

## Effect of Nursing Guideline Regard Passive Smoking Hazards on Pregnancy Outcome

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### Abstract

**Background:** Passive smoking is unintentional breathing in of smoke that gets permeated into the environment due to smoking by an “active” smoker. **The study aim:** was to evaluate the effect of nursing guideline of reducing passive smoking hazards on pregnancy outcome. **Research design:** A quasi-experimental study **sample:** a purposive sample include 214 pregnant women with passive smoking exposure from Ain Shams university maternity hospital. The total No. of the sample divided into two groups (control group and study group). **Tools:** five tools were used for data collection; structured interviewing questionnaire sheet, written exam tool (Pre/post/follow up test), attitude assessment tool, maternal and fetal assessment sheet & maternal and neonatal observation sheet, plus educational supportive material about effect of passive smoking on pregnant women and prevention. **The results revealed** that, there were more than two-third of pregnant mothers among control group suffered from abnormal vital signs (temperature, pulse rate, respiratory rate, and blood pressure) during pregnancy & 2 hours immediately after labor & there were more than two-third of mothers among study group delivered vaginally and one-tenth only of them delivered by caesarean section while two-third of mothers among control group delivered vaginally and one-third of them delivered by caesarean section also the majority of mother in study group had newborn with good health conditions and good APGAR score in 1 & 5 minutes after labor compared with more than one-half of mothers in control group had newborn with abnormal fetal heart rate, weight and APGAR score at first & fifth minutes after birth. **conclusion revealed that,** more than two third of studied sample “both group” had unsatisfactory knowledge and negative attitude about passive smoking hazards on pregnancy at 1<sup>st</sup> trimester while more than three quarter of study group who received specific nursing guideline were /satisfactory knowledge & positive attitude about passive smoking hazards at 2<sup>nd</sup> and 3<sup>rd</sup> trimester of pregnancy. **The study recommended that** the nursing guide line intervention for pregnant women in first trimester through session/ booklet or brochures and follow up tests were improved the women knowledge & attitude for reducing passive smoking hazards on pregnancy outcome.

**Key words:** passive smoking, pregnancy outcome, nursing guideline.

### Introduction

Smoking is an important risk factor for morbidity and mortality in every individual irrespective of age. When an individual start smoking, dependency develops due to nicotine. A recent report of middle and low

income countries show that a population – based prevalence of tobacco use was approximately 2.6% in middle low income countries. In Egypt which was surveyed in 2005, the rates were 0.4% for cigarette smoking, 0.1% for smokeless tobacco & 0.4 & for any form of tobacco. Data was

obtained from demographic & health surveys. which are routinely. Conducted in middle & low income countries (WHO, 2013).

Smoking in Egypt is mainly masculine, as 33.3% of male are smokers compared to only 0.2% of females are smokers only 6 million smokers are in an urban compared to 8.1% million in rural. inspite of more than 20 million individual are non –smokers but exposed to passive smoking inside the family, because of the presence of one or more smoking family member.85% of male & female are exposed to passive smoking. Pregnant women who don't smoking can also be at hazard, from SHS in their environment such as; home, the work place, and others, like to smoking, through the pregnancy, being exposed to passive smoking. result in serious risk for both, the mother & the embryo (WHO, 2013).

It occurs if you happen to be in the presence of someone who is smoking a cigarette, cigar or pipe. The tobacco smoke exhaled by the smoker gets infused into the environment and is involuntarily inhaled by persons especially nonsmokers present close by (Mojibyn et al., 2013).

According to many studies, there is a connection between second-hand smoking and low birth weight. A pregnant woman exposed to passive smoking may give birth to a baby whose weight is lower than the expected normal weight. A baby with low birth weight is more susceptible to complications during pregnancy, at the time of delivery, and even after birth (Onken et al., 2010).

Pregnant women exposed to passive smoking can also suffer from a miscarriage. Studies indicate that pregnant women whose partners smoke cigarettes are at a higher risk of a miscarriage than those who have non-smoking partners. Preterm delivery is the most common outcome of passive smoking.

It can lead to problems like anaemia, hypertension, PROM (Premature Rupture of Membranes) among pregnant women exposed to tobacco smoke (Hedstrom et al., 2016).

The problem of passive smoking in pregnancy remains under appreciated by healthcare providers and public research (Gupta et al., 2002), studies about the effect of maternal passive smoking during pregnancy are few therefore this study was conducted to examine the effect of passive smoking on maternal and fetal outcome.

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### **Significance of the study**

Smoking rate in Egypt increase more than 7% per year between young male and 20% between children and puberty (age from 10-16 year) many study for world health organization (WHO, 2013) in Egypt refers to dangerous of second hand smoking on pregnancy outcome because the approximately one third of pregnant women from total population may be exposed for passive smoking and this lead to increase morbidity rate up to 49% and mortality rate up to 51% for women and fetus so smoking cessation intervention for pregnancy women can effectively prevent prenatal morbid Second hand smoking during pregnancy has received limited research attention in Egypt, therefore this study was carried out to draw the attention of maternity nurses to the causes & consequences of the problem & to the related role she can play in practice, research & health care policy formulation.

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### **Aim of the study**

To evaluate the effect of nursing guideline for reducing passive smoking hazard on pregnancy outcome.

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### This objective will be attained through:

1. Assessing the women knowledge and attitude about passive smoking hazard and its effect on pregnancy outcome.
2. Design, develop, implement of nursing guidelines for pregnant women that exposed for passive smoking.
3. Evaluation the effect of nursing guideline on pregnancy outcome

### Research Hypothesis:

Nursing guideline will improves pregnancy outcome for passive smoking women.

### Subject and Methods

#### Subjects and methods for this study were portrayed under for main designs:

- Technical design
- Operational design
- Administrative design
- Statistical design

#### 1) Technical design:

##### The technical design for the study include:

Research design, setting, subjects and tools used for data

##### Research design:

Aquasi – experimental study

##### Setting

The study was conducted in antenatal clinic and complete follow up in the delivery room at Ain Shams University Maternity Hospital.

### Sampling:

#### Type:

Purposive sample technique was used.

#### Inclusion criteria:

- Primipara
- Pregnant women in first trimester (First 3 months)
- Pregnant women with exposure for passive smoking
- Different age.

#### Exclusion criteria:

Any women suffer from medical or obstetric problems

- Medical problems such as respiratory disease, heart, diabetes, anemia, renal disease, brain disease
- Obstetric problems as mal position and presentation, multi pregnancy, antepartum hemorrhage, PIH, fetal distress, IUGR.

#### Sample size:

The sample size was calculated by power analysis which based on statistical flow rate for pregnant women whose attended in antenatal clinic at Ain Shams University maternity hospital. The size was 214 pregnant women that represented 5 % of total number.

#### Technique:

- Data collection all passive smoking pregnant women who fulfilled the previous criteria and by sequence of their registration book.
- First one fulfill the criteria was the first one in the sample till the sample reaches the pre-determined number.

**Sampling methods:**

**The sample were equally divided into two group:**

- 1<sup>st</sup> group (control group) number of pregnant women (107) that exposed for passive smoking hazards and receive route in antenatal care.
- 2nd group (study group) number of pregnant women (107) that exposed for passive smoking and received specific nursing guideline regard passive smoking.

**Ethical consideration:**

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Research ethics will be consider and maintain during the study through the following:

- 1- Women will be inform that they are allow to choose to participate or not in the study and they have the right lo withdraw from the study at any time.
- 2- The researcher will be clarify the purpose of the study to the women include in this study.
- 3- The researcher assure that confidentiality of the subject data will be maintain.
- 4- The proposal review and approve by the faculty ethics committee

**Tools of the study:**

Data was collected by used the following tools:

**Tool (I): Structured interviewing questionnaire sheet**

This tool was constructed by the researcher after reviewing the related

literature and it was Arabic language. It include 31 questions (open, closed, multiple choice question) divided into 3 parts.

**Part (A): Socio-demographic characteristic (question 1-7):**

This part aimed to collect data related to age, educational level and type of occupation... etc.

**Part (B): (8-15 questions):**

Concerned with reproductive history and question about present pregnancy.

**Tool (II): Written exam tool (pre/post/ follow (Question 16- 31):**

Adopted by (Walsh et al., 2005) this tool was translated into simple arabic language to assess pregnant woman's knowledge regards passive smoking hazards. This tool wrote by researcher in clear, simple, complete question to be easily answered by the pregnant women whose exposed for passive smoking (question 16-31)

**Scoring system:**

**Each knowledge assessment item (16 question) was given:**

- Complete– correct answer 3 grades
- Incomplete answer 2 grade
- Incorrect answer 1 grade

**Total score as follows:**

- Complete-correct answer. indicate from (32-48).
- Incomplete answer indicate from (17-31).
- Incorrect answer indicate from (1-16)

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### **Tool (III): Attitude assessment tool (Likert scale)**

It was used to assess women attitude toward passive smoking hazards. The scale was adopted from **Willis et al. (2003)** and modified by the researcher, it consists of 18 statements with three levels of response:

- Agree three grade
- Uncertain two grade
- Disagree one grade

#### **Total score as follows:**

- Positive attitude was considered if grades were more than 36.
- Uncertain attitude was considered if grades were 36.
- Negative attitude was considered if grades were less than 36.

### **Tool (IV): Maternal and fetal assessment sheet:**

This tool developed by the researcher and was used to assess the maternal and fetal condition during pregnancy. **This tool consists of two parts:**

#### **Part (1): Maternal assessment sheet:**

To assess the general condition for mother such as vital signs, weight, laboratory investigation and physical problems during pregnancy.

#### **Part (2): Fetal assessment sheet:**

To assess the general condition for the fetus such as weight, gestational age, F.H.S, amniotic fluid and any abnormalities for fetus. This sheet will be applied for pregnant women during pregnancy according to antenatal visit schedule.

- Every month (at 1-7 month).
- Every two weeks (at 8 month).

- Every week (at 9 month).

### **Tool (V): Maternal and neonatal observation sheet :**

This tool developed by the researcher and it used to evaluate the maternal and neonatal condition after birth. **This tool consists of two parts:**

#### **Part (1): Maternal follow up sheet:**

It used to evaluate the maternal condition within 2 hours after labor such as vital signs, uterine condition or contraction, lochia, perineal area and any abnormalities or complication after labor. This tool used within 2 hours after delivery.

#### **Part 2: Apgar score sheet:**

It used to evaluate the neonatal condition at first and fifth minute immediately after birth. This sheet includes weight of the newborn and general condition (such as heart rate, respiratory rate, muscle tone, reflexes, color)..

### **Tool (VI): Educational Supportive material (nursing guideline):**

The researcher's work Handbook or (Nursing guideline) a simple, Clear, Arabic language about passive smoking with illustrative and Colorful so the women can use what they like, and this book includes the Important elements of which (the definition of passive smoking, impact of secondhand smoke on different body system, the effect of passive smoking on the women health during pregnancy, protection from this hazards.....etc).

## **II. Operational design:**

The operational design for the study included:

- Preparatory phase.

- Pilot study.
- Field work.

### **Preparatory phase:**

Review of the current, past local and international related literature and theoretical knowledge of various aspect of the study using books, articles, internet and magazines. This review helped the researcher to be acquainted with magnitude and incidence of the problem and guided the researcher to prepare data collection tools.

### **Pilot study:**

Pilot study involve 22 women attending the outpatient clinic of Ain Shams university maternity hospital (10% of total sample included in the study) the pilot will be done to evaluate the clarity and content validity of the tools used for data collection, evaluate time needed for women to fill tools of the study and find the possible obstacles and problems that might face researcher and interfere data collection, women include in the pilot study will including in the total sample as there is no modification.

### **Field work:**

- Data was collected by researcher during morning shift for outpatient clinic, 3 days/week from 9 am to 2 pm for more than two year. included all women who have the previous inclusion criteria through used study tools done by researcher.
- Approval of women was obtain orally before taking history and after explaining the purpose of the study.

### **A. Control group:**

The total number for this group (group A) 107 pregnant women that exposed for passive smoking and received route in antenatal care.

### **First visit at 2<sup>nd</sup> month of pregnancy:**

The research will conduct this visit with pregnant women at second month. In this visit the researcher will complete the questionnaire by interviewing each woman individually for 15-20 minutes, 1st tool filled structured interviewing questionnaire.

In 20-30 minutes 2nd tool filled or answer questionnaire (written exam or pre-test) to assess women knowledge related passive smoking then, the research will use 15-20 min, 3rd, tool "filled modified Likert scale" to assess. Women attitude toward passive smoking (tool I/ tool II/tool m).

### **Second visit at 5<sup>th</sup> months of pregnancy:**

The researcher will conduct this visit at fifth month and using 20-30 min, 4th tool the "fills maternal and fetal assessment sheet during pregnancy (tool IV).

### **Third visit al 9<sup>th</sup> month of pregnancy:**

The researcher will conduct this visit at nine month before labour. The research will using 20-30 min. 4th tool to, "fill maternal and fetal assessment sheet and also will using another 20-30 min. 2nd tool (post-test) to "answer questionnaire Related passive smoking" (tool II/tool IV).

### **B. Study group;**

The total number for this group (group B) 107 pregnant women that exposed for passive smoking and received specific nursing guideline regards passive smoking.

### **First visit at 2<sup>nd</sup> month of pregnancy**

The researcher will conduct this visit at second month and will using (tool I, tool II, tool III) such as control group "fill structure interviewing questionnaire, answer pre-test questions/and modified Likart scale" to

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assess women knowledge and attitude related passive smoking and its effects on pregnancy outcome.

During this visit the researcher will be start the application for nursing guideline to reduce passive smoking hazards during pregnancy:

**The researcher will be divided the nursing guideline into three session:**

**1<sup>st</sup> session at second month of pregnancy during first visit:**

- The session time: about 10 minutes.
- The session contents: "introduction and importance of nursing guideline intervention to reducing passive smoking hazards on mother and fetus".

**2<sup>nd</sup> session at third month of pregnancy after one month from first visit / first session:**

- The session time: about 15 minutes.
- The session contents: discussion.

All elements of nursing guideline such as "general effect of passive smoking in all body system, dangerous substance in smoking, effect of passive smoking on mother and her fetus and nursing intervention or nursing guidance to avoid passive smoking hazards on pregnancy outcome.

**3<sup>rd</sup> session at fourth month of pregnancy after another one month from second session:**

- The session time 20-30 minutes.
- The researcher was used 2n tool to answer questionnaire and re-evaluate the women knowledge after program implementation was conducts.

**Second visit at 5<sup>th</sup> month of pregnancy:**

The researcher was conducted this visit at fifth month and used (tool IV) such as control group (group A). according antenatal schedule visit to assess maternal and fetal condition during pregnancy.

**N.B:** Application of tool IV at same time for (control and experimental group).

**Third visit at 9<sup>th</sup> month of pregnancy:**

The researcher was conducted this visit at nine month before labour. The researcher was used 20-30 min. to "fill maternal and foetal assessment sheet and also will using another 20-30 min. 2nd tool to answer questionnaire related passive smoking (tool II/tool IV).

**Final visit at labour:**

This visit was conducted in labour department (pre-natal/ natal/ postnatal). For two groups (-A and B- group) the researcher in this visit will using 5 (tool to assess maternal and neonatal condition immediately after 2 hours of labour (tool V), this tool consists of two part:

**Part 1: Maternal follow up sheet:**

It used to evaluate the maternal condition within 2 hour after labour.

**Part 2: Apgar score sheet:**

The researcher used the 5th tool to evaluate the neonatal condition at first and fifth minute immediately after birth.

**III. Administrative design:**

An official approval with written letter clarifying the title, purpose and setting of the study was obtained from dean of faculty of nursing at Ain Shams maternity university hospital. Another letter was send to director

of Ain shams maternity university hospital as an approval for data collection to conduct this study.

#### IV. Statistical design:

The collected data was coded organized, categorized and tabulated. Data was analyzed by inferential statistics and used appropriate statistical method as mean, range standard deviation SD, T. test, Statistical significance was considered at P-value <0.05, highly significant difference obtained at  $P < 0.001$ .

#### Limitation of the study

- Interruption of the interview by the routine antenatal care as examination or Investigation.
- Lack of cooperation from the pregnant women especially the employer's women due to lack of their time.

#### Result:

**Table (1):** Shows that, the study sample of pregnant women age ranged between < 20 - > 40 years. Slightly less than half of them (44.9%) in the age group 20 to <30 years among control group while in study group and it was more than two third (65.4%) also, slightly less than one third of them (26.2 %, 28.0 %) lived in rural area respectively and 29.9%, 34.6% of them had secondary education respectively. Concerning study sample occupation slightly more than half of them (53.3%) were housewife with enough family income for 22.4% out of them.

**Table (2):** Presents that, there was insignificant statistical relation between control and study group of pregnant women according to their total knowledge about passive smoking hazards and its effect on pregnancy outcome through pre program implementation phase with  $X^2 = 4.343$  and P value 0.114 while there was highly significant relation between two groups immediately post program with  $X^2 = 84.985$  and P value 0.000. Also the table shows that, there was highly statistical

significant relation between pre and post program implementation phases regarding pregnant women total knowledge for two groups with  $X^2 = 91.106$  and P value <0.001.

**Table (3):** Indicates that, there was highly statistical significant relation between control and study group of pregnant women according to their total attitude about passive smoking hazards and its effect on pregnancy outcome post program implementation with  $X^2 = 32.85$  and P value <0.001.

**Table (4):** Reveals that, there were majority of pregnant mothers 82.2% and 80.4% suffered from abnormal blood pressure and respiratory rate respectively for control group while, there were 52.3% and 85.05 of them for study group had normal range of blood pressure and respiratory rate respectively. P value <0.001. Regarding to the fetal heart rate and fetal weight this table indicates that, there were 49.5% and 43.0 of studied women respectively were abnormal among control group compared with 75.7% of women had normal fetal heart rate and 94.4% of them had normal fetal weight among study group with highly statistical significant relation  $x^2$  14.62, and 40.64 and P value < 0.001.

**Table (5):** clarifies that, there were 58.9%, 31.8%, 80.4%, and 62.6% of pregnant mothers among control group suffered from abnormal temperature, pulse rate, respiratory rate, and blood pressure respectively compared with, 93.5%, 72.9%, 72.0%, and 60.7% of them for study group had normal range of vital signs respectively with highly statistical significant relation P value <0.001.

**Table (6):** Presents that, there were 86.9% of mothers among study group delivered vaginally and 13.1% of them delivered by caesarean section while 70.1% of mothers among control group delivered vaginally and 28.0% of them, by caesarean section. Regarding to the health condition of newborn there was all mothers of study group had newborn with good health conditions and good APGAR score compared with 70.1% for mothers of control group with highly statistical



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significant relation  $\chi^2$  35.611 and 35.611 respectively P value <0.001.

88.1,85.6,94.9,and 99.2 respectively and P value<0.001.

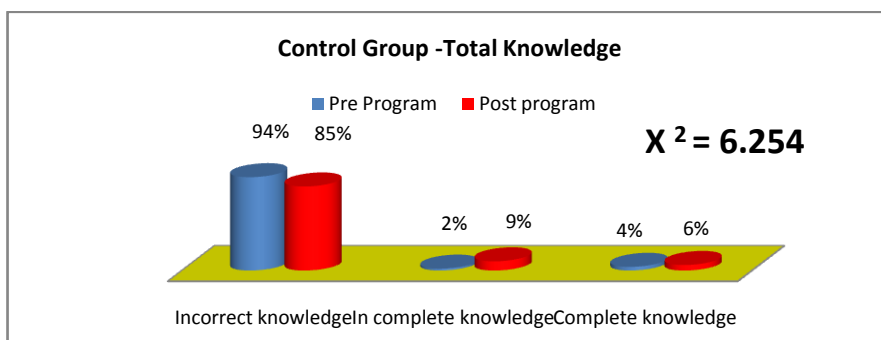
**Table (7):** As regard the relation between total knowledge about passive smoking hazards and its effect on pregnancy outcome for control and study group post program implementation, this table presents that, there were highly significant statistical relations between total knowledge of mothers and their type of birth, and newborn, the health condition of newborn, and APGAR score for control group and study group post program implementation with  $\chi^2 =$

**Table (8):** Regarding to the relation between total attitude of mothers and their pregnancy outcomes for control and study group post program implementation this table reveals that, there highly significant statistical relations between total attitude of mothers and their type of birth, and newborn, the health condition of newborn, and APGAR score for control group and study group post program implementation with  $\chi^2 = 37.4, 54.6, 54.7,$  and  $57.7$  respectively and P value < 0.001.

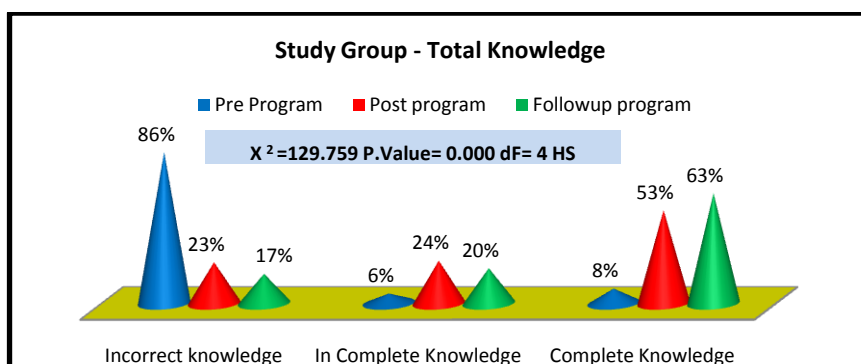
**Table (1):**Distribution of study sample of pregnant women according to demographic data for control and study group (n= 107).

Demographic data	Control Group		Study Group	
	No	%	No	%
<b>Age</b>				
< 20 years	17	15.9	30	28.0
20 to <30 years	48	44.9	70	65.4
30 to < 40 years	19	17.8	3	2.8
40 years or more	23	21.5	4	3.7
Mean age ( $\bar{X} + SD$ )	31 +0.5		29 +0.67	
<b>Residence</b>				
Urban	79	73.8	77	72.0
Rural	28	26.2	30	28.0
<b>Mother's Occupation</b>				
Employee	56	52.3	50	46.7
Housewife	51	47.7	57	53.3
<b>Mother's Educational level</b>				
Illiterate	14	13.1	10	9.3
Read and write	17	15.9	6	5.6
Primary education	10	9.3	8	7.5
Secondary education	32	29.9	37	34.6
Highly education	34	31.8	46	43.0
<b>Father's Educational level</b>				
Illiterate	12	11.2	0	0.0
Read and write	14	13.1	13	12.1
Primary education	13	12.1	12	11.2
Secondary education	25	23.4	37	34.6
Highly education	43	40.2	45	42.1
<b>Family income</b>				
Not enough < 2500	84	78.5	83	77.6
Enough $\geq$ 2500	23	21.5	24	22.4
Mean	1617.29 L.E		1891.12 L.E	
Std. Deviation	846.695 L.E		925.68 L.E	
Minimum	400 L.E		300.00 L.E	
Maximum	3500 L.E		5000.00 L.E	

**Figure (1):** Distribution of study sample of pregnant women according to their total knowledge about passive smoking hazards and its effect on pregnancy outcome for control group pre and post program implementation (n= 107).



**Figure (2):** Distribution of study sample of pregnant women according to their total knowledge about passive smoking hazards and its effect on pregnancy outcome for Study group pre / post and follow up program implementation (n=107).



**Table (2):** The relation between control and study group of pregnant women according to their total knowledge about passive smoking hazards and its effect on pregnancy outcome through program implementation phases(n= 107).

	Control Group			Study Group			$\chi^2$	P-value
	Incorrect knowledge	Incomplete knowledge	Complete knowledge	Incorrect knowledge	Incomplete knowledge	Complete knowledge		
	No %	No %	No %	No %	No %	No %		
Pre Program	101 94.4%	2 1.9%	4 3.7%	92 86.0%	6 5.6%	9 8.4%	4.343	0.114 NS*
Post Program	91 85.0%	10 9.3%	6 5.6%	25 23.4%	26 24.3%	56 52.3%	84.985	0.000 HS***
$\chi^2$	91.106							
P-value	<0.001 HS***							

\* NS= No statistically significant \*\* S =statistically significant, \*\*\* HS= highly statistically significant

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**Table (3):** The relation between control and study group of pregnant women according to their total attitude about passive smoking hazards and its effect on pregnancy outcome post program implementation (n= 107).

Item	Total Attitude					X <sup>2</sup>	P Value
	Control group		Study Group				
	No	%	No	%			
Negative Attitude	16	15.0	5	4.7	32.85	<0.001 HS	
can't judge almost	47	43.9	17	15.9			
Positive Attitude	44	41.1	85	79.4			

**Table (4):** Distribution of study sample of pregnant women according to their Follow-up during pregnancy for control group and study group post program implementation (n= 107).

Follow-up during pregnancy		Control group		Study Group		X <sup>2</sup>	P Value
		No	%	No	%		
Vital signs							
Blood pressure	Normal	19	17.8	56	52.3	28.10	0.000
	Abnormal	88	82.2	51	47.7		HS***
Respiratory rate	Normal	21	19.6	91	85.0	91.78	0.000
	Abnormal	86	80.4	16	15.0		HS***
Pulse rate	Normal	57	53.3	85	79.4	16.41	0.000
	Abnormal	50	46.7	22	20.6		HS***
Temperature	Normal	72	67.3	105	98.1	35.58	0.000
	Abnormal	35	32.7	2	1.9		HS***
Laboratory investigations & physical examination							
Hemoglobin	Normal	83	77.6	96	89.7	5.773	0.016
	Abnormal	24	22.4	11	10.3		S**
Blood Sugar	Normal	47	43.9	58	54.2	2.262	0.132
	Abnormal	60	56.1	49	45.8		NS*
Albumin	Found (+v)	24	22.4	10	9.3	6.854	0.008
	Not found (-v)	83	77.6	97	90.7		S**
Other analyzes	Normal	6	5.6	107	100.0	191.2	0.000
	Abnormal	101	94.4	0	0.0		HS***
Fetal heart rate	Normal	54	50.5	81	75.7	14.62	0.000
	Abnormal	53	49.5	26	24.3		HS***
Fetal weight	Normal	61	57.0	101	94.4	40.64	0.000
	Abnormal	46	43.0	6	5.6		HS***
Amniotic fluid	Normal	90	84.1	107	100.0	18.46	0.000
	Abnormal	17	15.9	0	0.0		HS***
health problems	Found (+v)	97	90.7	0	0.0	177.4	0.000
	Not found (-v)	10	9.3	107	100.0		HS***

\* NS= No statistically significant, \*\* S =statistically significant, \*\*\* HS= highly statistically significant

**Table (5):** Distribution of study sample of mothers according to their postnatal health conditions for control group and study group post program implementation (n= 107).

Postnatal health status		Control group		Study Group		X <sup>2</sup>	P Value
		No	%	No	%		
Vital signs							
Temperature	Normal	44	41.1	100	93.5	66.57	0.000 HS***
	Abnormal	63	58.9	7	6.5		
Pulse rate	Normal	73	68.2	78	72.9	0.562	0.36 NS
	Abnormal	34	31.8	29	27.1		
Respiratory rate	Normal	21	19.6	77	72.0	59.03	0.000 HS***
	Abnormal	86	80.4	30	28.0		
Blood pressure	Normal	40	37.4	65	60.7	11.68	10.77 NS
	Abnormal	67	62.6	42	39.3		
Postpartum health status							
Postpartum constriction	Normal	89	83.2	105	98.1	14.12	0.000 HS
	Abnormal	18	16.8	2	1.9		
Postpartum complications	Hemorrhage	7	6.5	2	1.9	29.63	0.000 HS***
	Puerperal Infection	25	23.4	1	0.9		
Skin Color	Normal	4	3.7	107	100.0	198.57	0.000 HS***
	Abnormal	103	96.3	0	0.0		
Postpartum Lochia							
Color	Normal	100	93.5	107	100.0	7.237	0.007 S
	Abnormal	7	6.5	0	0.0		
Amount	Normal	103	96.3	105	98.1	0.686	0.407 NS
	Abnormal	4	3.7	2	1.9		
Odour	Normal	103	96.3	107	100.0	4.076	0.04 S
	Abnormal	4	3.7	0	0.0		
Perineum status	Normal	103	96.3	107	100.0	4.076	0.04 S
	Abnormal	4	3.7	0	0.0		

**Table (6):** Distribution of study sample of newborn according to their health condition for control group and study group post program implementation (n= 107).

Newborn's health condition	Control group N=105		Study Group N=107		X <sup>2</sup>	P Value
	No	%	No	%		
<b>Type of birth</b>						
Vaginal delivery	75	70.1	93	86.9	7.729	0.005 S**
<b>The health condition of newborn</b>						
Good condition	75	70.1	107	100.0	35.611	0.000 HS***
Poor condition	30	28.0	0	0.0		
<b>Abgar Score</b>						
Good	75	70.1	107	100.0	35.611	0.00000 HS***
Moderate condition and need suction and oxygen	28	26.2	0	0.0		

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Poor and need to CPR	2	1.9	0	0.0
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**Table (7):** The relation between total knowledge of mothers and their pregnancy outcomes for control group and study group post program implementation (n= 107).

Newborn's health condition	Total knowledge Control Group (n=105)						Total knowledge Study Group (n= 107)						X <sup>2</sup>	P Value
	incorrect knowledge		Incomplete knowledge		Complete knowledge		incorrect knowledge		Incomplete knowledge		complete knowledge			
	No	%	No	%	No	%	No	%	No	%	No	%		
Vaginal delivery	64	61.0	8	7.6	3	2.9	23	21.5	22	20.6	48	44.9	88.1	0.00 HS***
Caesarean section	25	23.8	2	1.9	3	2.9	2	1.9	4	3.7	8	7.5		
The health condition of newborn														
Good condition	61	58.1	8	7.6	6	5.7	25	23.4	26	24.3	56	52.3	94.9	0.00 HS***
Poor condition	28	26.7	2	1.9	0	0.0	0	0.0	0	0.0	0	0.0		
Abgar Score														
Good	63	60.0	6	5.7	6	5.7	25	23.4	26	24.3	56	52.3	99.2	0.00 HS***
Moderate (need suction & oxygen)	24	22.9	4	3.8	0	0	0	0.0	0	0.0	0	0.0		
Poor (need to CPR)	2	1.9	0	.0	0	0.0	0	0.0	0	0.0	0	0.0		

**Table (8):** The relation between total attitude of mothers and their pregnancy outcomes for control and study group post program implementation (n= 107).

Newborn's health condition	Total Attitude Control Group (n=105)						Total Attitude Study Group (n=107)						X <sup>2</sup>	P Value
	Negative Attitude		can't judge almost		Positive Attitude		Negative Attitude		can't judge almost		Positive Attitude			
	No	%	No	%	No	%	No	%	No	%	No	%		
Type of birth														
Vaginal delivery	8	7.6	34	32.4	33	31.4	5	4.7	15	14.0	73	68.2	37.4	0.00 HS***
Caesarean section	8	7.6	11	10.5	11	10.5	0	0.0	2	1.9	12	11.2		
The health condition of newborn														
Good condition	8	7.6	31	29.5	36	34.3	5	4.7	17	15.9	85	79.4	54.7	0.00 HS***
Poor condition	8	7.6	14	13.3	8	7.6	0	0.0	0	0.0	0	0.0		
Abgar Score														
Good	8	7.6	33	31.4	34	32.4	5	4.7	17	15.9	85	79.4	57.7	0.00 HS***
Moderate (need suction & oxygen)	8	7.6	10	9.5	10	9.5	0	0.0	0	0.0	0	0.0		
Poor (need to CPR)	0	0%	2	1.9	0	0.0	0	0.0	0	0.0	0	0.0		

## Discussion

**Regarding characteristics of the sample,** the present study revealed that more than two third of the studies sample, age ranged between < 20 -> 40 years, the mean of women age were 31 + 0.5, 29 + 0.67 year. This finding contradiction with the study conducted

by **Sheriff et al (2004)** They found that the mean maternal age at non-exposed group was (25.0 + 2.9) and (26.3 + 5.4) years for exposed group. Concerning study sample occupation slightly more than half of them were housewife. Also, these results were in agreement with the study **Goel et al. (2004)** they studies the effects of passive smoking on outcome in pregnancy. The mean age of

the pregnant women in both the groups, was comparable. They demonstrated that, there was no significant differences between both groups as regards to the mean age. This result may be due to female reproductive age between < 20 - > 40 years. This age consider were reasonable time for women marriage & pregnancy.

The finding of the present study revealed that more than on tenth of the pregnant women in two group were less educated (illiterate, basic or primary school) and also slightly less than one third of women in both groups were lived in rural areas Concerning study sample occupation slightly more than half of them were housewife.

These result was in the same line with a study done by **Hadayat et al., (2012)** their studies to evaluate the effect of active and passive smoking during pregnancy & its outcomes, they indicted that nearly half of the active smokers group had illiterate or read & write, were not working and living in urban areas. This findings are similar in some characteristic variable with the current study & different in others variable may be due to sampling size and place variation.

Regarding the level of women knowledge about passive smoking hazards: The finding of the present study shows that, more than two third of women had unsatisfactory knowledge regarding passive smoking this finding was obtained from both groups. Through (pre- test). While the study group that received specific nursing guideline with antenatal visit or follow up during pregnancy, more than one half they had satisfactory knowledge related passive smoking items this finding also obtained from study group through (post/follow up test).. this agree with **Wall et al. (2012)** they found that ETS knowledge score increased significantly in the CHG (child health group) from 64% of items correct at base line 69%

correct both at 1 month and 6 month post intervention while. CG (control group) subjects shows an initial decrease in knowledge score at 1 month which return to baseline level at 6 months so the researcher suggested that, it is necessary to repeat smoking cessation intervention over time. This result may be due the majority of the pregnant women in studies had not enough knowledge about passive smoking & need to improvement their knowledge through nursing intervention During antenatal visit or follow- up.

**Regarding the source of information about passive smoking:** The finding of the current study illustrated that the women in (study group) who received specific nursing guideline through many session explained by researcher and women obtained hand out or booklet from the beginning of first trimester and follow up until labor this lead to improve women level of knowledge, **this finding was supported by Whitney, (2011) who found that the non-smokers** had greater knowledge about the health effect of smoking than the smokers. Many smokers understand mated or denied the serous health risk associated with smoking. There for effort to educate pregnant women about the health risks of smoking during pregnancy is one of the few times in a women's life where she has regular contact with a health care provider who can give smoking cessation recommendation and counseling. This finding means Education during pregnancy should be increased in school health programs. Maternal & child health curriculums should include lessons on the dangers of smoking during pregnancy especially targeted at women of child bearing age.

**Regarding laboratory investigation and physical examination during pregnancy (antenatal follow up from 1-9 month in both group):** The present study revealed that the majority of pregnant women suffered from abnormal vital signs

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such as (elevated B.P, Temp. Resp.) this indicated sign of PIH during pregnancy, labor, after labor this results was congruent with **Hadayat et al., (2012)** they report that more than seventy percent of the active & passive smokers reported having antenatal health problem. They found association between smoking status and gestational hypertension and anemia.

The current study results assured with **Weickstorm et al. (2004)**. They reported nicotine may in fact raise the pre-eclampsia risk through effect on the cardiovascular system such as by causing endothelial dysfunction raising blood pressure. This result due to harmful effect of active or passive smoking on women health during pregnancy.

**Regarding Effect of passive smoking exposure during pregnancy on women health condition at labor (intranatal-natal follow up):** the present study revealed that the nearly less than one- third delivered abnormally such as C.S labour This results was agree with **Wisbory et al. (2004)** they found that smoking increase the risks of very pre-term birth, premature rupture of membranes an late pregnancy bleeding. Smoking was also associated with type for delivery with more cesarean birth among active & passive smokers. Statistically significant difference was found between smoking status and rupture of membrane cesarean birth, breech presentation, pre-term birth was found to be more common in active and passive smokers. This result also due to negative impact of active or passive smoking on maternal condition during labour.

**Regarding of the Effect of passive smoking exposure on pregnant outcome:** the current study represent that the majority of pregnant mother in control group suffer from abnormal vital signs in first two hours after labour& also the newborn Apgar score after birth for all mothers of study group had newborn with good health conditions and good APGAR score compared with nearly one-half of mothers in control group their baby was abnormal heart rate & weight, abnormal

APGAR score immediately after birth ( at first& fifth min). This result was agree with **Hadayat et al. (2012)** they found that there were strong association between smoking status and pre-term birth and fetal distress. this result due to negative effect of passive smoking exposure during pregnancy on maternal and fetal health.

**As regards to relation between total knowledge & attitude of women in both group and their pregnancy outcome:** there were highly significant statistical relations between total knowledge of mothers and their type of birth, and newborn, the health condition of newborn, and apgar score for control group and study group post program implementation.

**Wall et al. (2012)** who studied the impact of a brief intervention on maternal smoking behavior, they shown that brief intervention of health care providers during the prenatal visit resulted in 50% increase in smoking cessation compared with the spontaneous quit rate. The research of **wall et al** reported sixty – one percent of subjects were successfully contacted for one month follow up and 48% for six months follow up. so the nursing guide line intervention for pregnant women in first trimaster through session/ booklet or brochures and follow up tests were improved the women knowledge & attitude.

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## Conclusion

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More than two third of the studied sample (2 groups) have poor knowledge & negative attitude on passive smoking hazards & its effect on pregnancy outcome. The nursing guideline intervention for pregnant women in first trimesters through sessions/ booklet were improve the women knowledge / attitude & reducing passive smoking hazards on pregnancy outcome.

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## Recommendations:

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In the light of the finding of the study, the following points are recommended:

- Routine investigation for pregnant women during antenatal visit should include biochemical marker as nicotine test in urine, blood, saliva to assess maternal tobacco exposure.
- Nursing guideline for pregnant women about passive smoking hazards, way of protection from it should be done at the booking visit.
- More research needed to evaluate incidence of maternal tobacco exposure with increase sample size and to examine the relation between tobacco exposure and maternal & fetal health problems.

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#### Conflict of interest:

No Yes

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