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# Effectiveness of capacity building programme on the competency of predicting preeclampsia by using glycosylated fibronectin as a point of care biomarker among staff nurses.

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## ABSTRACT

***Pre-eclampsia (PE) complicates 2–8% of pregnancies globally and 9% of maternal deaths are attributed to pre-eclampsia in Africa and Asia [1]. The study objective is to evaluate the efficacy of Capacity Building Programme on Predicting Preeclampsia using Glycosylated Fibronectin as a Point of Care Biomarker (GlyFn POC) among Staff Nurses. A pre-experimental design was conducted among 40 staff nurses selected through consecutive sampling techniques at selected hospitals, Chennai. Pretest was conducted using background variables proforma, Structured questionnaire on predicting preeclampsia by using (GlyFn POC), checklist to assess the competency on (GlyFn POC) and rating scale for the level of acceptability on capacity building programme. Capacity building programme was conducted by lecture cum discussion and demonstration method for 2hours. Post-test was done one week after the intervention, knowledge and skills were assessed using the same tool. The mean posttest knowledge scores on (GlyFn POC) was higher (21.87 ± 3.87) than the pretest knowledge scores (17.32 ± 3.45) significant at p <0.0001. Most of the staff Nurses acquired moderately adequate skills 65% in performing test with the (GlyFn POC) to Predict Preeclampsia. Thus, training program of the health care provider on the updated test helps them to predict preeclampsia at earliest and protects the pregnant women from complications***

***Keywords***: *GlyFn POC, Preeclampsia, Lumella, Capacity Building Programme*.

## 1. INTRODUCTION

According to the World Health Organization (WHO), pre-eclampsia occurs seven times more frequently in developing nations (2.8% of live births) than in more industrialized nations (0.4%). 1. According to the India National Health Portal (2016)2, 8–10% of pregnant women are said to have preeclampsia. When life-threatening complications first appear, getting the right care can take three steps: failing to recognize the problem's importance, delaying referral because of distance and access issues, and delaying starting treatment once the woman gets to the institution. In this study, the researcher alleviated the first stage of delay in recognizing the problem. Advancing accurate risk assessment of preeclampsia, biochemical markers can improve accurate clinical stratification and expectant management. Glycosylated fibronectin levels are elevated in preeclampsia.

Lumella[3] is the newer technology for the early diagnosis of preeclampsia which was invented in the western countries, staff nurses need to update their knowledge on the Lumella kit, in predicting the preeclampsia at the earliest. In order to empower the staff nurses, by updating their skills on Lumella kit for the effective usage, early identification of preeclampsia and prompt action to prevent the maternal and fetal complications.

 

Rasanen et al (2016)[4] evaluated the point of care (POC) test results and the relationship between preeclampsia and glycosylated fibronectin (GlyFn). Analysis was done on GlyF's capacity to predict preeclampsia status as well as its associations with maternal characteristics and pregnancy outcomes. With its ability to monitor preeclampsia in both standard and POC formats, GlyFn is a reliable biomarker that may be used in a variety of contexts.

In order to compare the efficacy of a glycosylated fibronectin (GlyFn) point-of-care (POC) test for pre-eclampsia (PE) to previously identified biomarkers in a sizable Southeast Asian cohort (India), Nagalla (2020)5 conducted a prospective case control study. The study comes to the conclusion that the LumellaTM GlcoyFn POC test has been validated for PE diagnosis in a low/middle-income country context and might be a helpful supplementary tool.

This study was designed to expand the nurse's knowledge on preeclampsia in order to promote early diagnosis of preeclampsia and conservative management to prevent the complications of preeclampsia. Even though there are studies available in western countries, researchers could not find much studies on (GlyFn POC) testing for preeclampsia in India. Therefore, the researcher has conducted this study to assess the effectiveness of capacity building program on knowledge and skills on predicting preeclampsia by using (GlyFn POC).

## 2. STATEMENT OF THE PROBLEM

A Pre-Experimental Study to Assess the Effectiveness of Capacity Building Programme on Competency of Predicting Preeclampsia by using Glycosylated Fibronectin as a Point of Care (GlyFn POC) Biomarker among Staff Nurses at Selected Hospitals, Chennai.

## 3. OBJECTIVES OF THE STUDY

1. To evaluate the level of Knowledge and Skills in Predicting Pre-eclampsia by using (GlyFn POC) Biomarker among staff nurses
2. To compare the knowledge and skill levels before and after the capacity building program in Predicting Pre-eclampsia by using (GlyFn POC) Biomarker among staff nurses.
3. To assess the level of acceptability on the capacity building programme in Predicting Preeclampsia by using (GlyFn POC) Biomarker among Staff Nurses.
4. To determine the association between the selected variables and pretest & posttest level of Knowledge and Skills on Predicting Pre-eclampsia by using (GlyFn POC) Biomarker among staff nurses.
5. To determine the correlation between knowledge and skills scores on using (GlyFn POC) biomarker to predict pre-eclampsia among staff Nurses.

## 4. MATERIALS

The tools were developed after extensive review of literature and in consultation with the opinion of experts. Background variable proforma consists of Age in years, Educational status, Designation, Years of Experience, source information regarding glycosylated fibronectin point of care biomarkers. Structured questionnaire consists of 30 items of multiple choice questions with four options, one right answer and 3 distractors on Preeclampsia & predicting preeclampsia by using glycosylated fibronectin as a point of care, checklist to asses skills includes 20 steps to be followed for glycosylated fibronectin point of care biomarker testing, which includes the steps to be performed before, during and after glycosylated fibronectin point of care biomarker testing.

## 5. ETHICAL CONSIDERATIONS

Ethical clearance and approval to conduct the study was obtained from institutional Ethics committee. After getting permission from the Authorities of hospital, purpose of the study was explained clearly to the participants and informed consent was obtained. Participants Confidentiality was maintained throughout the study and was informed about their voluntary participation and could withdraw at any time they during the study.

## 6. METHODS

Pre-experimental design was used to collect the data. A group of 40 staff nurses were selected using consecutive sampling techniques. They were divided into two groups 20 staff nurses for each group and teaching sessions for 2 hrs were conducted in two sessions. Pretest was conducted using structured knowledge questionnaire, followed by theoretical class was taken by the researcher through lecture cum discussion by using the power point presentation and demonstration video was played for orientation of the procedure, live demonstration was done by the researcher by using the (GlyFn POC) testing kit. Posttest was conducted after one week of intervention by using the structured knowledge questionnaire, checklist was used to assess the skill of the staff nurses in using the (GlyFn POC) testing kit for the Pregnant women. The gathered data were tabulated and appropriate descriptive and inferential statistics were used to analyze them.

## 7. RESULTS & DISCUSSION

The findings of the study shows that majority of the Staff Nurses were aged less than 25 years (85%). More than half of them have less than one year of experience (55%). Nearly half of the staff nurses (45%) were gained information regarding (GlyFn POC) from the books. The similar findings were highlighted by Hamida et al (2018) in his study where more than half of the staff nurses (56%) age was less than 30 yrs and 22% of them had < 2 yrs of experience which made it clear that most of the staff nurses are novice & interested to serve the pregnant women.

 

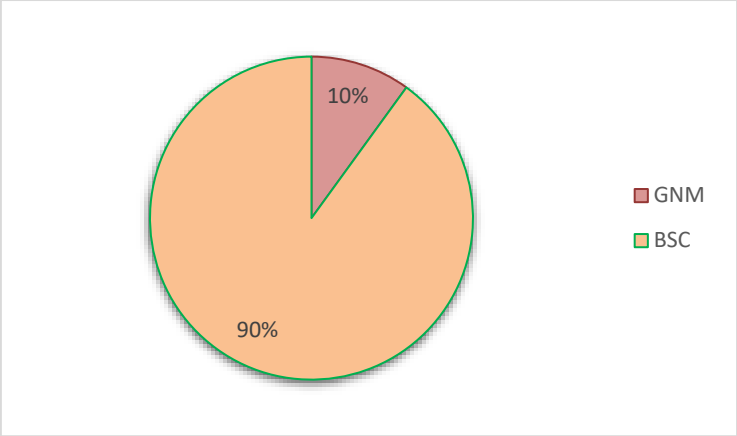


**Fig 1. Percentage Distribution of Educational Status of Staff Nurses.**

Fig 1 represents 90 % of Staff Nurses were graduates. Safaa (2017)[6] reported in his study that, most of the staff nurses (50%) are graduated with B.Sc. nursing. Thus, majority of staff nurses in hospitals graduates who render patient care.

**Tab.1. Comparison of Pre and Post-Test knowledge scores' Mean and SD among Nurses on (GlyFn POC) (N = 40)**

| Knowledge score | Mean | SD | t & p value |
|---|---|---|---|
| Pre-test | 17.325 | 3.459 | t value = 6.098337*** p value = 1.512 |
| Post test | 21.875 | 3.877 | |

Table 1. depicts that, the posttest mean knowledge scores on (GlyFn POC) (21.87±3.87) was higher than the pretest knowledge scores (17.32±3.45) was significant (p <0.000).

The similar findings were found by Safaa et al (2017) showed that the program made a success in improving the knowledge of nurses regarding the nature of preeclampsia; from only 20 to 44 optimal knowledge, the epidemiology from 12 to 40 optimal knowledge, the symptomatology from 16 to 48 optimal knowledge, the healthcare from 18 to 46 optimal knowledge, and consequences from 18 to 46 optimal knowledge (p<0.05). That shows the staff nurses need an upgradation of their knowledge with the frequent training courses on the Preeclampsia & Diagnostic modalities.

Remadurg et al (2016), has reported that in order to improve their knowledge and competence regarding the early diagnosis and rapid treatment of preeclampsia, nurses and community health workers need to undergo frequent training updates. The study findings showed that, the Skills (GlyFn POC) was improved among Staff Nurses after performing return demonstration with the equipment which is used to find out the Glycosylated Fibronectin as a point of Care Biomarker. This is a result of the Glycosylated Fibronectin being a useful point-of-care biomarker in the capacity building programme.

**Tab.2 Distribution of Frequency and Percentage of Post-test Skills on Glycosylated Fibronectin Point of care Biomarker (N = 40)**

| Level of Skills | f | % |
|---|---|---|
| Adequate skills | 14 | 35 |
| Moderately adequate skills | 26 | 65 |
| Inadequate skills | 0 | 0.0 |

Tab 2 shows that most of the staff Nurses acquired moderately adequate skills 65% in performing test with the (GlyFn POC) to Predict Preeclampsia

**Tab.3 Correlation between Post-Test Knowledge and Skill Scores on Predicting Preeclampsia using (GlyFn POC) among Staff Nurses (N = 40)**

| Variables | r Value | p value |
|---|---|---|
| Knowledge | 0.14919 | P > 0.05 |
| Skills | | |

Table 3 reveals that, there was a weak positive correlation between knowledge and skill on predicting Preeclampsia using Glycosylated fibronectin as a point of care Biomarker at p> 0.05 which was not significant.

 

Capacity Building Programme on Predicting Preeclampsia by using (GlyFn POC) were highly acceptable by majority of the Staff Nurses (88%). The above findings give a clear picture that everyone can benefit through capacity building programme on Predicting Preeclampsia by using Glycosylated Fibronectin as a Point of Care Biomarker.

There was no significant association between the selected background variables like age, education and source of Previous knowledge on glycosylates fibronectin point of care biomarker with pre-test and post-test level of knowledge and Post-test skills on predicting preeclampsia by using (GlyFn POC).

The findings of the study revealed that the knowledge and Skills outcome was better among Staff Nurses after the Capacity Building Programme on Predicting Preeclampsia by using Glycosylated Fibronectin as a Point of Care Biomarker. Thus the study supported the importance of providing training program to health care provider for protecting pregnant women and fetus from complication of preeclampsia

## 8. CONCLUSION

Alarmingly high maternal death rates exist. In 2017, almost 295 000 women lost their lives during, immediately after, or soon after childbirth. The vast majority of these fatalities (94%) happened in areas with little resources, and the bulk of them could have been avoided. Early identification can prevent pre-eclampsia, which contributed to 6.6% of all pregnancy-related issues[7]. Fibronectin Glycosylated as a Point of Care Since biomarkers have recently become more accurate at predicting preeclampsia, nurses and midwives should update both their knowledge and their skills to assure competency. Thus, the study backed up the need for health care providers to receive training in order to safeguard pregnant patients and the foetus from preeclampsia complications.

## 9. RECOMMENDATIONS

- To determine the accessibility and availability of Glycosylated Fibronectin Testing Kit by the staff nurses in the rural and urban healthcare facilities, a longitudinal study can be carried out.
- It is possible to compare settings in the public and private sectors.
- To generalise the findings, a wider population could participate in the same study.
- Nursing students can participate in the same study.

## 10. LIMITATION

- The study findings cannot be generalized due to small sample size.
- Setting was selected based on convenience of the researcher
- Researcher could not find much literature in this area.

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