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Impact of Educational Programs about Methods of Assessment of Fetal Wellbeing during Pregnancy among Staff Nurses

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Abstract

Objective: Aims of the study are to study the impact of increased knowledge and awareness among staff nurses towards assessment of methods of fetal wellbeing to early identification of pregnancy outcomes and the frequency of interventions during delivery. Design: A quasi-experimental design was used in carrying out the study to impact knowledge and awareness assessment of methods of fetal wellbeing among staff nurses. The study was conducted at obstetric & gynecological department working at setting in Jarsh Governorate Hospitals & Prince Hussein Bin Abdullah Hospitals. Methods: The study sample consisted of all staff nurses working at obstetric & gynecological department in Jarsh Governorate Hospital & Prince Hussein Bin Abdullah Hospitals who have agreed to participate in the study. The current study has included 150 staff types of sample convenient sample. Results: The main findings of this study showed that there is a highly statistical significance differences between pre-test and post-test in all answers regarding knowledge about methods of fetal wellbeing assessment. Conclusion: Nurses have a major role to prevent the complication for the fetus and mother during pregnancy. Nurses coming in contact with the antenatal mothers should take initiative to provide necessary information to the women and the relatives on different methods used for the assessment of fetal wellbeing, so as to improve the quality of life among the pregnant women. For that they should adequate knowledge about all the aspects of fetal wellbeing, so that they can prevent the complication.

Keywords

Fetal Wellbeing, Educational Program

1. Introduction

Assessment of maternal and fetal well-being is the focus of prenatal care. Nursing responsibilities include heavy emphasis on teaching throughout the pregnancy. At each prenatal visit, it is the role of the nurse to screen the woman, monitor vital signs, perform other assessments as delegated by the primary care provider (PCP), answer questions and provide appropriate teaching. A nurse and trusted health care provider play a large role in teaching women about the importance of early and continued prenatal care [1].

Fetal monitoring in a wide sense means fetal surveillance but, practically, it is an indirect way to measure fetal wellbeing or the adequacy of fetal oxygenation and as such it is an integral part of the concept of "the fetus as a patient". Antepartum fetal surveillance technique allows detection of high-risk pregnancy before damage occurs. It is used to assess the wellbeing of the fetus at risk of adverse prenatal outcome associated with utero-placental insufficiency and is recommended for pregnancies that are at risk for hypoxia and stillbirth through providing early identification and intervention for fetal compromise [2] [3].

Fetal surveillance monitoring is now available and both patient mother and fetus can be assessed. Sophisticated technology and biochemical analyses aid in the care of both patients. Nurses working in modern obstetric units must understand a myriad of technologic and laboratory data to effectively care for the mother and fetus and to educate women regarding their choices fetal heart rate monitoring [4] [5].

Fetal movement remains as an area of interest for both the mother and the obstetrician. Fetal movement is a marker of wellbeing [6]. The mother usually feels the movements of her fetus for the first time (quickening) between 16th and 20th week. It is the first natural sensation of feeling like a light tapping or the fluttering of a butterfly. These sensations eventually become stronger and more regular as the pregnancy progresses. Usually, quickening occurs naturally at about the middle of a pregnancy. Fetal movement reassures the mother and provides an early perceptional link with her offspring. The primigravidae usually feel fetal movements for the first time at 18 to 20 weeks and multipara start feeling fetal movements at 16 to 18 weeks [7] [8].

The nurse is responsible for administering the test and for protecting the safety of the mother and the fetus throughout the testing period. The woman position should sit in a reclining chair in a semi-Flower's position. External electronic fetal monitoring devices are applied to record both uterine activity and fetal heart rate [9].

Significance of the Study

There is no previous study in Jarsh Governorate Hospital and Prince Hussein Bin Abdullah Hospitals to assess knowledge and awareness about assessment of methods of fetal wellbeing among staff nurses. Therefore this study is very urgently needed to focus among nurses to improve quality of antenatal care to optimize the health of the woman and the fetus and to increase the odds that the fetus will be born healthy to a healthy mother in a timely manner [10]. Ante-partum identification of the fetus at risk for preventable morbidity or mortality remains as the major challenge of modern obstetrics. Optimal test methods would assess fetal status, so the testing process must be cost-effective, accurate, and sensitive enough to detect pregnancies at risk and specific enough to identify pregnancies, which will have good outcomes [4].

Aims of the study: To study the impact of increased knowledge and awareness among staff nurses towards assessment of methods of fetal wellbeing to early identification of pregnancy outcomes and the frequency of interventions during delivery.

2. Methodology

2.1. Design, Setting and Participants

Design: A quasi-experimental study design was used in carrying out the study to impact knowledge and awareness assessment of methods of fetal wellbeing among staff nurses. The study was conducted at obstetric & gynecological department working at setting in Jarsh Governorate Hospitals & Prince Hussein Bin Abdullah Hospitals.

Hospital level and admission per year in Jarsh Governorate Hospitals the flow rate for normal deliveries in this hospital range from 1100 to 1200 cases annually. The investigator recruited the cases from the obstetric and gynecological department & Prince Hussein Bin Abdullah Hospitals in which the annual flow rate range from 2000 to 2500 per year.

Sample: The study sample consisted of all staff nurses working at obstetric & gynecological department in Jarsh Governorate Hospital & Prince Hussein Bin Abdullah Hospitals who have agreed to participate in the study. The current study has included 150 staff types of sample convenient sample (**Figures 1-3**).

2.2. Tools of Data Collection

Self-administered interview questionnaire this tool consisted of 2 parts
- **Part 1:** include the nurse's demographic data such as age, marital status, educational level, occupation and years of experience.
- **Part 2:** include questionnaire to assess staff nurse knowledge about assessment of methods of fetal wellbeing as definition, methods, time of testing, indication, its variables or components, its advantages & disadvantage, its interpretation, degree and the nurse roles during the test.

   Human rights and ethical considerations

   The ethical approval was obtained from ministry of health Jordan and Prince Hussein Bin Abdullah Hospitals and Jarsh Governorate Hospital that included in the study. Informed consent was obtained. Participant's rights were confirmed.

2.3. Validity of the Tools

A pilot study was conducted to test the feasibility, clarity and applicability of the developed tools, and to estimate the time needed to collect the data; it was carried out on 10% of each sample. The results of the pilot study were used to finalize the tool and schedule the time needed for the fieldwork. Some modifications were done in the questionnaires based on the finding of the pilot study.

2.4. Data Collection Procedure

The study was begun from the first of September 2015 to the end of September 2016. The researcher was started
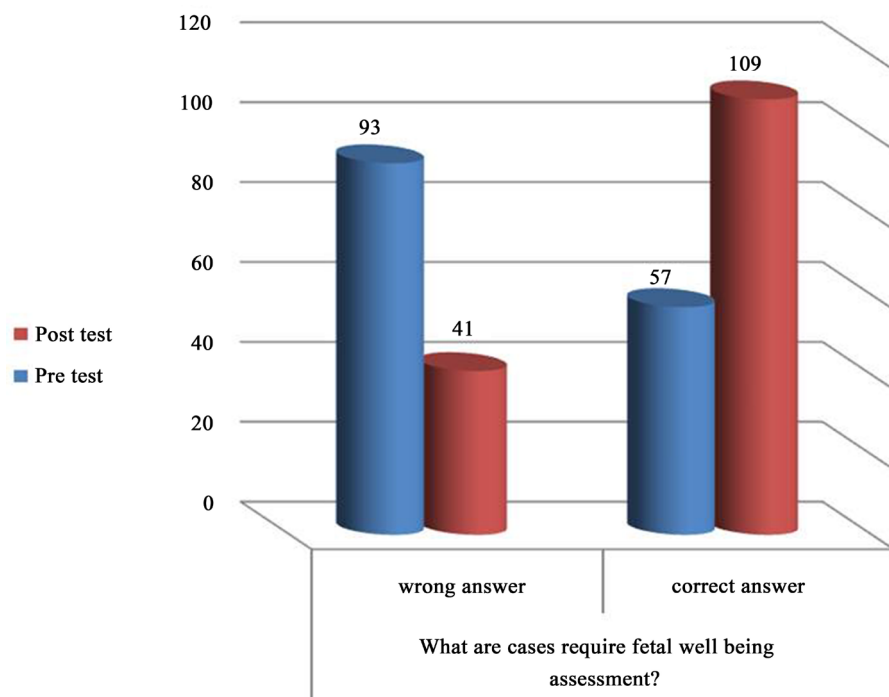

Figure 1. Bar chart show the difference of correct and wrong answers in pre and posttest regarding to what are cases require fetal wellbeing assessment, where the incidence of correct answer 109 in posttest was higher than 57 in pretest. Meanwhile, statistical significance differences was found at 1% level of statistical significance, where p-value ≤ 0.001.
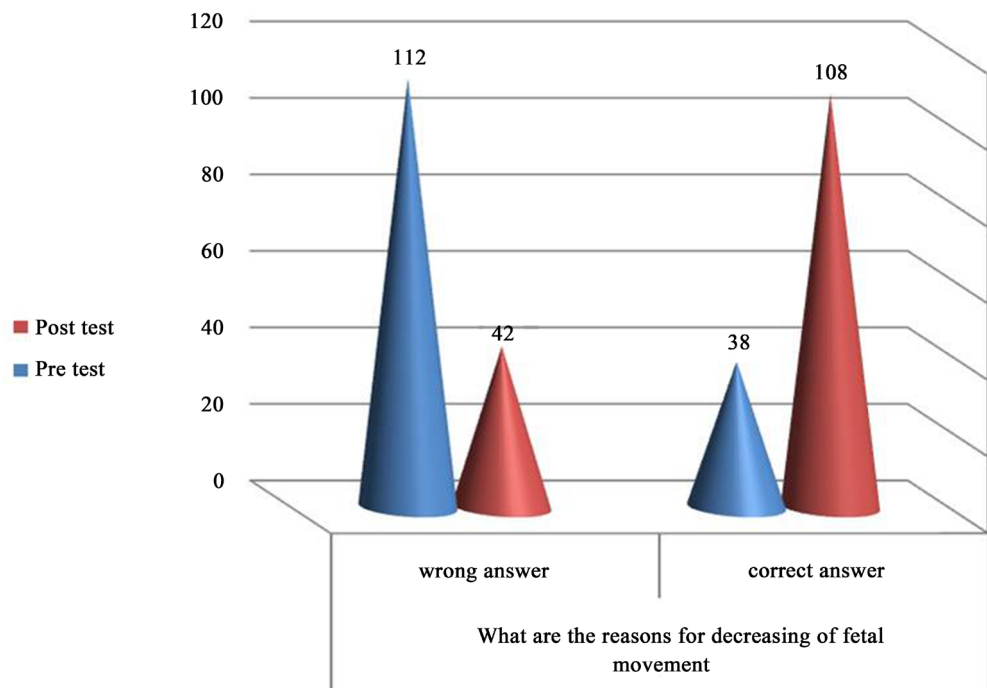
Figure 2. Par chart show the difference of correct and wrong answers in pre and posttest regarding to what are the reasons for decreasing fetal movement, where the incidence of correct answer in posttest 108 was higher than in pretest 38. Meanwhile, statistical significance differences was found differences at 1% level of statistical significance, where p-value ≤ 0.001.
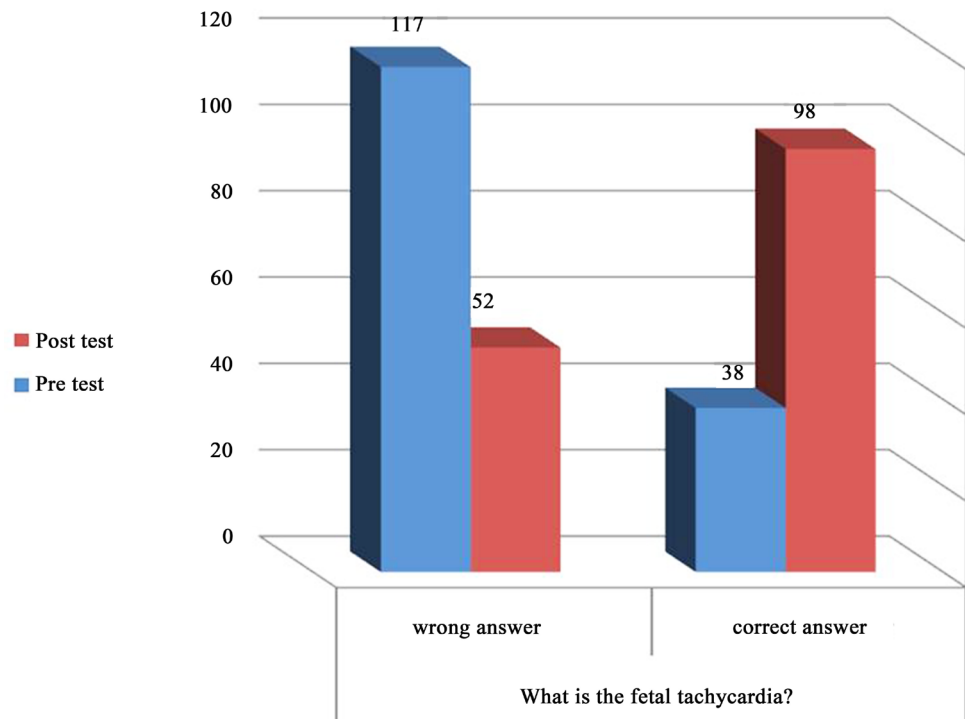

Figure 3. Par chart show the difference of correct and wrong answers in pre and posttest regarding to what is the fetal tachycardia, where the incidence of correct answer in posttest 98 was higher than in pretest 38. Meanwhile, statistical significance differences was found at 1% level of statistical significance, where p-value ≤ 0.001.

data collection from different subjects using the interview questionnaire. The designed questionnaire was distributed through meeting the staff nurses in the selected study settings with giving them instructions about each item and its filling called pretest exam. The study sample was filled the questionnaire in the working area during their shift.

Implement educational program informed that the purpose of the study was to improve our knowledge the researcher was explained definition and overview about fetal wellbeing, objectives, indications, methods of antepartum fetal assessment, fetal movement counting. In the second session, the researcher was explained non stress test (NST), contraction stress test (CST). In the third session, the researcher was explained definition of biophysical fetal profile (BPP), time of testing, indication of its use, its variables or components, its advantages, disadvantage, its interpretation, its degree, ultrasound and the nurse roles.

Nurses knowledge were evaluated to determine the extent of acquired knowledge by giving the same questionnaire called posttest exam (an immediate follow-up) where the time needed was about 10 - 15 minutes.

The staff nurses attending the session were interested of the topic, felt confident and could see that by participating they were highlighting issues. In addition, the language used in the program was easily understood and the nurses were selected the proper time to receive the session, therefore they benefited greatly.

2.5. Statistical Analysis

Data were statistically analyzed using SPSS statistical package social science version 12 on IBM compatible computer. Test of significance was used and level of significance is $p < 0.05$. Statistical presentation and analysis of the present study was carried out. Data were tabulated using the following.

3. Results

Table 1 basic demographic of the staff nurse participators in the study as indicated in the table regarding to staff nurses age range from 18 - 55 and the mean ± SD was 33.2 ± 10.6. The largest percentage of age (36.7%) was 20 - 30 years, while the small percentage of age (12%) was below 20 years. Considering with marital status, more than half of the staff nurse (65.3%) were married, while only (4%) were divorced. Concerning with the studying level of educational status, more than half of staff nurses (56%) had specialty nursing diploma. In relation to years of experience, slightly less than half of the staff nurse (46.7%) had more than 10 years of experience. Concerning with attending a training course before depicts that the majority of the staff nurse had not undergone training course (92.7%), while only (7.3%) attending course.

Table 2 represents comparison of knowledge about fetal wellbeing assessment among staff nurses on posttest than on pretest. A highly statistical significance differences was found at 5% and 1% level of statistical significance, where p-value ≤ 0.001.

This **Table 3** represents comparison of knowledge about nurse roles. It was obvious that staff nurses had higher knowledge on posttest than on pretest. The high percentage of staff nurse in correct answer was in question number two where the pretest was 44% and in posttest was 82%. A highly statistical significance differences was found at 1% level of statistical significance, where p-value ≤ 0.001.

4. Discussion

Nurses are primary care providers to patients. Hence it is very important that nurses possess adequate knowledge to implement the intervention appropriately thus it is important to identify and improve quality of nursing staff clinical performance [11]. Showed assessment of the staff nurse knowledge pre and posttest about electronic fetal monitoring it revealed that staff nurses had higher knowledge on posttest than on pretest. The high percentage of staff nurse in correct answer was in question number five where the pretest was 84.7% and in posttest was 88.7%. Therefore; there were statistical significance differences. The researcher's point of view that due to every staff nurse that represent the majority know what is the normal fetal heart rate perform correctly activities of the procedures. In addition, there is study conducted by [12], who recommended that the electronic fetal monitoring should be used as a screening test for all parturient women with indicate the importance of nurse role.

Also, [13] believed that the use of electronic fetal monitoring of limited effectiveness and carried an increased risk of interventions. Increasing information at admission through nurse staff would not necessary lead to better clinical outcomes. This may be true for a population provided comprehensive antenatal care and receiving appropriate personal attention.

Table 1. Distribution basic demographic of the staff nurse participators in the study.

Demographic data of the study members (n = 150)	No	%
Age/Year		
Below 20 years	18	12
20 - 30 years	55	36.7
31 - 40 years	43	28.7
More than 40 years	34	22.6
Marital. Status		
Single	37	24.7
Married	98	65.3
Divorced	6	4
Widow	9	6.0
Occupation (Categories of staff nurses)		
Nurse	98	65.3
Supervisor	27	18
Professional nurse	25	16.7
Professional qualification		
Nursing diploma	14	9.3
Specialty nursing diploma	84	56
Technical nursing institute	27	18
Bachelor of nursing	25	6.7
Experience/year		
Less than 2 years	25	16.7
From 2 to 5 years	20	13.3
From 5 to 10 years	35	23.3
More than 10 years	70	46.7
Have you attend a training course before?		
Yes	1	7.3
No	9	92.7
What are the sources of your information?		
Colleagues	65	43.3
Medical books	49	32.7
Educational services	14	9.3
Other	22	14.7

In the current study almost all the staff nurse did not have answer about biophysical fetal profile in pretest where this findings support the study of [9], in Bangalore Karnataka, who investigate the nurse have in adequate knowledge in the area wise analysis. It observed the maximum 54.23% mean percentage was in area of clinical

Table 2. Assessment of the staff nurse knowledge pre and posttest about fetal wellbeing assessment.

Variable	Pre test (n = 150)	Post test (n = 150)	X^2	p-value
1. Definition of fetal wellbeing assessment				
correct answer	80 (53.3%)	116 (77.3%)	18	<0.001**
wrong answer	70 (46.7%)	34 (22.7%)		
2. Objective of fetal wellbeing assessment				
correct answer	34 (22.7%)	76 (50.7%)	28.8	<0.001**
wrong answer	116 (77.3%)	74 (49.3%)		
3. Indication of fetal wellbeing assessment				
correct answer	57 (38%)	109 (72.7%)	35	<0.001**
wrong answer	93 (62%)	41 (27.3%)		
4. Methods of fetal well being assessment				
correct answer	27 (18%)	115 (76.7%)	101.2	<0.001**
wrong answer	123 (82%)	35 (23.3%)		

Table 3. Assessment of the staff nurse knowledge pre and post test about nurse roles.

Variable	Pre test (n = 150)	Post test (n = 150)	X^2	p-value
1. Methods of fetal wellbeing assessment is responsibility of				
correct answer	63 (42%)	110 (73.3%)	28.9	<0.001**
wrong answer	87 (58%)	40 (26.7%)		
2. Role of nurse during ultrasound scanning				
correct answer	66 (44%)	123 (82%)	44.8	<0.001**
wrong answer	84 (56%)	27 (18%)		
3. Gel placed on abdomen during ultrasound scanning				
correct answer	82 (54.7%)	119 (79.3%)	46.6	<0.001**
wrong answer	68 (45.3%)	31 (20.7%)		
4. Urinary bladder during ultrasound scanning should be				
correct answer	43 (28.7%)	94 (62.7%)	36	<0.001**
wrong answer	107 (71.3%)	56 (37.3%)		

methods of fetal wellbeing and the minimum 45.48% was in area of biophysical methods of fetal wellbeing assessment. The researcher's point of view in the current study that the majority of staff nurse participants have correct answer and gained more knowledge about biophysical fetal profile in posttest. The knowledge about biophysical fetal profile increased significantly. The session show significant remarkable effect of the result. Also [14], who reported about effects of educational program not only on their knowledge but also on their performance in nursing care where, the staff nurse gain real-world experience.

There are other studies by [15] in Lahore evaluated fetal biophysical profile as an effective technique for the assessment of fetal condition and to improve fetal outcome by early detection of fetal hypoxia. He showed that the patients having poor BPS, delivered babies with low Apgar score. However, despite the complaints of decreased fetal movements and clinically smallish babies, most of the patients had normal BPS and babies delivered with good Apgar score. It means BPS effectively detected those patients who really needed early interven-

tion and thus avoiding unnecessary inductions and cesarean sections with related morbidity. The fetal BPP appears to be an effective technique for assessment of fetal condition [16].

These study results suggest that nursing care include complete performance of antepartum fetal assessment (NST and BPP) for the woman with normal test results and that it involve the physician when nonreassuring results are found. Skilled nurses can perform and interpret antepartum testing, including biophysical profiles, and thereby improve the quality of care. Collaborative communication between non-site nurses and physicians at a distance will allow women whose test results are reassuring to remain in their communities, whereas those whose results are nonreassuring can be transferred to a prenatal center [17].

[18] determine the agreement between maternal perception of fetal movements and visualization by ultrasound. They showed a significant correlation between maternal perception (x) and ultrasound (y) p < 0.001. The agreement between ultrasound and maternal perception of fetal movement is good, allowing the use of fetal movement counting in the assessment of fetal wellbeing.

In the current study almost all the staff nurse did not have answer about their roles ,where this findings support the study of [9], who investigate the nurse have in adequate knowledge in the area wise analysis. The researcher's point of view, in the current study that there was a marked improving in knowledge was observed in all items.

These result indicated health knowledge were much stronger. The researcher's point of view suggests giving staff members opportunities to assume roles beyond primary responsibility, gain new skills and knowledge to work, access to session for learning new things encourage, feeling of achievement. It also increases motivation to further expand their skills. The educational session was effective in raising staff nurse awareness. The session shows a significant impact increase of the participants' level of knowledge which reinforce the continuing need for more education about methods fetal wellbeing assessment. It also increase motivation to further expand their skills, finally the session has a great effect because continuing education plays a significant role in equipping nurses to deal with the major changes currently making an impact on health care. Nurses today need knowledge and skills to perform and practice their job [19].

The researchers view that the staff nurse must be aware and have knowledge about methods of fetal wellbeing assessment because it is a corner stone in management of high risk pregnancy. Moreover, the result of the present study demonstrated that the staff nurse had better knowledge on posttest and there were highly statistical significant difference between pretest and posttest. This could be attributed to the fact that any training course increase nurses knowledge in turn changes their practice.

5. Conclusion

Nurses have a major role to prevent the complication for the fetus and mother during pregnancy. Nurses coming in contact with the antenatal mothers should take initiative to provide necessary information to the women and the relatives on different methods used for the assessment of fetal wellbeing, so as to improve the quality of life among the pregnant women. For that they should adequate knowledge about all the aspects of fetal wellbeing; so that they can prevent the complication.

Methodological Considerations

Further research is needed to assess the effects of fetal movement counting on hard outcomes such as stillbirth rates.

Acknowledgements

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