Answer research question NO. (4): Is there a relation between women knowledge, attitude and reported practices regarding exposure to passive smoking hazards?**

Items	Total knowledge	Total attitude
Total knowledge		r = 0.310 P = 0.000**
Total reported practices	r = 0.562 P = 0.000**	r = 0.290 P = 0.000**

r= Pearson's correlation coefficient test. P= p-value **highly statistically significant at $p < 0.01$.

Table (6) indicated that, there was highly statistically significant positive correlation between total knowledge, total

attitude and total reported practices regarding exposure to passive smoking hazards among the studied women (P= 0.000).

DISCUSSION

Passive smoking is the involuntary unintended inhalation of smoke resulting from the burning of other people's cigarettes. Tobacco smoke is the most prevalent and easily avoidable public health issue resulting in massive health problems in both smokers and non-smokers who are exposed to passive smoking. People must be aware of possible complications of passive smoking because it has the same negative health outcomes as active smoking. Passive smoking causes health risks in all age groups from gestation to elderly people, so it takes a big burden and puts a great pressure on the health economics of any country ⁽¹³⁾.

Part I: Demographic characteristics of the studied women and their husbands:

The present study showed the demographic characteristics of the studied women, the findings of the current study revealed that less than half of the studied women their age ranged between $20 < 30$ years (**table 1**). This result agreed with the result of study conducted by **Iwuagwu et al.** ⁽¹⁴⁾, in Nigeria, entitled "Knowledge of adverse health outcomes of maternal exposure to passive and active smoking" (n= 1463),

stated that the age of 41.5% of the women included in the study was < 30 years.

In regard to the educational level of the studied women, the present study found that about one quarter of women had secondary education This result agreed with the result of the study conducted by **Pan et al.** ⁽¹⁵⁾, in China, entitled "Secondhand smoke and women's cognitive function" (n= 17705), stated that 27.79% of the studied women had secondary education. This could be related to the lower level of adherence to education in the area where the study was conducted.

Considering the husband's occupational status, less than half of the husbands were farmers. This result agreed with the result of the study performed by **Lin et al.** ⁽¹⁶⁾ in China, entitled "Interactive effects of maternal vitamin D status and socio-economic status on the risk of spontaneous abortion" (n= 293), determined that 38.68% of the husbands were farmers. These findings might be related to the rural nature of the study area, so the agriculture is the most prevalent job.

Regarding the source of information about passive smoking, the findings of the current study showed that less than half of the studied women their source of information about passive smoking was from their doctor.

This result disagrees with the result of the study done by **Saiyed** ⁽¹⁷⁾, in Saudi Arabia, about "Awareness of the impact of smoking on pregnancy and the neonate sudden infant death syndrome" (n= 460), stated that 94.0% of the studied women their information about hazards of cigarette smoking was from their doctor. This might be because the doctor and health professionals are the first providers of health education.

According to the findings of the current study, less than half of the studied women had not heard about passive smoking. This result agreed with the result of the study conducted by **Ngo et al.** ⁽¹⁸⁾, in Vietnam, entitled "Prevalence and sources of second-hand smoking exposure among non-smoking pregnant women in an urban setting of Vietnam" (n= 432), said that 34.9% of the studied women had not heard about passive smoking. This could be due most awareness campaign targeted smoking with almost no concentration on passive smoking.

Part (II): Women history of exposure to passive smoking.

Regarding the place of exposure to passive smoking, the findings of the current study showed that the majority of the studied women were exposed to passive smoking at home; also the nearly three quarters of them were exposed to passive smoking from their husbands (**table 2**). This result agreed with the result of the study conducted by **Frazer et al.** ⁽¹⁹⁾, in Ireland, entitled "Smoking prevalence and secondhand smoke exposure during pregnancy and postpartum - establishing risks to health and human rights before developing a tailored programme for smoking cessation" (n= 322), presented that 88.2% of the studied sample were exposed to passive smoking at home from husband. This result might be related to the fact that women spend most of their time at home.

Related to the number of smokers at home, the findings of the current study

showed that more than three quarters of the studied women were exposed to passive smoking at from 1-2 persons. This result agreed with the result of the study conducted by **Nashed et al.** ⁽²⁰⁾, in Egypt, about "Relation between women's knowledge and their exposure to second hand smoking" (n= 700), stated that 84.0% of the studied women were exposed to passive smoking at home from 1-2 person. This could be because most women lived in an extended family and also because of the culture that indicate smoking is allowed at home.

Regarding the number of smokers at workplace, the findings of the current study showed that more than three quarters of the studied women were exposed to passive smoking from 1-2 person. This result are also supported by **Ngo et al.** ⁽¹⁸⁾, who found that 56.8% of the studied women were exposed to passive smoking at work place. This was caused by non-compliance of employees with smoke-free laws at workplace.

Concerning the expected number of exposure days per week, the findings of the current study showed less than three quarters of the studied women were exposed to passive smoking 6-7 days per week. This result is in the same line with the result of the study performed by **Andriani et al.** ⁽²¹⁾, in Indonesia, about "second-hand smoke exposure inside the house and adverse birth outcomes" (n =19,935), who stated that 58.0% of the studied women had daily exposure to passive smoking.

Part (III): Women's knowledge about exposure to passive smoking hazards

Answer research question NO. (1): What is the women knowledge regarding exposure to passive smoking hazards?

Concerning the women's knowledge about exposure to passive smoking hazards, the finding of the current study revealed that the majority of the studied women didn't

know the meaning of passive smoking (**table 3**). This result agreed with **Yavagal et al.** ⁽²²⁾, in India, entitled as "Knowledge, attitude, and behavior related to secondhand smoke exposure among pregnant women with smoking spouses in Davangere city: A cross-sectional survey" (n= 245), reported that 61.6% of the studied sample did not know what is passive smoking. This might be related to the concentration on smoking without using the term "passive smoking"; so it was a strange expression.

In addition, the finding of the current study showed that more than three quarters of the studied women had incomplete correct answer about hazards of passive smoking on women's health. This result agreed with the result of the study done by **Yasin et al.** ⁽²³⁾, in Malaysia, entitled "Avoidance of environmental tobacco smoke among non-smoking pregnant women" (n= 661), clarified that 70.0% of the study respondents had incomplete knowledge about the effects of passive smoking on their own health. This could be due the limited focus on passive smoking as a public health issue.

Moreover, the finding of the current study presented that the majority of the studied women had complete correct answer about ways of preventing exposure to passive smoking hazards. This result agreed with the result of the study performed by **Reuben et al.** ⁽²⁴⁾, in Nigeria, about "Knowledge, attitudes and practices towards COVID-19" (n= 589), reported that 94.7% of the respondents know the preventive guidelines against Covid-19. This might be due to most health education focuses on prevention of passive smoking rather than its meaning, types and hazards.

Regarding the total knowledge of the studied women about exposure to passive smoking hazards, the finding of the current study presented that less than three quarters of the studied women had unsatisfactory

level of total knowledge about passive smoking hazards, while more than one quarter of them had satisfactory level of total knowledge (**figure 1**). This result is in the same line with **Rahman et al.** ⁽²⁵⁾, in Bangladeshi, about "Secondhand smoking, knowledge/attitudes and socioeconomic status among married Bangladeshi women: A cross-sectional study" (n= 541), clarified that 79.8% of the studied sample had low and medium levels of knowledge regarding passive smoking. This could be due to the limited number of health education campaigns regarding passive smoking.

Part (IV): Women's attitude toward exposure to passive smoking hazards

Answer research question NO. (2): What is the women attitude regarding exposure to passive smoking hazards?

Concerning the women's attitude toward exposure to passive smoking hazards, the findings of the current study revealed that the majority of the studied women agreed that smoke from other people's cigarettes is harmful for them (**table 4**). This result agreed with **Petersen et al.** ⁽²⁶⁾, in Ethiopia, who studied "An exploratory study of knowledge, attitudes, and beliefs related to tobacco use and secondhand smoke among women" (n= 353) stated that 97.5% of the studied women believed that passive smoking is harmful for them. This attitude might be caused by the symptoms women experience after exposure to other people's smoke.

Also, the findings of the current study showed that less than half of the studied women were neutral regarding allowing passive smoking at home discourages smokers from quitting; and less than half of them were neutral regarding presence of passive smoking encourages young people to begin smoking. This result is inconsistent with the result of the study conducted by **Rahman et al.** ⁽²⁵⁾, who found that 65.6% of the studied sample agreed that allowing

passive smoking at home discourages smokers from quitting and 77.6% of them agreed that presence of passive smoking encourages young people to begin smoking. This attitude could be because women did not realize that there is a psychological relation between starting or stopping smoking and being present in an environment where smoking is prevalent.

In addition, the findings of the current study showed that about three fifths of the studied women disagreed that preventing husband from smoking at home could cause problems at home. This result agreed with the result of the study conducted by **Mahmoodabad et al.** ⁽²⁷⁾ in Iran, entitled "Exposure to secondhand smoke in Iranian pregnant women at home and the related factors" (n= 255), found that 74.7% of the studied women mentioned that their husbands were understanding and did not cause any problems when the women asked them not to smoke at home. This could be due to husbands knew the hazards caused by their smoking.

Moreover, the findings of the current study stated that about three fifths of the studied women disagreed that preventing a co-worker from smoking could cause problems at work environment. This result is inconsistent with the result of the study done by **Suriani et al.** ⁽²⁸⁾, in Malaysia about "Knowledge, attitude and practices on secondhand smoking among women who are exposed to secondhand smoking at home and at workplace" (n=67), revealed that 17.9% disagreed that preventing a co-worker from smoking could cause problems at work environment. This might be because women believed that co-workers should respect the laws and not cause a problem.

Additionally, the findings of the current study revealed that about two thirds of the studied women believed that smoking should not be allowed at home. This result agreed

with the result of the study conducted by **Rahman et al.** ⁽²⁵⁾, stated that 66.2% of the studied women believed smoking should be prohibited at home. This may be related to women's agreement that passive smoking is hazardous for their health and their children's health.

Regarding the total attitude of the studied women about exposure to passive smoking hazards, the findings of the current study demonstrated that more than half of the studied women had negative attitude toward passive smoking exposure, while, less than half of them had positive attitude (**figure 2**). This result agreed with the result of the study conducted by **Mistry** ⁽²⁹⁾, stated that 45.0% of the studied women had good attitude toward passive smoking exposure. This could be a result of women's confusion about their right to protect themselves from passive smoking hazards.

Part (V): Women's reported practices regarding exposure to passive smoking hazards?

Answer research question NO. (3): What is the women's reported practices regarding exposure to passive smoking hazards?

Concerning the women's reported practices regarding exposure to passive smoking hazards, the findings of the current study displayed that, the majority of the studied women reported that they always open the window to dilute the smoke and improve ventilation if they are with smokers (**table 5**). This result agreed with the result of the study conducted by **Rao et al.** ⁽³⁰⁾, in India, entitled as "Exposure to second hand tobacco smoke among 12 year old adolescents in Mangalore, Karnataka: A descriptive study" (n= 1442), presented that 70.0% of the study participants reported that they would open the window to ventilate the room if they could not avoid passive smoking. This could be because women considered opening windows would be a traditional way to reduce the effect of the smoke.

Also, the findings of the current study showed that more than three fifths of the studied women reported that they sometimes spent as little time as possible in places where smoking is prevalent. This result was supported by the result of the study done by **Sun et al.** ⁽³¹⁾, in Mauritius, entitled as "Need for sensitization on serious threats of second-hand smoke: Findings from a national study in Mauritius" (n= 408), stated that 76.2% of the participants would avoid passive smoking exposure by staying away from places where smoking was prevalent. This was because they perceived some risks of passive smoking but at the same time they cannot always separate themselves from areas where smoking is prevalent.

Also, the findings of the current study showed that more than three quarters of the studied women reported that they had not prevented their family members from smoking in the house. This result agreed with the result of the study conducted by **Chen et al.** ⁽³²⁾, in china, entitled as "Influence of family resources on secondhand smoking in pregnant women: a cross-sectional study in the border and minority urban areas of Northwest China" (n= 1249), found that 80.0% of the study sample had not prevented their family members from smoking in the house. This could be related to the rural culture where it is not acceptable that a woman asks her husband or other family member to smoke outside the house.

Moreover, the findings of the current study demonstrated that the majority of the studied women reported that they had not taught their children about passive smoking and how to avoid it. This result disagreed with **Junus et al.** ⁽³³⁾, in Malaysia, about "Parental health risk perceptions and preventive measures related to children's second-hand cigarette smoke exposure" (n= 246), reported that 85.4% of respondents had taught their children to stay away from

cigarette smokers. This result could be due to the negligence of mothers to educate their children about passive smoking or might be related to the culture that considers smoking a habit that cannot be avoided.

Regarding the total reported practices of the studied women about exposure to passive smoking hazards, the findings of the current study showed that more than three quarters of the studied women had inadequate level of total reported practices regarding exposure to passive smoking hazards. While, about one fifth of them had adequate level of total reported practices (**figure 3**). This result disagreed with the result of the study conducted by **Vu et al.** ⁽³⁴⁾, in Vietnam, entitled as "Inadequate knowledge, attitude and practices about second-hand smoke among non-smoking pregnant women" (n= 432), stated that 57.0% of the sample included in the study had inadequate level of total reported practices regarding exposure to passive smoking hazards, while 43.0% of them had adequate level. This could be due to the rural culture of the area where the study was conducted, which interfere with women's ability to perform practices that help them to avoid exposure to passive.

Part (VI): Correlation between women's knowledge, attitude and reported practices regarding exposure to passive smoking hazards?

Answer research question NO. (4): Is there a relation between women knowledge, attitude and reported practices regarding exposure to passive smoking hazards?

Related to the correlation between total knowledge, total attitude and total reported practices regarding exposure to passive smoking hazards, the findings of the current study indicates that, there was highly statistically significant positive correlation between total knowledge, total attitude and total reported practices regarding exposure to passive smoking

hazards among the studied women ($P= 0.00$) (table 6). This result agreed with Mistry⁽²⁹⁾, who reported that there was highly statistically significant positive correlation between knowledge and attitude of the studied women regarding exposure to passive smoking. This could be because the three variables; knowledge, attitude and practice, would affect the level of exposure to passive smoking hazards among the studied women.

CONCLUSION

In the light of results of the current study and answers of research questions, it could be concluded that:

Nearly three quarters of the studied women had unsatisfactory level of total knowledge about passive smoking hazards. While, more than half of the studied women had negative attitude regarding passive smoking hazards. Moreover, more than three quarters of the studied women had inadequate level of total reported practices regarding exposure to passive smoking hazards. Finally, there was highly statistically significant positive correlation between knowledge, attitude and reported practices regarding exposure to passive smoking hazards among the studied women.

RECOMMENDATIONS

1. Health educational programs should be directed to improve women's awareness regarding hazards of exposure to passive smoking.
2. Counseling programs should be held to increase knowledge and practices of women regarding passive smoking exposure effects on health.
3. Further research should be done on larger scale and wider area about the hazards of exposure to passive smoking.

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REFERENCES

1. Hashemi, M., Shafiee, G., Ebrahimi, M., Ejtahed, H., Yaseri, M., Motlagh, M., & Kelishadi, R. (2022). Trend of passive smoking and associated factors in Iranian children and adolescents: the CASPIAN studies. *BMC Public Health*, 22(1), 1-10. Available at: <https://doi.org/10.1186/s12889-022-13045-8>. Accessed at: 12/12/2022
2. Kashani, H., Nakhjirgan, P., Hassanvand, M., Shamsipour, M., Yunesian, M., Farzadfar, F., & Mesdaghinia, A. (2021): Subnational exposure to secondhand smoke in Iran from 1990 to 2013: a systematic review. *Environmental Science and Pollution Research*, 28(3), 2608-2625. Available at: <https://pubmed.ncbi.nlm.nih.gov/33140301/>. Accessed at: 15/12/2022
3. Štěpánek, L., Ševčíková, J., Horáková, D., Patel, M., & Durd'áková, R. (2022). Public Health Burden of Secondhand Smoking: Case Reports of Lung Cancer and a Literature Review. *International Journal of Environmental Research and Public Health*, 19(20), 13152. Available at: <https://doi.org/10.3390/ijerph192013152>. Accessed at: 12/12/2022
4. Islam, T., Braymiller, J., Eckel, S., Liu, F., Tackett, A., Rebuli, M., & McConnell, R. (2022). Secondhand nicotine vaping at home and respiratory symptoms in young adults. *Thorax*. 77(7), 638-639. <http://dx.doi.org/10.1136/thoraxjnl-2021-217041>. Accessed at: 15/12/2022
5. Protano, C., Manigrasso, M., Cammalleri, V., Biondi Zoccai, G., Frati, G., Avino, P., & Vitali, M. (2020): Impact of Electronic Alternatives to Tobacco Cigarettes on Indoor Air Particular Matter Levels. *International*

- journal of environmental research and public health, 17(8), 2947. Available at: <https://doi.org/10.3390/ijerph17082947> . Accessed at: 20/12/2022
6. **Merklinger, A., Jasienska, G., Thune, I., & Kapiszewska, M. (2022).** Joint effect of particulate matter and cigarette smoke on women's sex hormones. *BMC Women's Health*, 22(1), 1-15. Available at: <https://doi.org/10.1186/s12905-021-01586-w> Accessed at: 15/12/2022
 7. **Sharma, T., & Khapre, M. (2021).** Exposure of second hand smoke in women and children: A narrative review. *Journal of Family Medicine and Primary Care*, 10(5), 1804. Available at: doi: 10.4103/jfmpc.jfmpc_1397_20 . Accessed at: 16/12/2022
 8. **Popova, T., Stambolova, I., Iantcheva, M., & Trendafilova, P. (2020).** Health training for parents in the fight against passive smoking. In 2nd World Conference on Future of Education, Brussels.
 9. **Dai, S., Au, C., Chan, M., Kam, R., Li, A., & Chan, K. (2021):** Parental Knowledge, Attitude, and Practice on Tobacco Use, Smoking Cessation, and Children's Environmental Tobacco Smoke Exposure. *Frontiers in public health*, 9, 733667. Available at: <https://doi.org/10.3389/fpubh.2021.733667>. Accessed at: 18/12/2022
 10. **Hahn, D., Schmied-Tobies, M., Rucic, E., Pluym, N., Scherer, M., Debiak, M., & Kolossa, M. (2022).** Urinary cotinine and exposure to passive smoke in children and adolescents in Germany—Human biomonitoring results of the German Environmental Survey 2014–2017 (GerES V). *Environmental Research*, 216(1), 114320. Available at: <https://doi.org/10.1016/j.envres.2022.114320> . Accessed at: 16/12/2022
 11. **Center for Disease Control and Prevention (CDC), (2022).** Health Problems Caused by Secondhand Smoke. Available at: <https://www.cdc.gov/tobacco/secondhand-smoke/health.html>
 12. **Hassanein, Z., Langley, T., Murray, R. L., Bogdanovica, I., & Leonardi, J. (2021).** Experiences and views of women, children, and professionals regarding second-hand smoke exposure prevention in Middle Eastern countries: a qualitative systematic review protocol. *JBIC Evidence Synthesis*, 19(1), 222-228. Available at: DOI: 10.11124/JBISRIR-D-19-00248 . Accessed at: 16/12/2022
 13. **Starker, A., Kuhnert, R., Hoebel, J., & Richter, A. (2022).** Smoking behaviour and passive smoke exposure of adults—Results from GEDA 2019/2020-EHIS. *Journal of Health Monitoring*, 7(3):6-20. doi: 10.25646/10291.
 14. **Iwuagwu, T., Ozurumba, I., Isabu, A., Enemuo, N., Ibhafidon, A., Burbwa, S., & Onyekwere, O. (2022).** Knowledge Of Adverse Health Outcomes Of Maternal Exposure To Passive And Active Smoking In Nigeria. *Pollution Research*, 40(4):1132-1143
 15. **Pan, X., Luo, Y., & Roberts, A. (2018).** Secondhand smoke and women's cognitive function in China. *American journal of epidemiology*, 187(5), 911-918.
 16. **Lin, S., Zhang, Y., Jiang, L., Li, J., Chai, J., Pei, L., & Shang, X. (2022).** Interactive Effects of Maternal Vitamin D Status and Socio-Economic Status on the Risk of Spontaneous Abortion: Evidence from Henan Province, China. *Nutrients*, 14(2), 291.
 17. **Saiyed, A. (2019).** Awareness of the impact of maternal smoking on

pregnancy and the neonate SIDS. Multi-Knowledge Electronic Comprehensive Journal For Education And Science Publications (MECSJ), 25

18. **Ngo, Q., Phan, T., Vu, V., Chu, T., Nguyen, T., Nguyen, H., & Ho, C. (2019).** Prevalence and sources of second-hand smoking exposure among non-smoking pregnant women in an urban setting of Vietnam. *International journal of environmental research and public health*, 16(24), 5022.
19. **Frazer, K., Fitzpatrick, P., Brosnan, M., Dromey, A., Kelly, S., Murphy, M., & McAuliffe, F. (2020).** Smoking Prevalence and Secondhand Smoke Exposure during Pregnancy and Postpartum—Establishing Risks to Health and Human Rights before Developing a Tailored Programme for Smoking Cessation. *International Journal of Environmental Research and Public Health*, 17(6), 1838.
20. **Nashed, A., Mahmoud, R., & Mohammed, M. (2020).** Relation between Women's Knowledge and their Exposure to Second Hand Smoking. *Assiut Scientific Nursing Journal*, 8(23), 122-131.
21. **Andriani, H., Rahmawati, N., Ahsan, A., & Kusuma, D. (2021).** Second-hand smoke exposure inside the house and adverse birth outcomes in Indonesia: Evidence from Demographic and Health Survey 2017. *MedRxiv*, 2021-11.
22. **Yavagal, P., Velangi, C., Desai, J., Gupta, H., Sheik, F., & Kaushal, M. (2021).** Knowledge, attitude, and behavior related to secondhand smoke exposure among pregnant women with smoking spouses in Davangere City: A cross-sectional survey. *Journal of Indian Association of Public Health Dentistry*, 19(1), 37.
23. **Yasin, S., Mizan Taib, K., & Idris, M. (2018).** Avoidance of environmental tobacco smoke among non-smoking pregnant women in Malaysia. *Asian Journal of Agriculture and Biology*, 6, 13-22.
24. **Reuben, C., Danladi, M., Saleh, A., & Ejembi, E. (2021).** Knowledge, attitudes and practices towards COVID-19: an epidemiological survey in North-Central Nigeria. *Journal of community health*, 46, 457-470.
25. **Rahman, M., Hasan, S., Haque, S., Haque, N., Rahman, M., Mostofa, G., & Mahmud, H. (2019).** Secondhand smoking, knowledge/attitudes and socioeconomic status among married Bangladeshi women: a cross-sectional study. *Sao Paulo Medical Journal*, 137, 13-24.
26. **Petersen, A., Thompson, L., Dadi, G., Tolcha, A., & Cataldo, J. (2018).** An exploratory study of knowledge, attitudes, and beliefs related to tobacco use and secondhand smoke among women in Aleta Wondo, Ethiopia. *BMC women's health*, 18, 1-10.
27. **Mahmoodabad, S., Karimiankakolaki, Z., Kazemi, A., Mohammadi, N., & Fallahzadeh, H. (2019).** Exposure to secondhand smoke in Iranian pregnant women at home and the related factors. *Tobacco Prevention & Cessation*, 5.
28. **Suriani, I., Aidalina, M., Sidek, N., & Ramalingam, D. (2017).** Knowledge, attitude and practices on secondhand smoking among women who are exposed to secondhand smoking at home and at workplace. *International Journal of Public Health and Clinical Sciences*, 4, 66-76.
29. **Mistry, M. (2020).** Knowledge and Attitude on Hazards of Passive Smoking

among Women of Pune City. *Indian Journal of Forensic Medicine & Toxicology*, 14(4), 3897-3902.

30. **Rao, A., Unnikrishnan, B., Rungta, N., Nandini, M., Shenoy, R., Rao, A., & Shetty, M. (2021).** Exposure to Second Hand Tobacco Smoke among 12 year old Adolescents in Mangalore, Karnataka-A Descriptive Study. *Asian Pacific Journal of Cancer Prevention: APJCP*, 22(3), 827.
31. **Sun, M., Panray, U., Cheeneebash, J., & Gunesh, R. (2022).** Need for sensitization on serious threats of second-hand smoke: Findings from a national study in Mauritius, a small island developing state in the Indian Ocean. *Preventive Medicine Reports*, 25, 101667.
32. **Chen, J., Li, X., & Fang, P. (2020).** Influence of family resources on secondhand smoking in pregnant women: a cross-sectional study in the border and minority urban areas of Northwest China. *BMC Pregnancy and Childbirth*, 20(1), 1-10.
33. **Junus, S., Chew, C., Sugunan, P., Meor, N., Zainal, N., Hassan, H., & Hss, A. (2021).** Parental health risk perceptions and preventive measures related to Children's second-hand cigarette smoke exposure in Malaysia. *BMC public health*, 21(1), 1-11.
34. **Vu, V., Ngo, Q., Phan, T., Doan, P., Nguyen, T., Nguyen, H., & Ho, S. (2020).** Inadequate knowledge, attitude and practices about second-hand smoke among non-smoking pregnant women in urban Vietnam: the need for health literacy reinforcement. *International journal of environmental research and public health*, 17(10), 3744.