

## KNOWLEDGE, ATTITUDE, AND PRACTICE OF NURSES AND MIDWIVES CONCERNING PREGNANCY INDUCED HYPERTENSION AND GESTATIONAL DIABETES

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### ABSTRACT

**Background:** Obstetric nurses and midwives play a vital role in providing care and managing pregnant females during the whole course of the pregnancy and it is vital to provide them with proper education and training to provide adequate care and achieve adequate outcomes in pregnant females.

**Aim:** The present study aimed to longitudinally assess the knowledge, attitude, and practice of nurses and midwives concerning pregnancy-induced hypertension and gestational diabetes.

**Methods:** The study utilized a questionnaire comprising 56 items concerning practice, attitude, and knowledge and comprising 23, 18, and 15 items respectively on these three subscales. The questionnaire was given to the obstetric nurses and midwives at three different time intervals during the program including the pre-test, post-test, and the three months follow-up. The data gathered were statistically analyzed using Pearson correlation coefficients and ANOVA to assess the significance after 3 months of the questionnaire.

**Results:** The study results showed a significant increase in the levels of practice, attitude, and knowledge of obstetric nurses and midwives after the training which persisted after 3 months of training reinforcement compared to the level before training. The comparison of three subscales showed the positive impact of the training and education on the levels of practice, attitude, and knowledge of obstetric nurses and midwives for gestational diabetes and hypertension.

**Conclusions:** The present study concludes that training and education poses a positive impact on the levels of practice, attitude, and knowledge of obstetric nurses and midwives for gestational diabetes and hypertension.

**Keywords:** Attitude, gestational diabetes, knowledge, midwives, obstetric nurses, pregnancy-induced hypertension

### INTRODUCTION

Obstetric nurses and midwives play a vital role in providing care and managing pregnant females during the whole course of the pregnancy. For achieving improved and better outcomes in pregnant females and children, it is critical to assure the quality of treatment, care, and

assessment of obstetric nurses and midwives are of the appropriate standard. These obstetric nurses and midwives are engrossed with the local community which could help deliver effective treatment meeting the needs of the community, families, and the subjects.<sup>1</sup>

Presently, in Indian hospitals, there is a lack of midwives and obstetric nurses with proper training along with the community care centers and the ambulatory units. Also, a falling trend is estimated in the coming future in the number of midwives and obstetric nurses along with the number of units that could properly train these nurses and midwives. The two most common pathologies in Indian pregnant females remain pregnancy-induced hypertension and gestational diabetes which are commonly seen in pregnant females of advanced age.<sup>2</sup>

Gestational diabetes presents a transitory metabolic disorder diagnosed with impaired glucose tolerance during pregnancy causing a high glycemic index that could further cause various maternal and fetal complications. The main complications in pregnant females and their fetus by gestational diabetes mellitus includes perinatal mortality, neonatal hypoglycemia, respiratory distress syndrome, shoulder dystocia, fetal macrosomia, eclampsia, preeclampsia, hypertension, spontaneous abortion, and/or hydramnios.<sup>3</sup>

Another major disease affecting pregnant females is hypertension which leads to preeclampsia which represents a hypertensive disorder seen in the second half of the pregnancy and is characterized by proteinuria and high blood pressure. Hypertensive disorder of pregnancy affects the main body organs including the placenta, kidneys, liver, and brain, and can negatively affect the normal pregnancy evolution.<sup>4</sup>

Preventive care and screening are vital in reducing the impact of the pathologies on mother and fetus both. Also, both obstetric nurses and midwives that are involved in the care of pregnant females must have both practical and theoretical knowledge which is necessary for effective management, diagnosis, and evaluation of the pregnant female with a reduction in the mortality rates for female and infants and provide the effective healthcare to the pregnant females. Between the year 1990-2010, a significant decrease in infant mortality rates is seen from 400 deaths to 210 deaths per 100,000 live births on a global scale.<sup>5</sup>

Assessment of the practice, attitude, and knowledge of the obstetric nurses and midwives caring the pregnant females can help in giving the needed directions for better care practices for pregnant females. Previous literature data depicts limited access and lack of knowledge for the care of pregnant females that can further cause the ineffective management of these subjects in the identification and prevention of the pathologies related to the pregnancy. With the deficit of the standardized protocol concerning maternal care to subjects at risk of pregnancy-related complications, it can be a barrier to providing standard healthcare practices.<sup>6</sup>

Hence, the present study aimed to longitudinally assess the knowledge, attitude, and practice of nurses and midwives concerning pregnancy-induced hypertension and gestational diabetes. The study also aimed to assess the impact of the training program on pregnancy-induced hypertension (PIH) and gestational diabetes on the knowledge, attitude, and practice of nurses and midwives.

## **MATERIALS AND METHODS**

The present longitudinal clinical study aimed to assess the knowledge, attitude, and practice of nurses and midwives concerning pregnancy-induced hypertension and gestational diabetes.

The study also aimed to assess the impact of the training program on pregnancy-induced hypertension (PIH) and gestational diabetes on the knowledge, attitude, and practice of nurses and midwives. The study was done at Government Medical College and Hospital, Ratlam, Madhya Pradesh after the clearance was given by the concerned institutional Ethical committee. Informed consent in both verbal and written format was taken from all the participants before the study participation.

The study assessed 117 midwives and obstetric nurses and 31 were midwives who gave consent for study participation. The exclusion criteria for the study were other healthcare personnel and nurses working in neonatology and neonatal ICU, students, doctors, and physiotherapists were also excluded from the study. A consistent sample size was kept at all three stages of the study. The study included 63 obstetric nurses and midwives after getting informed consent.

All the subjects were given a performed, pre-validated, and structured questionnaire formed by a person expert in the field. The questionnaire was assessed concerning its competency for the obstetric nurses and midwives of India and its adaptability to the practice. Also, the questionnaire was assessed concerning its degree of difficulty for the items, contextual expressions, answer choice alternatives, reliability, and clarity of the text.

The questionnaire in the present study comprised 56 questions to assess the level of knowledge, attitude, and practice of obstetric nurses and midwives for the management of pregnancy-induced hypertension and gestational diabetes mellitus. The survey questionnaire comprised 15 items on knowledge of pregnancy-induced hypertension and gestational diabetes mellitus, 18 items about attitude, and 23 items about their practice.

The study was done in 5 stages where in the first stage, the knowledge, practice, and attitude of the obstetric nurses and midwives caring for pregnant females with pregnancy-induced hypertension and gestational diabetes mellitus were assessed and in the second phase, based on this evaluation, an educational program was developed for them. In the third phase, the educational program was conducted with 63 obstetric nurses and midwives. In the fourth phase, the knowledge, attitude, and practice were assessed in the obstetric nurses and midwives immediately following the training and educational program. In the final phase, the knowledge, attitude, and practice were reassessed after 3 months of the training program completion and the knowledge, attitude, and practice were analyzed by the obstetric nurses and midwives.

The training program was made based on the need of the obstetric nurses and midwives seen at the beginning of the study. The program focused on the care of subjects with gestational diabetes mellitus during pregnancy, delivery, and post-delivery. Also, it was based on knowledge of gestational diabetes, its etiology, and its effects on pregnancy, birth, and delivery. The educational program focused on pregnancy-induced hypertension, its management, the test for prediction of pathologic increase in hypertension during the last trimester, and the role of obstetric nurses and midwives in supervision and follow-up.

The data gathered were analyzed statistically using SPSS software version 21.0 along with ANOVA (analysis of variance) and Pearson correlation coefficient to find the relationship between the 3 domains assessed to the place of work, professional experience, gender, educational level, and age of the subjects. The significance level was kept at  $p < 0.05$ .

## **RESULTS**

The present longitudinal clinical study aimed to assess the knowledge, attitude, and practice of nurses and midwives concerning pregnancy-induced hypertension and gestational diabetes. The study also aimed to assess the impact of the training program on pregnancy-induced hypertension (PIH) and gestational diabetes on the knowledge, attitude, and practice of nurses and midwives. The study had 1.58% (n=1) male and 98.41% (n=62) female participants. The majority of the study subjects were in the age range of 40-49 years with 44.4% (n=28) subjects followed by 30.15% (n=19) subjects from 50-59 years, 14.28% (n=9) subjects in 30-39 years, 6.34% (n=4) subjects in 20-29 years, and least 1.58% (n=1) subject from >60 years of age. The majority of the participants had experience of 15-19 years with 19.04% (n=12) subjects followed by 20-4 years in 15.87% (n=10) subjects, and only 3.17% (n=2) subjects with experience of 35 years or more. The majority of the participants were posted in Obstetrics and Gynecology with 60.31% (n=38) subjects followed by 17.46% (n=11) subjects in the delivery room, 12.69% (n=8) subjects in the ICU, 4.76% (n=3) subjects in the OPD, and 3.17% (n=2) subjects in the emergency department (Table 1).

On comparing the practice scores in the study subjects, it was seen that before training the mean practice scores were  $16.93 \pm 5.93$  and had a confidence interval of 15.83-17.94 which increased significantly immediately after training, the mean practice scores were  $21.77 \pm 3.36$  with a confidence interval of 21.17-22.36. The scores were significant after 3 months with mean practice scores of  $22.15 \pm 1.96$  and a confidence interval of 21.76-22.46. The f-value was 63.32 and the p-value was  $<0.001$  as shown in Table 2.

For the attitude scores in the study subjects, before training the mean attitude scores were  $12.06 \pm 3.52$  with a confidence interval of 11.44-12.67 which improved significantly immediately after training to  $16.21 \pm 2.44$  with a 95% confidence interval of 15.82-16.64 and further improved to  $17.23 \pm 0.84$  at 3 months post-training with 95% CI of 17.08-17.38. The result was statistically significant with an f-value of 148.24 and a p-value of  $<0.001$  as depicted in Table 3.

Concerning the knowledge scores in the study participants, before training, mean knowledge scores were  $10.34 \pm 1.98$  with a 95% CI of 9.99-10.68 which significantly improved after training to  $14.14 \pm 1.28$  and 95% CI of 13.87-14.36 and further to  $13.52 \pm 1.44$  and 95% CI 13.27-13.77 at 3 months follow-up which was significant with  $p < 0.001$  (Table 4).

On assessing the correlation of scores of 3 scales and age and professional experience, it was seen that after the training program, all three scales showed a positive and significant correlation. However, before training, no significant correlation was seen between the attitude and the practice scale scores as shown in Table 5. The most commonly encountered challenges by the participants were lack of staff and high work pressure and the lack of proper training was reported by the participants before the training was given to them.

## **DISCUSSION**

The present study included 1.58% (n=1) male and 98.41% (n=62) female participants. The majority of the study subjects were in the age range of 40-49 years with 44.4% (n=28) subjects followed by 30.15% (n=19) subjects from 50-59 years, 14.28% (n=9) subjects in 30-39 years, 6.34% (n=4) subjects in 20-29 years, and least 1.58% (n=1) subject from >60 years of age. The majority of the participants had experience of 15-19 years with 19.04% (n=12) subjects

followed by 20-4 years in 15.87% (n=10) subjects, and only 3.17% (n=2) subjects with experience of 35 years or more. The majority of the participants were posted in Obstetrics and Gynecology with 60.31% (n=38) subjects followed by 17.46% (n=11) subjects in the delivery room, 12.69% (n=8) subjects in the ICU, 4.76% (n=3) subjects in the OPD, and 3.17% (n=2) subjects in the emergency department. These data were similar to the studies of Stan D et al<sup>7</sup> in 2022 and Whitehorn A et al<sup>8</sup> in 2021 where authors assessed subjects with demographic data comparable to the present study.

It was seen that for the practice scores in the study subjects, it was seen that before training the mean practice scores were  $16.93 \pm 5.93$  and had a confidence interval of 15.83-17.94 which increased significantly immediately after training, the mean practice scores were  $21.77 \pm 3.36$  with a confidence interval of 21.17-22.36. The scores were significant after 3 months with mean practice scores of  $22.15 \pm 1.96$  and a confidence interval of 21.76-22.46. The f-value was 63.32 and the p-value was  $<0.001$ . These results were consistent with the studies of Murray-Davis B et al<sup>9</sup> in 2022 and Gholamin K et al<sup>10</sup> in 2022 where authors reported similar changes in the practice scores following training in the nurses.

The study results showed that for the attitude scores in the study subjects, before training the mean attitude scores were  $12.06 \pm 3.52$  with a confidence interval of 11.44-12.67 which improved significantly immediately after training to  $16.21 \pm 2.44$  with a 95% confidence interval of 15.82-16.64 and further improved to  $17.23 \pm 0.84$  at 3 months post-training with 95% CI of 17.08-17.38. the result was statistically significant with an f-value of 148.24 and a p-value of  $<0.001$ . These results were in agreement with the previous findings of Soggiu-Duta CL et al<sup>11</sup> in 2019 and Anyati J et al<sup>12</sup> in 2020 where similar changes in the attitude scores were seen following training as in the present study.

It was also seen that concerning the knowledge scores in the study participants, before training, mean knowledge scores were  $10.34 \pm 1.98$  with a 95% CI of 9.99-10.68 which significantly improved after training to  $14.14 \pm 1.28$  and 95% CI of 13.87-14.36 and further to  $13.52 \pm 1.44$  and 95% CI 13.27-13.77 at 3 months follow-up which was significant with  $p < 0.001$ . These results aligned with the findings of Indarti J et al<sup>13</sup> in 2019 and Ramadurg U et al<sup>14</sup> in 2016 where knowledge improvement was shown by the authors after training.

For the correlation of scores of 3 scales and age and professional experience, it was seen that after the training program, all three scales showed a positive and significant correlation. However, before training, no significant correlation was seen between the attitude and the practice scale scores. The most commonly encountered challenges by the participants were lack of staff and high work pressure and the lack of proper training was reported by the participants before the training was given to them. These results aligned with the findings of Suff N et al<sup>15</sup> in 2011 and Utz B et al<sup>16</sup> in 2017 where a similar correlation was reported by the authors in their studies.

## CONCLUSION

Considering its limitations, the present study concludes that training and education poses a positive impact on the levels of practice, attitude, and knowledge of obstetric nurses and midwives for gestational diabetes and hypertension. However, the study was a single institute

study having a small sample size. Further longitudinal studies with larger sample sizes and longer monitoring are needed to reach a definitive conclusion.

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## TABLES

S. No	Characteristics	Number (n)	Percentage (%)
<b>1.</b>	<b>Gender</b>		
a)	Males	1	1.58
b)	Females	62	98.41
<b>2.</b>	<b>Age (years)</b>		
a)	20-29	4	6.34
b)	30-39	9	14.28
c)	40-49	28	44.4
d)	50-59	19	30.15
e)	>60	1	1.58
f)	Unanswered	1	1.58
<b>3.</b>	<b>Experience</b>		
a)	<5	9	14.28
b)	5-9	5	7.93
c)	10-14	6	9.52
d)	15-19	12	19.04
e)	20-24	10	15.87
f)	25-29	11	17.46
g)	30-34	7	11.1
h)	35 or more	2	3.17
<b>4.</b>	<b>Department</b>		
a)	Emergency	2	3.17
b)	OPD	3	4.76
c)	ICU	8	12.69
d)	Delivery room	11	17.46
e)	Obstetric gynecology	38	60.31

**Table 1: Demographic data of the study participants**

S. No	Practice	Mean ± S. D	CI (95%)	f-value	p-value
<b>1.</b>	<b>Before training</b>	16.93±5.93	15.83-17.94	63.32	<0.001
<b>2.</b>	<b>Immediately after training</b>	21.77±3.36	21.17-22.36		
<b>3.</b>	<b>3 months follow-up</b>	22.15±1.96	21.76-22.46		

**Table 2: Comparison of practice scores at different phases of the study**

S. No	Attitude	Mean ± S. D	CI (95%)	f-value	p-value
1.	Before training	12.06±3.52	11.44-12.67	148.24	<0.001
2.	Immediately after training	16.21±2.44	15.82-16.64		
3.	3 months follow-up	17.23±0.84	17.08-17.38		

**Table 3: Comparison of attitude scores at different phases of the study**

S. No	Knowledge	Mean ± S. D	CI (95%)	f-value	p-value
1.	Before training	10.34±1.98	9.99-10.68	207.63	<0.001
2.	Immediately after training	14.14±1.28	13.87-14.36		
3.	3 months follow-up	13.52±1.44	13.27-13.77		

**Table 4: Comparison of knowledge scores at different phases of the study**

S. No	Parameter	Attitude scores	Knowledge scores	Age	Professional experience
1.	Before training				
a)	Practice scores	0.23	0.14	0.24	0.22
b)	Attitude scores		0.17	0.04	0.01
c)	Knowledge scores			0.07	-0.003
d)	Age				0.72
e)	Professional experience				
2.	Immediately after training				
a)	Practice scores	0.43	0.34	0.14	0.22
b)	Attitude scores		0.36	0.18	0.16
c)	Knowledge scores			0.12	-0.12
d)	Age				0.72
e)	Professional experience				
3.	3 months after training				
a)	Practice scores	0.26	0.46	0.12	0.14
b)	Attitude scores		0.24	0.16	0.16
c)	Knowledge scores			0.03	-0.06
d)	Age				0.72
e)	Professional experience				

**Table 5: Correlation between scores of 3 scales and age and professional experience**