

Effect of Self-Care Guidelines for Pregnant Women with Premature Rupture of Membrane on Pregnancy Outcomes

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Abstract

Background: Premature rupture of membranes (PROM) refers to the breaking of the amniotic sac before the onset of labor, occurring in approximately 8-10% of pregnancies. Complications associated with PROM include increased chances of infection, preterm labor, and adverse neonatal outcomes, such as low birth weight and respiratory distress syndrome. **Aim:** To evaluate the effect of self-care guidelines for pregnant women with premature rupture of membrane on pregnancy outcomes. **Design:** Quasi- experimental was utilized. **Setting:** Conducted at Maternity and Child Minia University Hospital in Minia governorate. **Sample:** A purposive sample of 80 pregnant women was gathered over a period of six months, starting on October 1, 2023, and ending on March 31, 2024. **Tool:** Three tools were used: A structured interview questionnaire, tool to assess women knowledge and self-care practices about PROM as well as a tool to assess maternal and neonatal Outcomes after delivery. **Results:** In this study premature rupture of membranes most common in the age group between 20 -35 years (81.2%), Primigravida (82.5%) and previous Caesarean section (46.2%), in addition 65% of pregnant women have good level of knowledge, 82.5% of the women have a satisfactory level of practices regarding PROM after program implementation. **Conclusion:** This result concludes that implementing self-care guidelines practices lead to better outcomes for both mothers and fetuses in cases of premature rupture of membrane post implementation program. **Recommendations:** It is recommended that these guidelines be incorporated as a standard protocol in maternity hospitals to support women with high-risk pregnancies and enhance overall outcomes.

Key words: Maternal and fetal outcomes, premature rupture of membrane, pregnant women, self-care guidelines.

Introduction:

Usually, when the cervix is fully dilated during childbirth, the membranes rupture. When the membranes rupture after 37 weeks but before labor starts, this is known as premature rupture of membranes. The rupture of the membranes before to 37 weeks of pregnancy is known as PROM. About 3% to 4% of pregnancies result in pre-labor rupture of the membranes, a serious obstetric issue that is commonly ignored. Between 40% and 50% of premature deliveries are caused by it (Gondane Et al., 2024).

The prevalence of PROM is significantly higher than that of preeclampsia and gestational diabetes. More infant deaths and morbidities are caused by preterm PROM than by any other group of illnesses. The prevalence of PROM associated with preterm births has risen during the past three decades, despite notable advancements in prenatal care. With a primary focus on PROM examination and diagnosis, this research paper attempts to analyze and clarify the concepts associated with the condition (Qian Et al., 2023).

Preterm birth is one of the three leading causes of newborn mortality worldwide, and PROM is responsible for over 40% of preterm births. It is also associated with 18%–20% and 21.4% of perinatal deaths and morbidities, respectively. In both high- and low-income nations, it is a major contributor to maternal, newborn, and perinatal morbidity and mortality. Prelabor rupture of membranes (PROM), which is defined as rupture of the membranes before to the start of labor, complicates less than 10% of pregnancies. (Wolde, M Et al., 2023).

Prior history of PROM (recurrence risk ranging from 16% to 32% compared to 4% in non-complicated term

pregnancies), vaginal bleeding prior to delivery, prolonged steroid use, abdominal trauma, history of preterm labor, cigarette smoking, drug abuse, anemia, low body mass index (less than 19.8 kg/m²), food deficiencies (ascorbic acid and copper), history of hypertension, abortion, cesarean section, Black racial/ethnicity, access to hospital care services, marital status, parity, uterine exposure to diethylstilbestrol are all risk factors for PROM (Abdel Maaboud Et al., 2021).

According to Esteves, (J. S. 2022) that show signs and symptoms of PROM, sudden gush of fluid: A noticeable leakage or gush of fluid from the vagina Continuous Leaking: persistent wetness or fluid leakage that doesn't stop. Foul smelling Vaginal Discharge: an unusual, strong odor from the discharge. Abdominal Pain: discomfort or cramping in the abdominal area. Fever: elevated body temperature, which could indicate an infection. Fetal Tachycardia: an unusually fast heart rate in the baby, especially if it's not related to the mother's temperature.

Overall, PROM is a significant contributor to perinatal morbidities and mortalities. Even premature rupture of the membrane has serious morbidity and mortality it is possible to minimize the morbidity and mortality with good clinical skills (Tiruye Et al., 2022).

The risk and severity of complications arising from PROM depend on gestational age, and generally decrease with increasing gestational age. For PROM at term with no associated infection or asphyxia, the neonate's risk of severe adverse outcomes is low. Despite the possibility of complications, birth between 32 and 36 weeks of pregnancy is generally associated with good newborn outcomes, especially if the fetus has demonstrated pulmonary maturity. In contrast,

the risk of complications significantly increases with decreasing gestational age. The risk of neonatal complications and morbidities is particularly high with early delivery following preterm PROM at 23 to 30 weeks' gestation. (Bracha, L. 2021).

Significance of the Study:

In Egypt, approximately 30% of preterm births are related to preterm rupture of membranes. PROM is a serious condition leading to approximately one-third of preterm births and it complicates about 3% of pregnancies (Ali Et al.,2020).

Self-care guidelines have additionally been suggested as a potential way to improve outcomes for pregnant women who experience premature rupture of membranes. Researchers can determine if self-care recommendations, including as dietary guidelines, activity restrictions, and symptom monitoring, can improve outcomes. In order to develop effective management plans for this high-risk pregnancy, healthcare practitioners require essential information.

In addition, providing pregnant women with PROM self-care guidelines can significantly improve outcomes for both mothers and neonatal, reduce medical costs, and empower patients to take charge of their own care. This may have a significant effect on the mother's and the child's health.

Aim of study:

To evaluate the effect of self-care guidelines for pregnant women with premature rupture of membrane on pregnancy outcomes.

Research hypothesis:

- Implementing self-care guidelines for pregnant women with premature rupture of membrane will improve level of women knowledge regarding PROM.
- Implementing self-care guidelines for pregnant women with premature rupture of membrane will decrease maternal and fetal complications and improve pregnancy outcomes.

Research Design:

To accomplish the goal of the current study, a quasi-experimental design was utilized.

Setting:

The study was conducted in the prenatal and high-risk pregnancy department at Maternity and Child Minia University Hospital in Minia governorate. The hospital provides primary treatment for expectant mothers living in Minia city, nearby cities, and surrounding villages.

Sample Type:

The sample type for this study was purposive sample. This approach involves enrolling participants who meet the inclusion criteria and are available during the recruitment period until the desired sample size is reached.

Sample Size:

The sample size was determined based on relevant characteristics (e.g., age, gestational age, socio-demographic status, etc). This ensures that the sample reflects the population of interest more accurately. 80 women represented the sample size, which was gathered over a period of six

months, starting on October 1, 2023, and ending on March 31, 2024, when data collecting for the study began.

Inclusion criteria:

- Pregnant women between 34 and 39 weeks of gestation.
- Confirmed clinical diagnosis of PROM.

Exclusion criteria:

- Pregnant women with intra uterine fetal death (IUFD).
- Women who refused to participate in the study.

Data collection tools:

It was developed by the researcher after extensive review of related literatures

Tool I: A structured interview questionnaire: it consisted of two parts:

Part 1: Socio Demographic characteristics and past obstetric history:

Socio-demographic characteristics include: (age, residences, educational level, occupational status of mother, and body mass index) Past obstetric history includes: (Gravidity, Parity, history of abortion, mode of last delivery, previous obstetrical complications)

Part II: Present obstetrical history and assessment of neonatal condition during pregnancy:

Present obstetrical history includes current gestational age, space between this pregnancy and previous pregnancy, regular antenatal follow up, and number of visits.

Assessment of neonatal conditions during pregnancy includes: assessment of fetal movements, fetal heart rate, characteristics of amniotic fluid, time of rupture membrane, neonatal complications, and management plan for PROM.

Tool II: Tool to assess women knowledge and self-care practices about PROM

Assessment women knowledge it contained 30 items as 5 categories had a multiple answer such as definition of PROM, causes of PROM, sign and symptoms of PROM, risk factors of PROM, complications of PROM.

Assessment women knowledge about self-care guidelines practices toward PROM: it consists 22 items as 3 categories such as prevent infection and change pads, decrease activity, maintain antenatal care.

Tool III: Tool to assess maternal and neonatal Outcomes after delivery:

Part I: To assess maternal condition and maternal complication:

maternal conditions assessment for gestational weeks of labor, mode of delivery, time of ROM to delivery, assess women knowledge and practices post implementation program. Maternal complication during labor, duration of stay at hospital, postpartum complications.

Part II: assessment neonatal outcome after delivery: Assessment of neonatal outcomes and Apgar score.

Validity and Reliability:

The tool has been examined for the face and content validity by 5 experts in the field of obstetrics and gynecologic nursing specialist Furthermore, the tool was examined for its reliability and the obtained values of Cronbach's alpha test coefficient was 0.745, 0.718, 0.383 for tool I, tool II and III respectively. These tests indicated that the tool was reliable.

Data Collection Procedure:

Researcher Visits: to gather research data from the pregnant women with PROM, the researcher spent two days a week at Minia University Hospital for Maternity and Child.

Recruitment of Participants: pregnant women who fulfilled the study's criteria were asked to participate, and after being informed of the study's goal, they were required to provide written consent.

Interviewing Participants: interview participants to obtain baseline information on their knowledge about PROM.

Initial Assessment: the researcher used questionnaires to collect preliminary data from expectant mothers and evaluate their general knowledge of the PROM (tool I & tool II) (pre-test).

Session scheduling: the first instructional session was planned by the participants and the researcher at a time that worked for everyone.

Implementation Phase:

Group division: Depending on the number of cases available, pregnant women with PROM were divided into smaller groups of five to seven people.

Teaching Sessions: Every week, the researcher gave a set of two instructional sessions that lasted 30 to 40 minutes each.

In the first session, the goal, prevalence, risk factors, and symptoms of PROM are introduced. The information was given to the participants through lectures, videos, and images.

In the second session: talking with the pregnant women about the seriousness of pregnancy complications related to PROM and how to adopt a healthy lifestyle that will reduce these issues, such as physical activity (including what is and is not permitted during the third trimester), exercise (when to practice and when to stop, what she can exercise), rest (preferred duration and position), personal hygiene (vaginal care and self-care), smoking (how to avoid and its effect on pregnancy), sexual relations (prevention and stress management), hospitalization (danger signs), and social support (transportation and home management).

Results:

Table (1): Distribution of the women according to their socio-demographics characteristics (N=80):

| socio-demographics characteristics | N | % |
|------------------------------------|-----------------------|------|
| Age: | | |
| less than 20 years | 7 | 8.8 |
| 20 -35 years | 65 | 81.2 |
| More than 35 years | 8 | 10.0 |
| Age (mean±SD): | 26.275±5.741 | |
| Occupational status: | | |
| Housewife | 73 | 91.2 |
| Worked | 7 | 8.8 |
| Education level: | | |
| Illiterate | 7 | 8.7 |
| Primary | 2 | 2.5 |
| Secondary | 43 | 53.8 |
| University | 28 | 35.0 |
| Residences: | | |
| Rural | 34 | 42.5 |
| Urban | 46 | 57.5 |
| Mother's weight: (mean±SD): | 70.80±10.316 | |
| Mother's height: (mean±SD): | 163.575±4.9753 | |
| Body mass index: | | |
| Normal Weight (18.5-24.9) | 30 | 37.5 |
| Overweight (25-29.9) | 42 | 52.5 |
| Obesity (30 and above) | 8 | 10.0 |
| Body mass index (mean±SD): | 26.256±3.069 | |

Evaluation Phase:

Evaluation following program implementation: to determine whether participants' knowledge and self-care practices on PROM had changed, they were reviewed using tools II and III as previously.

Pilot study:

A pilot study will be conducted on 10 % (8%) of the study sample to assess tools for its clarity, for face, content validity, clarity, relevance, comprehensiveness, understanding, applicability, and easiness, and time required to be applied. According to the results of the pilot, all required and necessary modifications will be done.

Ethical consideration:

- Research proposal approved from ethical committee and post graduate committee in Faculty of Nursing.
- An official permission obtained from the dean of the Faculty of Nursing and requested to the manager of the Minia University Hospital for Obstetric and Pediatrics.
- Written consent obtained from the participants that willing to participate in the study, after explaining the nature and purpose of the study.
- Study subject have the right to refuse to participate or withdrawal from the study without any rational.
- Study subject privacy considered during collection data.
- Participants assured that all their data are highly confidential.

Statistical Analysis:

The collected data will be summarized, analyzed, tabulated by using descriptive and inferential statistics suitable for the analysis of the study results will be done by using SPSS version (20). The level of significance will be accepted at $p < 0.05$ and will be considered significant when P-value less than or equal 0.01.

Table (1): It displays the sociodemographic characteristics of the women who were studied. It was found that 81.2% of the women were between the ages of 20 and 35, with a mean age of 26.275±5.741 years; 91.2% were housewives; 53.8% graduated from secondary school; 57.5% lived in urban areas; and the average weight and height of the women were 70.80±10.316 and 163.575±4.9753 respectively, with 52.5% of them being overweight.

Table (2): Distribution of the women according to past obstetric history (N=80):

| past obstetric history | N | % |
|--|----|------|
| Gravidity: | | |
| Primigravida | 66 | 82.5 |
| Multigravida | 14 | 17.5 |
| Parity: | | |
| None | 24 | 30.0 |
| Primipara | 20 | 25.0 |
| Multipara | 36 | 45.0 |
| History of abortion: | | |
| Yes | 31 | 38.7 |
| No | 49 | 61.3 |
| Mode of last delivery: | | |
| None | 24 | 30.0 |
| NVD | 19 | 23.8 |
| cesarean section | 37 | 46.2 |
| Previous obstetrical complication | | |
| Pregnancy induced hypertension | 5 | 6.3 |
| Gestational diabetes | 6 | 7.5 |
| Anemia | 28 | 35.0 |
| Vaginal infection | 6 | 7.5 |
| Trauma of abdomen | 2 | 2.5 |
| Polyhydramnios | 2 | 2.5 |
| Others: (Cervical operation Cervical cerclage) | 3 | 3.9 |

Table (2): According to the study's findings regarding past obstetric history, 82.5% and 45.0% of the women where it is primigravida and multipara, respectively; approximately 38.7% of them had abortions before; 46.2% previous CS; 35.0% had anemia; and 7.5% had gestational diabetes and vaginal infection.

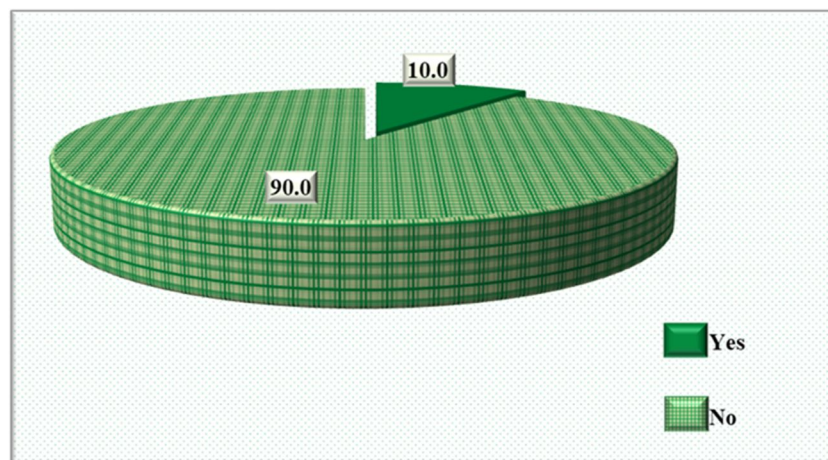


Figure (1): Distribution of the women according to Previous history of PROM (N=66):

Figures (1): Shows that 90% of the women in the study had no history of PROM, while 10% had.

Table (3): Distribution of the women according to current obstetric history (N=80):

| Current obstetric history | N | % |
|---|----|------|
| Gestational age: | | |
| 34 <37 | 62 | 77.5 |
| 37 or more | 18 | 22.5 |
| Space between this pregnancy and previous pregnancy: | | |
| Primigravida | 14 | 17.5 |
| <2 years | 61 | 76.2 |
| 3 or more years | 5 | 6.3 |
| Regular antenatal follow up: | | |
| Yes | 65 | 81.2 |
| No | 15 | 18.8 |
| Number of visits: | | |
| 1 < 3 visits | 25 | 31.3 |
| 3 and more visit | 55 | 68.7 |
| Associated risk factors | | |
| Pregnancy induced Hypertension | 5 | 6.3 |
| Gestational diabetes | 3 | 3.8 |
| Previous PROM | 10 | 12.5 |

| Current obstetric history | N | % |
|--|-----------|--------------|
| Anemia | 15 | 18.8 |
| Vaginal infections | 68 | 85.0 |
| Chronic cough | 3 | 3.8 |
| vaginal bleeding | 11 | 13.8 |
| Multiple pregnancy | 9 | 11.3 |
| Others (cigarette smoking, vaginal bleeding) | 5 | 6.3 |
| Women psychological factors addition to pregnancy: | | |
| Fear | 27 | 33.8 |
| Anxiety | 55 | 68.8 |
| Stress | 37 | 46.3 |
| Any medication taken according to clinical practice guidelines (CPGs) | | |
| Tocolytics drugs | 34 | 42.5 |
| Corticosteroid | 80 | 100.0 |
| Antibiotics | 80 | 100.0 |
| Progesterone | 46 | 57.5 |
| Magnesium sulfate | 18 | 22.5 |
| Women physical activity habits: | | |
| Carry heavy objects | 65 | 81.2 |
| Sleep > 8 hours | 6 | 7.5 |
| Daily transportation | 9 | 11.3 |

Table (3): Represents the women's current obstetric history. It was discovered that, with regard to current obstetric history, 77.5% of the women in the study had gestational age greater than 37 weeks, 76.2% Less than 2 years between this pregnancy and the previous one, 81.2% had a routine prenatal examination, 68.7% had more than three prenatal visits, and 85.0% had a risk factor for PROM from vaginal infections. Of them, 68.8% experienced anxiety, 100.0% took corticosteroids and antibiotics, and 81.2% carried out heavy things as part of their physical activities.

Table (4) Distribution of the women according to their knowledge regarding meaning and risk factors of PROM pre and post implementation program (N=80):

| | Pre implementation | | Post implementation | | p-value |
|---|--------------------|-------------|---------------------|-------------|----------------|
| | N | % | N | % | |
| What are you know about PROM? | | | | | |
| The disruption of fetal membranes before the onset of labor | 16 | 20.0 | 77 | 96.2 | 0.001** |
| I don't know | 64 | 80.0 | 3 | 3.8 | |
| Risk factors of PROM | | | | | |
| Low socioeconomic conditions | | | | | |
| Yes | 30 | 37.5 | 38 | 47.5 | 0.008** |
| No | 50 | 62.5 | 42 | 52.5 | |
| Sexually transmitted infections | | | | | |
| Yes | 36 | 45.0 | 41 | 51.2 | 0.063 |
| No | 44 | 55.0 | 39 | 48.8 | |
| Previous preterm birth | | | | | |
| Yes | 30 | 37.5 | 67 | 83.7 | 0.001** |
| No | 50 | 62.5 | 13 | 16.3 | |
| Vaginal bleeding | | | | | |
| Yes | 49 | 61.2 | 53 | 66.2 | 0.125 |
| No | 31 | 38.8 | 27 | 33.8 | |
| Cigarette smoking during pregnancy | | | | | |
| Yes | 40 | 50.0 | 45 | 56.2 | 0.063 |
| No | 40 | 50.0 | 35 | 43.8 | |
| Weakening of the membrane | | | | | |
| Yes | 49 | 61.2 | 58 | 72.5 | 0.004** |
| No | 31 | 38.8 | 22 | 27.5 | |
| Uterine contraction | | | | | |
| Yes | 51 | 63.7 | 54 | 67.5 | 0.250 |
| No | 29 | 36.3 | 26 | 32.5 | |
| Infection | | | | | |
| Yes | 44 | 55.0 | 49 | 61.2 | 0.063 |
| No | 36 | 45.0 | 31 | 38.8 | |
| History of PROM | | | | | |
| Yes | 53 | 66.2 | 77 | 96.2 | 0.001** |
| No | 27 | 33.8 | 3 | 3.8 | |

Table (4) Illustrates knowledge about PROM (meaning and risk factors) in pre and post- implementation program, and clarified that there was highly statistical significant difference between pre and post implementation program regarding knowing the meaning of PROM at p-value 0.001. Concerning knowledge about PROM's risk factors, there was highly statistical significant difference between pre and post implementation program regarding knowing low socioeconomic conditions, previous preterm birth, weakening of the membrane, and history of PROM as a risk factors for PROM at p-value <0.01.

Table (5) Distribution of the women according to their knowledge regarding symptoms and complications of PROM pre and post implementation program (N=80):

| Items | Pre implementation | | Post implementation | | p-value |
|--|--------------------|------|---------------------|-------|---------|
| | N | % | N | % | |
| Signs and symptoms of PROM | | | | | |
| Sudden gush of fluid from the vagina | | | | | |
| Yes | 57 | 71.3 | 78 | 97.5 | 0.001** |
| No | 23 | 28.7 | 2 | 2.5 | |
| Leakage of fluid | | | | | |
| Yes | 52 | 65.0 | 77 | 96.2 | 0.001** |
| No | 28 | 35.0 | 3 | 3.8 | |
| Others(fever, abdominal pain, fetal tachycardia) | | | | | |
| Yes | 36 | 45.0 | 35 | 43.7 | 0.972 |
| No | 44 | 55.0 | 45 | 56.3 | |
| Complications of PROM | | | | | |
| Placental abruption | | | | | |
| Yes | 47 | 58.7 | 69 | 86.2 | 0.001** |
| No | 33 | 41.3 | 11 | 13.8 | |
| Compression of the umbilical cord | | | | | |
| Yes | 45 | 56.3 | 58 | 72.5 | 0.001** |
| No | 35 | 43.7 | 22 | 27.5 | |
| Cesarean birth | | | | | |
| Yes | 55 | 68.7 | 79 | 98.7 | 0.001** |
| No | 25 | 31.3 | 1 | 1.3 | |
| Postpartum infection | | | | | |
| Yes | 53 | 66.2 | 70 | 87.5 | 0.001** |
| No | 27 | 33.8 | 10 | 12.5 | |
| Chorioamnionitis | | | | | |
| Yes | 41 | 51.2 | 47 | 58.7 | 0.031* |
| No | 39 | 48.8 | 33 | 41.3 | |
| Postpartum hemorrhage | | | | | |
| Yes | 54 | 67.5 | 80 | 100.0 | 0.001** |
| No | 26 | 32.5 | 0 | 0.0 | |
| Preterm labor | | | | | |
| Yes | 58 | 72.5 | 80 | 100.0 | 0.001** |
| No | 22 | 27.5 | 0 | 0.0 | |
| Obstructed labor | | | | | |
| Yes | 59 | 73.7 | 80 | 100.0 | 0.001** |
| No | 21 | 26.3 | 0 | 0.0 | |

Table (5) Represents knowledge about signs and symptoms and complications of PROM in pre and post implementation program, and clarified that regarding symptoms of PROM, there were highly statistical significant difference between pre and post implementation program regarding knowing sudden gush of water out vagina and leakage of fluid as symptoms of PROM at p-value <0.01. Concerning knowledge about complications of PROM, there were highly statistical significant difference between pre and post implementation program regarding knowing placental abruption, compression of the umbilical cord, cesarean birth, postpartum infection, postpartum hemorrhage, preterm labor and obstructed labor as complications of PROM at p-value 0.001 for all, also there was statistical significant difference between pre and post implementation program regarding knowing Chorioamnionitis as a complication of PROM at p-value 0.031.

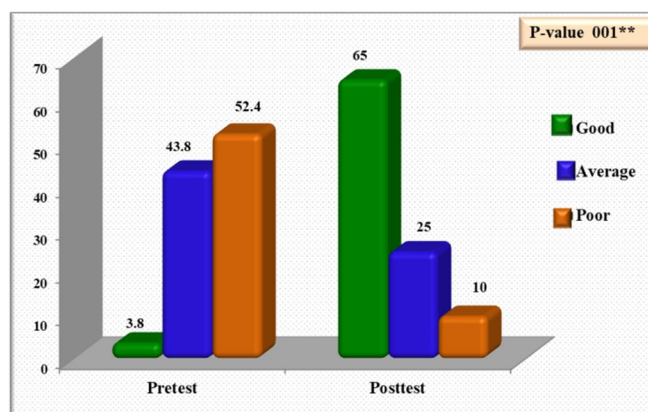


Figure (2) Distribution of the women according to total knowledge level about PROM in pre and post implementation program (N=80):

Figures (2): Illustrates that 3.8% of the studied women in pre implementation program had a good level of knowledge about PROM that improved in post implementation program to be 65% of them, about 43.8% and 52.4% in pre implementation program had average and poor level of knowledge respectively. While in post implementation program, 25% and 10% of the studied women had average and poor level of knowledge respectively, with highly statistically significant difference between pre and post implementation program at P-value 0.001.

Table (6) Distribution of the women according to their selfcare guidelines practices regarding prevent infection of PROM in pre and post implementation program (N=80):

| Items | Pre implementation program | | Post implementation program | | p-value |
|--|----------------------------|------|-----------------------------|-------|---------|
| | N | % | N | % | |
| How to prevent infection : | | | | | |
| Maintain general hygienic care | | | | | |
| Done | 34 | 42.5 | 45 | 56.2 | 0.001** |
| Not done | 46 | 57.5 | 35 | 43.8 | |
| Bathing daily | | | | | |
| Done | 52 | 65.0 | 80 | 100.0 | 0.001** |
| Not done | 28 | 35.0 | 0 | 0.0 | |
| Change clothes | | | | | |
| Done | 48 | 60.0 | 72 | 90.0 | 0.001** |
| Not done | 32 | 40.0 | 8 | 10.0 | |
| Maintain perennial care | | | | | |
| Done | 43 | 53.7 | 54 | 67.5 | 0.001** |
| Not done | 37 | 46.3 | 26 | 32.5 | |
| Monitor signs of infection such as increase temperature | | | | | |
| Done | 48 | 60.0 | 71 | 88.7 | 0.001** |
| Not done | 32 | 40.0 | 9 | 11.3 | |
| Change pads | | | | | |
| Change every 4 hours | | | | | |
| Done | 42 | 52.5 | 52 | 65.0 | 0.002** |
| Not done | 38 | 47.5 | 28 | 35.0 | |
| Change every 6 hours | | | | | |
| Done | 27 | 33.7 | 38 | 47.5 | 0.001** |
| Not done | 53 | 66.3 | 42 | 52.5 | |
| Change every 8 hours | | | | | |
| Done | 25 | 31.3 | 32 | 40.0 | 0.016* |
| Not done | 55 | 68.7 | 48 | 60.0 | |
| More than 8 hours | | | | | |
| Done | 6 | 7.5 | 24 | 30.0 | 0.001** |
| Not done | 74 | 92.5 | 56 | 70.0 | |

Table (6) Illustrates women’s self-care guidelines practices regarding PROM (prevent infection and change pads) in pre and post implementation program, and showed that practices regarding preventing infection, there were highly statistically significant difference between pre and post implementation program regarding maintain general hygienic care, bathing daily, change clothes, maintain perennial care, and monitor signs of infection such as increase temperature at p-value 0.001 for all. Concerning change pads’ practices, there were highly statistical significant difference between pre and post- implementation program regarding change every 4 hours, change every 6 hours and other time at p-value <0.01, also there was statistical significant difference between pre and post-implementation program regarding change every 8 hours at p-value 0.01

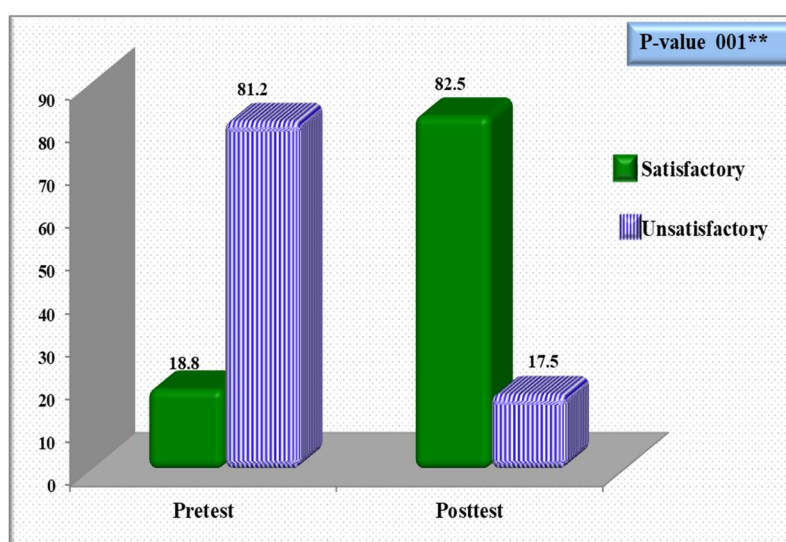


Figure (3) Distribution of the studied women’s total selfcare guidelines practices level regarding PROM in pre and post implementation program (N=80):

Figure (3): Illustrate that in pre- implementation program 18.8% and 81.2% of the studied women had satisfactory and unsatisfactory level of practices regarding PROM respectively, while in post- implementation program it changed to be 82.5% and 17.5% of them had satisfactory and unsatisfactory level of practices regarding PROM respectively, with highly statistically significant difference between pre and post implementation program at P – value 0.001.

Table (7) Distribution of the women according to maternal outcomes after delivery (N=80)

| Item | N | % |
|--|-----------|-------------|
| Gestational week of pregnancy | | |
| Before 37 weeks | 15 | 18.7 |
| After 37 weeks | 65 | 81.3 |
| time of ROM to delivery | | |
| >24 hours before delivery | 37 | 46.3 |
| <24 hours before delivery | 43 | 53.7 |
| Duration of hospital stay | | |
| >3 days | 16 | 20 |
| 3-7 days | 58 | 72.5 |
| 8 days or more | 6 | 7.5 |
| Maternal complications during labor | | |
| None | 43 | 53.7 |
| Obstructed labor | 10 | 12.5 |
| prolonged labor | 8 | 10 |
| abruption placenta | 6 | 7.5 |
| Infection (Chorioamnionitis) | 13 | 16.3 |
| Postpartum complications | | |
| None | 63 | 78.7 |
| Primary Postpartum bleeding | 13 | 16.3 |
| puerperal sepsis | 4 | 5 |

Table (7) Represents that 81.3 % of the studied women delivered after 37 weeks, about 46.3% of them had a duration of PROM >24 hours, 72.5 % of them stayed in the hospital from 3-7 days, about 16.3% of them had chorioamnionitis as maternal complication during labor, and primary Postpartum bleeding as post-partum complication.

Table (8) Distribution of the women according to neonatal outcomes (N=80):

| Item | N | % |
|--------------------------------------|--------------------|-------------|
| Birth weight | | |
| >2.5 kg | 40 | 50.0 |
| 2.5-3.5 kg | 39 | 48.7 |
| More than 3.5 kg | 1 | 1.3 |
| Birth weight(mean±SD) | 2.375±0.637 | |
| Admission to NICU | | |
| No | 60 | 75.0 |
| Immediately | 14 | 17.5 |
| Within 24 hours | 6 | 7.5 |
| Causes to admitted NICU | | |
| No admission | 60 | 75.0 |
| Need for resuscitation | 3 | 3.9 |
| Respiratory distress syndrome | 17 | 21.1 |
| Apgar score | | |
| Pulse | | |
| Absent | 2 | 2.5 |
| Less than 100 | 15 | 18.8 |
| More than 100 | 63 | 78.7 |
| Skin color | | |
| Cyanosis | 3 | 3.8 |
| Pink & hands and feet cyanosis | 16 | 20.0 |
| All the body pink | 61 | 76.2 |
| Grimace (reflex irritability) | | |
| No response | 4 | 5.0 |
| Grimaces | 12 | 15.0 |
| Sneezes cough or vigorous cry | 64 | 80.0 |
| Activity (muscle tone) | | |
| Absent | 2 | 2.5 |
| Arms and legs flexed | 14 | 17.5 |
| Active | 64 | 80.0 |
| Respiration | | |
| Absent | 2 | 2.5 |
| Gaspings, irregular | 13 | 16.3 |
| Good crying | 65 | 81.2 |

Table: (8) Reveals that 50.0% of the studied women their neonates had a weight less than 2.5 kg with mean ±SD of 2.375±0.637, 17.5% of them needed to admit immediately to NICU, about 21.1 % of them admitted to NICU with respiratory distress syndrome, 78.7 % of them had a normal pulse, 76.2% of them had pink color for all the body, about 80 .0 % of them had sneezes cough or vigorous cry and were active, concerning respiration, about 81.2 % of them had good crying.

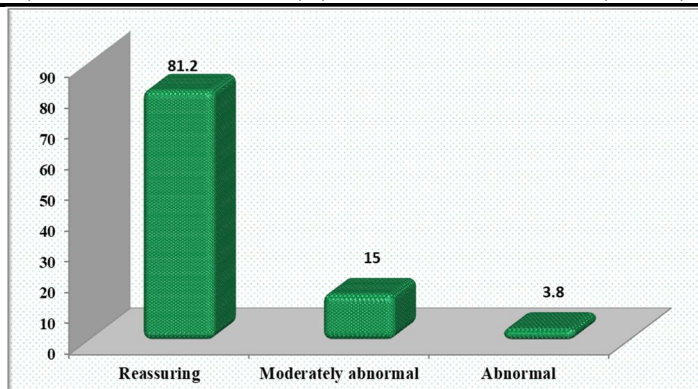


Figure (6): Distribution of the neonates according to total Apgar score after implementation program (N=80):

Figure (6) Illustrated that 81.2 % of the neonates of the studied women had reassuring fetal conditions, while 15% and 3.8% of them had moderately abnormal and abnormal fetal conditions.

Table (9) Correlation between total practices and sociodemographic characteristics in pre and post implementation program (n=80):

| Personal characteristics | | Total practices | |
|--------------------------|---------------------|----------------------------|-----------------------------|
| | | pre implementation program | post implementation program |
| Age: | Pearson Correlation | -.247* | .026 |
| | Sig. (2-tailed) | .027 | .819 |
| Occupational status: | Pearson Correlation | -.039 | .055 |
| | Sig. (2-tailed) | .731 | .156 |
| Education level: | Pearson Correlation | .426** | .398** |
| | Sig. (2-tailed) | .000 | .000 |
| Residences: | Pearson Correlation | .011 | -.070 |
| | Sig. (2-tailed) | .925 | .535 |
| Body mass index: | Pearson Correlation | -.009 | .093 |
| | Sig. (2-tailed) | .938 | .412 |

Table (9) Reveals that before implementation program there was negative correlation between the studied women’s age and total practices level. And there was highly positive correlation between educational level and total practices level before and after implementation program.

Table (10) Correlation between total practices and maternal outcomes in pre and post implementation program (n=80):

| Maternal outcomes | | Total practices | |
|------------------------------------|---------------------|----------------------------|-----------------------------|
| | | pre implementation program | post implementation program |
| Gestational weeks of labor | Pearson Correlation | .266* | .426** |
| | Sig. (2-tailed) | .017 | .000 |
| Time of ROM to delivery | Pearson Correlation | -.073 | .025 |
| | Sig. (2-tailed) | .521 | .824 |
| Mode of delivery : | Pearson Correlation | .106 | .143 |
| | Sig. (2-tailed) | .349 | .205 |
| Duration of hospital stay | Pearson Correlation | .078 | .128 |
| | Sig. (2-tailed) | .490 | .257 |
| Maternal complication during labor | Pearson Correlation | .399** | .243* |
| | Sig. (2-tailed) | .000 | .030 |
| Postpartum complication | Pearson Correlation | .268* | .255* |
| | Sig. (2-tailed) | .016 | .023 |

Table (10) Clarifies that before implementation program there was positive correlation between the studied women’s gestational weeks of labor and total practices level, and there was highly positive correlation after implementation program. And there was highly positive correlation between maternal complication during labor and total practices level before implementation program, and positive correlation after implementation program. Also, there was positive correlation between the studied women’s Postpartum complication and total practices level before and after implementation program.

Discussion:

Premature rupture of membranes (PROM), now also referred to as "pre-labor rupture of membranes," is the rupture of gestational membranes after 37 weeks but before the process of labor begins (Garg & Jaiswal, 2023). Its consequences vary from maternal and neonatal mortality and morbidity to country-wide economic loss (Habte et al., 2021). Premature rupture of the membrane is one of the complications linked to significant maternal and fetal morbidity and mortality. Adverse fetal birth outcomes are the

leading cause of neonatal morbidity and mortality worldwide, mainly in developing countries (Alene et al., 2024). Therefore, the current study was designed to evaluate the effect of self-care guidelines for pregnant women with premature rupture of membrane on pregnancy outcomes.

Other opinion was reported by Dawood & Mohammed, (2024), who achieved their study to investigate the relationship between folate, B12, and homocysteine in PPRM and assess the maternal and neonatal outcomes of PPRM, and indicated an increase in PROM and preterm

delivery in rural areas. Difference may be back to applying the study in a different setting and exposure to different circumstances.

Concerning past obstetric history, present study found that the majority and less than one half of the studied women were multigravida and multipara respectively, about less than two thirds of them has a previous abortion, regarding mode of last delivery, less than one half of them had cesarean section, as regard previous obstetrical complication, more than one third of them had anemia, and less than one tenth of them have gestational diabetes and vaginal infection.

Congruent with previous findings **Liang et al., (2024)**, who implemented their study in China to investigate the relationship between the long-term and short-term maternal exposure to air pollution and PROM, and found that the majority of studied women were multigravida. Additionally **Abdelwahid et al., (2023)**, who applied their study in Saudi Arabia to identify risk factors and outcome of premature rupture of membranes at term in low-risk patients, and found that more than one half of the studied women were multipara.

Regarding history of PROM, actual study demonstrated one tenth of the studied women had a history of PROM, while the great majority of them hadn't. In agreement with previous findings, **Habte et al., (2021)**, who achieved their study to identifying determinants of PROM among pregnant women admitted to public hospitals in Southern Ethiopia and showed that slightly more than one tenth of the studied women had a history of PROM.

On the other hand, **Gutema et al., (2021)** reported that more than one fifth of the studied women had a history of PROM. Additionally **Tiruye et al., (2021)**, who carried out their study in Ethiopia to identify the burden of premature rupture of the membrane and associated factors among pregnant women, and reported that the history of PROM was the strongest predictor for premature rupture of membranes in this study. Thus, women who had a previous history of PROM have 6.08-fold increased odds of developing premature rupture of membrane. This difference may back to presence of other risk factors that helped PROM to occur in current study.

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Regarding knowledge about PROM's meaning, present study reported that one fifth of the studied women in pre-test know correctly meaning of PROM, and clarified that there was highly statistically significant difference between pre and post-test regarding knowing the meaning of PROM. Around three fifths of the studied women in pretest know correctly the causes of PROM. And more than one half w correctly the signs and symptoms of PROM.

Similar findings was reported by **Laura & Br Sitepu, (2021)**, who applied study entitled "the knowledge level among third trimester pregnant women on PROM at Immanuela Clinic Batam", and represented that slightly more than one fifth of the studied women know correctly meaning of PROM, more than two thirds of the studied women had a good and sufficient knowledge about causes of PROM, and less than three fifths of them women had a good and sufficient knowledge about signs and symptoms of PROM. Similarity may be back to working on a similar sample (pregnant women). This agreement supports the obvious need to improve their knowledge regarding meaning of PROM.

Concerning the studied women's total level of knowledge about PROM in pre and posttest, present study clarified less than one tenth of the studied women in pre-test had a good level of knowledge about PROM that improved in post-test to be more than three fifths, about less than one half and more than one half in pre-test had average and poor level of knowledge respectively. While in post-test, one quarter and one tenth of the studied women had average and poor level of knowledge respectively, with highly statistically significant difference between pre and post-test at P-value 0.001.

Regarding level of practices regarding PROM, current study found that in pre-test less than one fifth and the majority of the studied women had satisfactory and unsatisfactory level of practices respectively, while in post-test it changed to be the majority and less than one fifth of them had satisfactory and unsatisfactory level of practices respectively, with highly statistical significant difference between pre and post-test at P – value 0.001, that was agreed with **Sharkawy et al., (2020)**, who achieved their study to investigate the effect of simulation-based educational program on maternity nurses' performance regarding obstetrical emergencies during pregnancy, and reported that there was highly statistical significant difference between pre and post-implementation program at P – value 0.001. This similarity back to implementing both studies in the same setting and support the vital role of educational intervention in improving practices regarding PROM. This result might be due to the learning sessions' effect and the studied sample interest in its content to improve their performance.

On the same line, **Aziz et al., (2023)**, who carried out their study in Indonesia to determine the relationship between

the level of knowledge about PROM before and after community education in terms of pre-test and post-test scores, and reported that there was highly statistical significant difference between pre and post-test at P-value 0.001. Moreover **Kasum, (2023)**, who applied their study to ascertain the association between the prevalence and knowledge of early membrane rupture and the age and parity of pregnant women, and demonstrated that there was an increase in average score of total knowledge about PROM with highly statistical significant difference between pre and post-teaching program. This agreement assured that the low level of knowledge of respondents could be due to lack of exposure to health information from health workers and information media such as television, books or newspapers, as well as unsupportive environmental factors, such as lack of access to health information from community leaders. And this improvement in the knowledge level might be due to active participation and good communication in the learning sessions with the researchers who helped them acquire knowledge.

On the other side **Lumbanraja et al., (2024)**, who implemented their study to determine the midwives' knowledge, attitude and healthcare practice on PROM in Indonesia, and reported that more than half of the studied midwives had a good and sufficient knowledge about PROM without intervention. This difference may be back to dissimilarity in the study sample.

Regarding correlation between total knowledge and total practices about PROM in pre and post implementation program, present study reported that there was highly positive correlation between the studied women's total knowledge and total practices level before and after implementation program. This was supported by **Sharkawy et al., (2020)**, who showed that there was relation between total knowledge and total practices PROM. This support that the vital role of having information in improving practice regarding PROM.

Concerning maternal outcomes after delivery, present study reported that the majority of the studied women delivered after 37 weeks, which is considered full term, more than half of them had a duration of PROM <24 hours, less than three quarters of them stayed in the hospital from 3-7 days, about more than one sixth of them had chorioamnionitis as maternal complication during labor, and primary Postpartum bleeding as post-partum complication. A significant portion of cases did not experience any maternal complications during labor.

Near to previous findings, **Sadia Ali Khan et al., (2024)**, who carried out their study to provide a comprehensive understanding of the fetal and maternal outcome with premature rupture of membranes at term, for a better management, and reported that one sixth and more than one tenth of the studied women had chorioamnionitis and pyrexia as a complication during labor. Additionally, **Abdelwahid et al., (2023)** illustrated that more than one third of the studied women had post-partum hemorrhage as a postpartum complications.

Regarding mode of delivery, actual study illustrates that more than two thirds of the studied women delivered by cesarean section, while less than one third had normal vaginal delivery. Near to previous findings, **Sadia Ali Khan et al., (2024)**, demonstrated that less than three fifths of the studied women delivered by cesarean section, this agreement showed that cesarean section delivery more common to occur with PROM. Other opinion was reported by **Alene et al., (2024)**,

who illustrated that slightly less than one quarter of the studied women had delivered by cesarean section. Difference may back to change in study setting and exposure to different rules and guidelines.

Regarding neonatal outcomes, actual study revealed that one half of the studied women their neonates had a weight less than 2.5 kg with mean \pm SD of 2.375 ± 0.637 , less than one fifth of them needed to admit immediately to NICU, more than one fifth of them admitted to NICU with respiratory distress syndrome, more than three quarters of them had a normal pulse and had pink color for all the body, the majority of them had sneezes cough or vigorous cry were active, concerning respiration, and had good crying.

On the same line **Abdelwahid et al., (2023)**, demonstrated that less than one third of the studied women admitted to NICU. And **Sadia Ali Khan et al., (2024)**, demonstrated that more than half of the studied women had a respiratory distress syndrome. This agreement showed that PROM had an effect on neonatal outcomes. On the other side, **Nossair et al., (2022)**, who carried out their study to improve the perinatal maternal and fetal/neonatal outcomes in cases with preterm premature rupture of membranes between 34 -37 weeks of gestations, and revealed that less than one third of the neonates admitted to NICU, dissimilarity may back to the gestational age of the studied mothers between 34 -37 weeks of gestations

As regard total Apgar scoring of neonates, present study demonstrated that the majority of the neonates of the studied women had reassuring fetal conditions, while one sixth and less than one tenth of them had moderately abnormal and abnormal fetal conditions. In agreement with previous findings, **Abdelwahid et al., (2023)**, showed that slightly more than one tenth of the neonates had respiratory distress. Other findings reported by **Nossair et al., (2022)**, who showed that nearly one third of the neonates had respiratory distress. Difference may back to working on pregnant women with age between 34 -37 weeks of gestations.

Conclusion

The present study concludes pregnancy-related complications for both mothers and fetuses are lower in the group post implementation program than pre implementation program that follow self-care recommendations. Moreover, applying self-care guidelines practices lead to better outcomes for both mothers and fetuses in cases of PROM in group post implementation program.

Recommendations:

Based on the study findings, it was recommended that: Apply self-care guidelines as protocol in maternity hospitals for management the women with PROM to promote positive fetal and maternal outcomes.

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