Effect of Educational Sessions for Pre-eclamptic Women on their Pre-eclampsia Knowledge

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1.ABSTRACT

Background: Pre-eclampsia is a life-threatening condition of pregnancy, especially in developing countries that has many adverse effects on maternal and fetal conditions. Increasing women's awareness of pre-eclampsia is recommended to promote hypertension control to prevent its serious complications. **Aim:** The current study intended to investigate the effect of educational sessions for pre-eclamptic women on their pre-eclampsia knowledge. **Design:** A quasi-experimental research design (one group pre & post-test). **Subjects:** A purposive sample of 96 pre-eclampsia-diagnosed women. **Setting:** The study was carried out at the Antenatal Outpatient clinics in the New Obstetrics and Gynecology Hospital, Mansoura, Egypt. **Tools of data collection**: Two tools were utilized; a Structured Interview Schedule, and a Pre-eclampsia Knowledge Questionnaire. **Results**: The study revealed that there were highly statistically significant improvements in the studied women's knowledge post-intervention in comparison with pre-intervention (p <0.001). **Conclusion:** Implementing educational sessions for pre-eclamptic women is effective in improving their pre-eclampsia knowledge. **Recommendation:** Implementing educational sessions about pre-eclampsia early in pregnancy should be an integral part of the routine antenatal care provided to the affected women to enhance pre-eclampsia management and prevent its complications.

Keywords: *Educational Sessions, Knowledge, Pre-eclampsia*

2.Introduction:

Pre-eclampsia is a health condition that only impacts pregnant women and is identified by a new onset of hypertension that is more than 140/90 mm Hg which appears in the second half of pregnancy (the second 20 weeks) or postpartum, associated with either proteinuria greater than 300 mg/24 hours or other maternal organ dysfunction **(Ali, Abdraboo, Shalaby & Abdelati, 2022 and Yang, et al., 2021).**

Pre-eclampsia affects about 4.6% of pregnancies worldwide, with poor nations having the highest prevalence rates (1.8% to 16.7%). **(Mou, et al. 2021 & Yang, et al., 2021).** While in Egypt, the prevalence of pre-eclampsia is estimated to be 6% - 8% of all pregnancies and can be as high as 15% in referral centers such as university hospitals **(Ameen, Hany & Ali, 2022).**

Pre-eclampsia may be started as a mild stage, but slowly or rapidly develops into a severe stage of pre-eclampsia. Mild pre-eclampsia is characterized by an increase in blood pressure (≥140/90 mm Hg) and proteinuria (≥300 mg/24 h) after 20 weeks gestation **(Coppage & Sibai, 2021).** While severe pre-eclampsia is characterized by an increase in blood pressure that is (≥160/110 mm Hg), thrombocytopenia, a serum creatinine concentration that is (>1.1 mg/dL) or more than twice the serum creatinine concentration's baseline, pulmonary edema, impaired liver functions, and cerebral or visual disturbances **(Bonnet, et al. 2021).**

Pre-eclampsia can negatively affect maternal and fetal conditions causing many complications for the mother and her baby. Maternal complications of pre-eclampsia may be eclampsia, placental abruption, postpartum hemorrhage, preterm delivery, and maternal mortality. While, the neonatal complications may be intrauterine growth retardation, prematurity, asphyxia at birth, and intensive care unit admission **(Elagamy, Sabbour, Ali, Ahmed, & Shahin, 2021).** Most of these complications are due to maternal negligence or unawareness of the disease and its management **(Rasouli, Pourheidari & Gardesh, 2019).**

Implementing educational sessions for pre-eclamptic women is an effective way to help them learn enough about the condition to control and manage it **(Ali, Abdraboo, Abdelati, & Shalaby, 2021).** These educational sessions usually cover all the information related to pre-eclampsia, its stages, etiology, clinical manifestations, diagnostic procedures, complications, prevention, and the management process.

2.1 Significance of the study

Pre-eclampsia is not only the most prevalent obstetric pregnancy complication, but it is also one of the top three global factors that contribute to maternal mortality and morbidity, particularly in low- and middle-income countries **(Sole, Staff, Räisänen & Laine, 2022).** Each year, it globally contributes to about 500,000 foetal and neonatal fatalities and 46,000 maternal deaths **(Longo, 2022; Gholami, et al., 2022).** While maternal deaths are estimated to be 16% in high-income countries and 9%- 26% in low-income countries **(Haile, et al., 2021).**

Globally, the majority of pre-eclamptic women have poor knowledge of their disease leading to delays in seeking care so many serious complications can occur **(Gholami, et al., 2022 and Ali, et al., 2022).** Moreover, previous studies reported that being equipped with adequate knowledge of pre-eclampsia helps the affected women to comply with the management process, and report early any problem to the healthcare provider which enables them to receive timely medical intervention which can decrease the incidence of adverse outcomes **(Fondjo, Boamah, Fierti, Gyesi & Owiredu, 2019).** Unfortunately, there are limited previous research studies that were conducted at Mansoura University to equip pre-eclamptic women with information about pre-eclampsia.

2.2 Aim of the study

The current study intended to investigate the effect of educational sessions for pre-eclamptic women on their pre-eclampsia knowledge.

2.3 Research hypothesis

Pre-eclamptic women who attended educational sessions about pre-eclampsia will exhibit improvement in their pre-eclampsia knowledge.

3. Method

3.1 Study design

The study used a quasi-experimental approach (one group pre & post-test).

3.2 Study settings

The study was carried out at the Antenatal Outpatient Clinics in the New Obstetrics and Gynecology Hospital, Mansoura, Egypt which are affiliated to Mansoura University Hospitals (MUH) and the Ministry of Higher Education and provide free antenatal and postnatal follow-up services. The antenatal outpatient clinics work daily from Saturday to Wednesday (9:00 A.M. - 1:00 P.M.) and the day off is Thursday.

3.3 Sample type: The study used a purposive sample technique.

3.4 Study sample: A sample of 96 pre-eclampsia-diagnosed women who attended the previously mentioned study setting was included in this study when they met the following criteria:

Inclusion criteria:

- Literate women.
- Women having mild pre-eclampsia.
- Between the ages of 18 and 40.
- Gestational age of 20 to 36 weeks.
- Attending an antenatal clinic regularly.

Exclusion criteria:

- Women with chronic medical illnesses.
- Women with obstetric complications, or convulsions.

3.5 Sample size:

Based on data from the literature **Afefy & Kamel (2019),** a study considering the level of significance of 5%, and the power of study of 80%, the sample size can be calculated using the following formula:

$n = [(Z\alpha/2 + Z\beta)2 \times \{2(SD)2\}]/$ (significant difference between the two groups)2

where SD = standard deviation

$Z\alpha/2$: This depends on the level of significance, for 5% this is 1.96

$Z\beta$: This depends on power, for 80% this is 0.84

Therefore, n= $[(1.96 + 0.84)2 \times \{2(37.1)2\}]/$ (15.0)2=95.9

So, based on the above formula, the sample size required is 96.

3.6 Tools of data collection: Two tools were utilized;

Tool I: Structured Interview Schedule: It consists of two parts:

Part (1): General characteristics of pre-eclamptic women which include age, level of education, occupation, residence, telephone number, family income, weight, height & BMI.

Part (2): Obstetric history which includes parity, gravidity, number of abortions and live births, gestational age, inter-pregnancy interval (IPI), family and personal history of pre-eclampsia, multiple pregnancy, previous antenatal care visits, time of the first visit, place of the visit and number of antenatal care visits.

Tool II: Pre-eclampsia Knowledge Questionnaire

It was adapted from **Afefy & Kamel (2019)** to assess pre-eclamptic women's knowledge about pre-eclampsia. It includes 15 questions assessing pre-eclamptic women's knowledge of pre-eclampsia definition, risk factors, symptoms, signs, contributing factors to pre-eclampsia, cases required further caution, the importance of rest and exercise for pre-eclamptic women, resting techniques, prevention, medical and dietary management, and maternal and fetal complications.

Scoring system:

Each item was given a score ranging from one to three where a score "three" for the correct answer, a score "two" for the partially correct answer, and a score "one" for the incorrect answer. The total score for pre-eclampsia knowledge equals 45 and it was divided into three categories: poor level of knowledge of less than 50% (scoring up to 23), a fair level of knowledge from 50-75% (scoring of 24-34), and a good level of knowledge of more than 75% (scoring of 35- 45) **(Elagamy, et al., 2021).**

3.7 Validity of the study tools:

An extensive review of the pre-eclampsia literature was used to determine the study tools' validity. Three experts in the fields of woman's health and midwifery nursing, and obstetric medicine verified the validity of the tools and suggested modifications were made then the completed form was utilized to collect data.

3.8 Reliability of the study tools:

The statistical program for social science (SPSS) version 20's Cronbach's alpha test was used to evaluate the reliability of the data collection tools in the current study showing high reliability with the values of Cronbach's alpha (0.903) for the tool (II).

3.9 Pilot study

Before starting data collection, a pilot study with 10 pre-eclamptic women (10% of the sample size) who attended the predefined study setting and met the criteria for inclusion was conducted to evaluate the clarity and usability of these tools as well as the amount of time needed to provide an answer. The pre-eclamptic women who participated in the pilot trial were eliminated before studying the sample, and required adjustments were made in light of the results. These modifications included adding and paraphrasing some statements and questions.

3.10 Ethical Considerations

Firstly, the Faculty of Nursing, Mansoura University's Research Ethics Committee granted ethical approval for conducting the study then the manager of the predetermined study setting was addressed in a formal letter from the Faculty of Nursing at Mansoura University asking for permission to implement the study after explaining its purpose. All participants were given the opportunity to give written, formal consent before data collection after being informed of the study's nature and its objectives. Each participant had the option to leave the study at any moment, and participation was completely voluntary. Throughout the whole study, anonymity, privacy, safety, and secrecy were guaranteed. All participant women were made aware that the outcome will be used as a part of doctoral research, publications, and educational purposes.

3.11 Study procedure

The study work started from the beginning of April 2021 to the end of July 2021 in three phases; the preparation phase, the implementation phase, and the evaluation phase.

Preparation phase:

At this time, the manager of the predetermined study setting provided official approval for conducting the study. Using journals, articles, and books to review the relevant scientific literature on a national and international level about the various aspects of the study, the researcher designed data collection tools. Their validity and reliability were then checked, any necessary modifications were made, and pilot testing was carried out. After studying Arabic and English literary works, the researcher created a colored manual guide in a simple Arabic language.

Implementation phase:

- The researcher visited the previously stated study setting three days weekly from 9 am to 1

pm until the estimated sample size was attained. The researcher first introduced herself to each pre-eclamptic woman, greeted them, verified that they were all eligible for the study and made sure that each one met the criteria for the study, and then asked for their written agreement to participate in the study after explaining its purpose.

- Before the intervention, the researcher conducted individual 15-20-minute interviews with each woman to collect data about their general characteristics and obstetric history using the Structured Interview Schedule and to fill Pre-eclampsia Knowledge Questionnaire pre-test tools by asking questions in Arabic and recording the answers.

- During the intervention, the researcher conducted three educational sessions for a small group of 3-5 pregnant women. The first session covered pre-eclampsia definition, stages, etiology, and clinical manifestations. The second session covered diagnosis, complications, prevention, and management of pre-eclampsia. The third session included revision of all content presented in the previous sessions and answering all questions. Each session lasted for 30 to 45 minutes.

- The researcher corrected woman's knowledge using PowerPoint presentations during the sessions. The researcher encouraged the pre-eclamptic woman's active participation during and after the teaching sessions by encouraging inquiries and giving feedback. The researcher also gave each woman a copy of an Arabic educational manual guide containing colored pictures that clarified the information illustrated during the sessions stressing the importance of reading it carefully to be aware of the disease and its ways for management to prevent unnecessary complications.

- The researcher coordinated a meeting with the pregnant women after the intervention to conduct the post-test to assess the effectiveness of the educational sessions.

Evaluation phase:

After 4 weeks of enrollment, the researcher met with each woman at the antenatal outpatient clinics to fill Pre-eclampsia Knowledge Questionnaire post-test tools by asking questions in Arabic and recording the answers to investigate the effect of the educational sessions for pre-eclamptic women on their pre-eclampsia knowledge.

3.12 Statistical Analysis

SPSS version 20.0 was used for all statistical calculations. Categorical variables were expressed in number and percentage, whereas continuous variables were expressed in Mean and standard deviation (SD). To investigate the correlation between the variables, the chi-square test was utilized $(x2)$. A value is considered statistically significant when the p-value is less than 0.05, very significant when the p-value is less than 0.001, and non-significant when the p-value is larger than 0.05. The p-value shows the level of significance.

3.13 Limitations of the study:

One main limitation for conducting this study; was no steady place for implementing the educational sessions.

4. Results

Table 1 illustrates that the studied women's Mean age ±SD was (29.6 ±6.1), (39.6%) of them had secondary education, (65.6%) of them were from rural areas, (77.1%) were working, and (70.8%) had a family income of less than 4000 Egyptian pounds.

Table 1. Frequency distribution of the studied women according to their general characteristics

General characteristics	No. (96)	%
Age (years)		
18 – 24	26	**27.1**
25 – 30	23	24.0
31 – 35	24	25.0
36 – 40	23	24.0
Mean ±SD	29.6 ±6.1	
Level of education		
Basic education	24	25.0
Secondary education	38	**39.6**
Higher education	34	35.4
Residence		
Rural	63	**65.6**

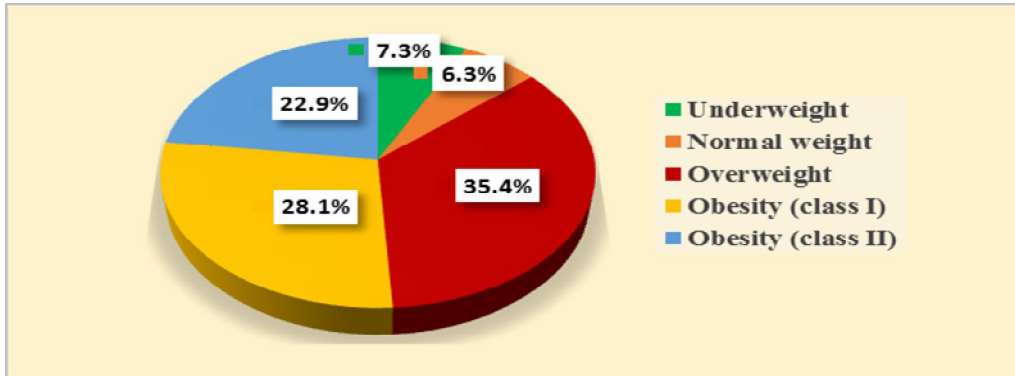|		
Urban	33	34.4
Occupation		
Work	74	**77.1**
Housewife	22	22.9
Family income (EGP)		
4000<	68	**70.8**
6000-4000	28	29.2

Figure 1. Body Mass Index (BMI) of the studied women (n=96)

Figure 1 demonstrates that (51%) of the studied women were obese and (35.4%) were overweight.

Table 2 shows that (62.5%) of the studied women were pregnant 2-4 times and (35.4%) of them gave birth 2-4 times. It also displays that (30.2%) of the studied women had an inter-pregnancy interval less than 2 years, (24.0%) and (29.2%) of them respectively had a family and a personal history of pre-eclampsia or high blood pressure. While (72.9%) of them had no prior history of abortion and (16.3%) had multiple pregnancy.

Table 2. Frequency distribution of the studied women according to their obstetric history

Obstetric history	No. (96)	%
Gravidity		
1	26	27.1
2 – 4	60	**62.5**
> 4	10	10.4
Mean ±SD	2.6 ±1.5	
Parity		
0	30	31.3
1	29	30.2
2 – 4	34	**35.4**
> 4	3	3.1
Mean ±SD	1.3 ±1.2	
Number of abortions		
0	70	**72.9**
1	19	19.8
≥ 2	7	7.3
Mean ±SD	0.4 ±0.7	
Number of live births		
0	31	32.3
1	33	**34.4**
≥ 2	32	33.3
Mean ±SD	1.1 ±1.0	
Inter-pregnancy interval (IPI) (years)		
First pregnancy	26	27.1
< 2	29	**30.2**
2 – 6	20	20.8
7 – 10	21	21.9
Family history of pre-eclampsia or high blood pressure		
Yes	23	**24.0**
No	73	76.0
History of pre-eclampsia or high blood pressure		
Yes	28	**29.2**
No	68	70.8
Multiple pregnancy		
Yes	15	**16.3**
No	77	83.7

Figure 2 displays that (37.5%) of the women in the study were pregnant between 20 and 25 weeks of gestation, (57.3%) were between 26-31 weeks, and (5.2%) were between 32-36 weeks.
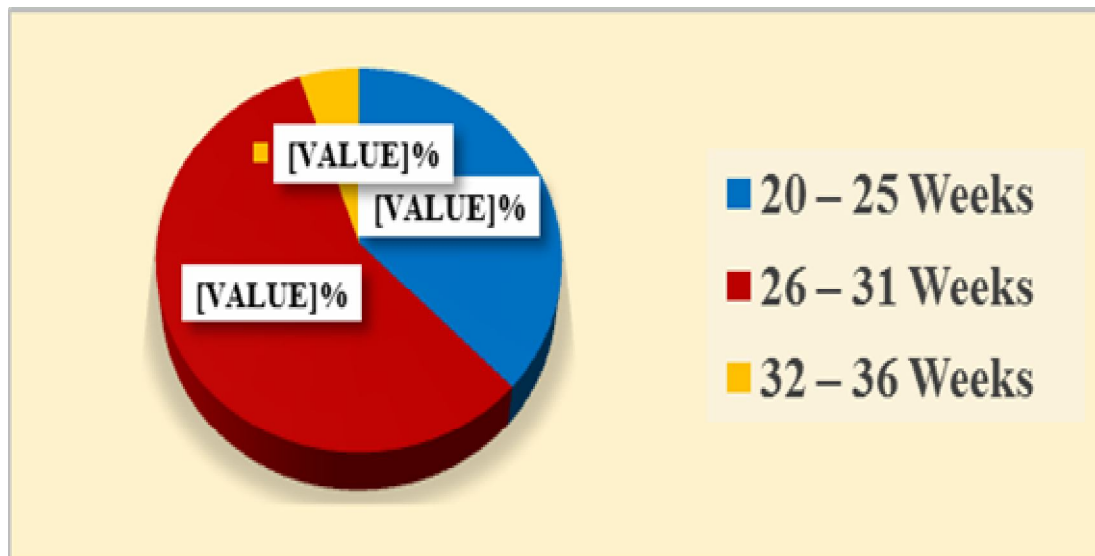

Figure 2. Current gestational age of the studied women (n=96)

Table 3 shows that (95.8%) of the studied women visited the antenatal care clinic previously and (82.3%) of them started the antenatal care follow-up in the 1st trimester. It also describes that (14.6%) of the studied women visited both the antenatal clinic at Mansoura University Hospital (MUH) and a private clinic and (68.8%) of them previously visited the clinic ≥ 4 times.

Table 3. Frequency distribution of the studied women according to their previous antenatal follow-up

Item	No. (96)	%
Previous antenatal care visit		
No	4	4.2
Yes	92	**95.8**
Time of the 1st antenatal visit		
1st trimester	79	**82.3**
2nd trimester	14	14.6
3rd trimester	3	3.1
Place of antenatal follow-up		
Antenatal clinic at MUH	83	86.5
Private clinic	13	13.5
Both	14	**14.6**
Number of antenatal care visits		
< 4	30	31.3
≥ 4	66	**68.8**

Table 4 demonstrates that all items of the studied women's pre-eclampsia knowledge post-intervention showed a highly statistically significant improvement (p < 0.001) where the highest percentage of the correct answer (97.9%) was observed related to the importance of exercise for pre-eclamptic women, and the maternal and fetal complications of pre-eclampsia and the lowest ones (80%) was observed with cases required further caution.

Table 4. Frequency distribution of the studied women according to their knowledge pre and post-intervention (n=96)

Items	Pre-intervention			Post-intervention			Significant test	
	Incorrect	Partially Correct	Correct	Incorrect	Partially Correct	Correct		
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	X^2	P
Definition of pre-eclampsia	69 (71.9)	18 (18.8)	9 (9.4)	1 (1.0)	11 (11.5)	84 (87.5)	128.230	<0.001**
Risk factors of pre-eclampsia	64 (66.7)	18 (18.8)	14 (14.6)	0 (0.0)	13 (13.5)	83 (86.5)	113.888	<0.001**
Symptoms of pre-eclampsia	72 (75.0)	19 (19.8)	5 (5.2)	0 (0.0)	10 (10.4)	86 (89.6)	146.892	<0.001**
Signs of pre-eclampsia	72 (75.0)	23 (24.0)	1 (1.0)	0 (0.0)	10 (10.4)	86 (89.6)	160.167	<0.001**
Contributing factors for pre-eclampsia	61 (63.5)	25 (26.0)	10 (10.4)	0 (0.0)	12 (12.5)	84 (87.5)	123.822	<0.001**
Cases required further caution	78 (81.3)	17 (17.7)	1 (1.0)	0 (0.0)	19 (19.8)	77 (**80.2**)	152.162	<0.001**
Importance of rest	58 (60.4)	29 (30.2)	9 (9.4)	1 (1.0)	14 (14.6)	81 (84.4)	117.900	<0.001**
Resting techniques	71 (74.0)	20 (20.8)	5 (5.2)	3 (3.1)	13 (13.5)	80 (83.3)	130.147	<0.001**
Foods should be avoided	58 (60.4)	28 (29.2)	10 (10.4)	2 (2.1)	6 (6.3)	88 (91.7)	128.583	<0.001**
Importance of exercise	55 (57.3)	28 (29.2)	13 (13.5)	0 (0.0)	2 (2.1)	94 (**97.9**)	138.851	<0.001**
The course of action after pre-eclampsia diagnosis	54 (56.3)	29 (30.2)	13 (13.5)	2 (2.1)	14 (14.6)	80 (**83.3**)	101.787	<0.001**
Prevention of pre-eclampsia	56 (58.3)	29 (30.2)	11 (11.5)	1 (1.0)	15 (15.6)	80 (**83.3**)	109.843	<0.001**
Management of pre-eclampsia	78 (81.3)	14 (14.6)	4 (4.2)	0 (0.0)	16 (16.7)	80 (**83.3**)	146.895	<0.001**
Maternal complications of pre-eclampsia	72 (75.0)	20 (20.8)	4 (4.2)	1 (1.0)	1 (1.0)	94 (**97.9**)	168.898	<0.001**
Fetal complications of pre-eclampsia	66 (68.8)	20 (20.8)	10 (10.4)	1 (1.0)	1 (1.0)	94 (**97.9**)	148.096	<0.001**

Figure 3 clarifies that, with a highly statistically significant difference (p <0.001), (68.8%) of the studied women had poor pre-eclampsia knowledge pre-intervention, which declined to (0%) post-intervention, while (8.3%) had good pre-eclampsia knowledge pre-intervention, which improved to (87.5%) post-intervention.
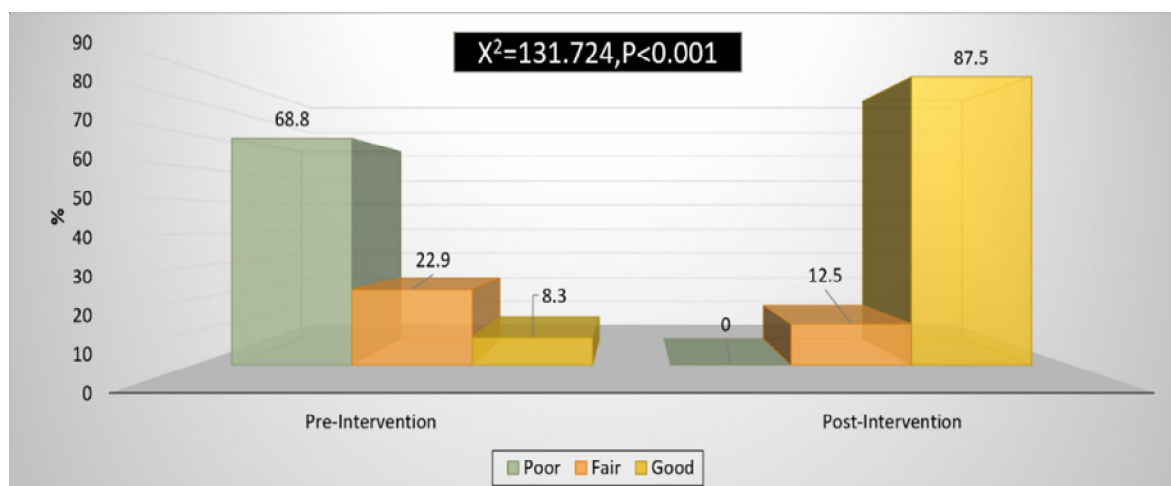
Figure 3. The studied women's total pre-eclampsia knowledge scores pre- and post-intervention (n=96)

5.Discussion

The current study intended to investigate the effect of educational sessions for pre-eclamptic women on their pre-eclampsia knowledge. Such study findings evidenced that after attending the educational sessions, the women's total pre-eclampsia knowledge score significantly improved when compared to previously. So, the hypothesis that "Women suffering from pre-eclampsia who will attend the educational sessions have good pre-eclampsia knowledge post-intervention in comparison with pre-intervention", was supported.

The present study evaluated the women's knowledge regarding pre-eclampsia at the first interview and the end of four weeks after attending the educational sessions. The current study's findings showed that more than two-thirds of the studied women had poor pre-eclampsia knowledge pre-intervention and the majority of them acquired good knowledge post-intervention with a highly statistically significant difference between the two.

The current study findings were supported by the results of **Elagamy, et al. (2021)** who evaluated the impact of nursing intervention based on the PRECEDE model on the knowledge and practice of high-risk pregnant women's preventive behavior regarding pre-eclampsia and found that both immediately and one month after nursing intervention, the mean score of knowledge had statistically significantly increased.

Similarly, **Alnuaimi, Abuidhail & Ismail (2020)** conducted research to look at how a pre-eclampsia intervention program affects pregnancy outcomes and awareness of high-risk pre-eclampsia Jordanian women and discovered a significant difference in pre-eclampsia awareness mean scores between the interventional group and the control group.

Moreover, the present study results agreed with **Radha (2019)** who evaluated the impact of a structured teaching program on primigravida mothers' knowledge of self-management of pregnancy-induced hypertension and reported that after the structured teaching program, there was a significant improvement in the primigravida women's overall knowledge of self-management of pregnancy-induced hypertension.

Furthermore, the results of the current study were consistent with the results of **Elsaid, Ahmed, El- Abedin, and Elkhayat (2021),** who assessed the impact of the teaching program on pregnancy outcomes of primipara women with pregnancy-induced hypertension and discovered that women's knowledge levels had increased as a result of implementing the health teaching program.

The results of the current study were in agreement with those of other studies and this may be related to the fact that pre-eclampsia is a serious maternal health issue that hasn't received enough attention in most nations, in addition to the positive effects of the educational sessions and the educational materials on acquiring detailed information and facilitating the continuity of effective learning in addition to the women's desire to be aware of their disease.

Also, the current study found that all items of the studied women's pre-eclampsia knowledge post-intervention showed a highly statistically significant improvement where the highest percentage of the correct answer was observed related to the importance of exercise for pre-eclamptic women, and the maternal and fetal complications of pre-eclampsia and the lowest one

was observed with cases required further caution.

The results of the current study did not agree with those of **Afefy and Kamel (2019)** who assessed the impact of an educational module on the knowledge and self-care of women with pre-eclampsia and reported that although there were significant changes in all items of knowledge regarding pre-eclampsia from the pre-intervention score to post-intervention score, the lowest percentage of the correct answer was observed related to the importance of exercise for pre-eclamptic women, and the highest one was observed with foods that should be avoided. This difference between the present study results and the previously described findings is often due to the difference in the content of the educational sessions that were provided to the studied women in both studies, in addition to the present studied women's fear of complications.

6. Conclusion

The present study's findings led to the conclusion that implementing educational sessions for pre-eclamptic women is effective in improving their pre-eclampsia knowledge.

7. Recommendations

The following can be recommended based on the findings of the current study:

- Implementing educational sessions about pre-eclampsia early in pregnancy should be an integral part of the routine antenatal care provided to the affected women to improve pre-eclampsia management and prevent its complications.

- A manual guide clarifying information about pre-eclampsia should be distributed to the affected women.

Further research studies need to be implemented to:

- Assess obstacles facing the health care providers in the implementation of educational sessions about pre-eclampsia in different obstetric settings.

8. Acknowledgment

I would like to thank all the women who participated in the study for their cooperation and for making it possible for me to finish this work.

9. Conflict of Interests

There are no conflicts of interest with this work, according to the authors.

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