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Postpartum care in labor with indication of premature rupture of membranes

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ABSTRACT

Premature rupture of membranes (PROM) is an obstetric condition that occurs when the amniotic sac ruptures before 37 weeks of gestation, which can increase maternal and neonatal morbidity and mortality, thus requiring special attention in postpartum management. This study aims to explore appropriate postpartum care for patients experiencing PROM, with a focus on pain management, monitoring vital signs, and educating about postnatal warning signs. Using an evidence-based literature review method, 25 articles published between 2018 and 2024 were analyzed. The findings indicate that nursing interventions based on the Nursing Outcomes Classification (NOC) and Nursing Interventions Classification (NIC) can improve functional patterns in patients, although there is still a risk of complications such as uterine atony and postpartum hemorrhage. Emotional and psychological support were also identified as essential elements in postpartum care. This study emphasizes the need for a holistic approach in postpartum care to ensure optimal recovery and minimize long-term complications for both mother and baby.

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INTRODUCTION

Premature rupture of membranes (PROM) is an obstetric condition involving the rupture of the amniotic sac before the onset of labor. This condition can occur at a gestational age of less than 37 weeks, known as Preterm Premature Rupture of Membranes (PPROM), or at a gestational age of 37 weeks or more, referred to as Premature Rupture of Membranes (PROM) (Satria et al., 2023). According to the World Health Organization, PROM occurs in 8-10% of all pregnancies and is frequently associated with serious complications, including intrauterine infection, preterm birth, and postoperative pain, particularly in cases of cesarean delivery (Morales-Amao et al., 2024).

PROM increases maternal and neonatal morbidity and mortality, necessitating specialized postpartum management (Puteri et al., 2024). PROM impacts not only the labor process but also

has long-term implications for maternal and infant health. PPROM accounts for approximately one-third of all preterm births, with its incidence rising by 38% since 1981 (Sulawati & Kurniawati, 2020). For mothers, PROM can lead to significant postoperative pain, infections, and other complications, while for infants, it increases the risk of preterm birth and respiratory problems (Morales-Amao et al., 2024; Aquino-Risco et al., 2024). As a result, it is crucial for healthcare providers to deliver focused, evidence-based care during the postpartum period (Muhammad, 2016).

Government initiatives aimed at reducing maternal and infant mortality rates include implementing the Maternal and Neonatal Mortality Review (M3) program and early detection programs for pregnant women, such as the Birth Planning and Complication Prevention Program (P4K) and Antenatal Care (ANC) services (Rahayuningsih et al., 2021). These efforts are bolstered by improving healthcare providers' skills and knowledge through nursing interventions that include pain management, monitoring vital signs, and educating mothers on warning signs to watch for postpartum (Muliani, 2024). A study indicates that applying the Nursing Outcomes Classification (NOC) and Nursing Interventions Classification (NIC) taxonomies in planning nursing interventions can yield better outcomes in enhancing patients' quality of life (Morales-Amao et al., 2024). Furthermore, emotional and psychological support plays a critical role in postpartum care, as childbirth can be a traumatic experience for some mothers (Rahayuningsih et al., 2024).

Postpartum care for mothers with PROM is essential for ensuring optimal recovery and minimizing the risk of complications. In this context, proper nursing interventions can address issues such as postoperative pain and the prevention of uterine atony, one of the primary complications after delivery (Aquino-Risco et al., 2024). Previous research suggests that accurate nursing diagnoses and interventions based on the NANDA, NIC, and NOC taxonomies positively impact patients' functional patterns (Morales-Amao et al., 2024). This article aims to outline the postpartum care provided to patients experiencing PROM and emphasizes the importance of a holistic approach to postpartum care. By understanding and implementing appropriate interventions, healthcare providers can improve the quality of care for both mother and infant and reduce the risk of future complications.

RESEARCH METHOD

This study employed a comprehensive, evidence-based literature review method, analyzing 25 articles published between 2018 and 2024. During the article search process, the researchers adopted an approach that aligned with the findings within the articles, aiming to yield thorough and holistic insights. The literature search was conducted across various academic databases, including Semantic Scholar, Google Scholar, PubMed, and Elsevier, with highly specific keywords, such as "Postpartum Care," "Premature Rupture of Membranes," "Postpartum Labor," and "Literature Review," using Boolean operators ("OR") to refine and broaden the search results.

In the data screening process, the researchers systematically selected and filtered relevant articles based on specific inclusion criteria. Articles included were those employing descriptive methods, literature review, quasi-experimental designs, case studies, and those published in English or Indonesian, accessible free of charge. The initial search yielded a total of 246 identified journals, which were subsequently screened based on eligibility criteria, narrowing down to 25 articles that underwent further selective review. Finally, through a rigorous selection process using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method, the articles were filtered to match the study criteria, resulting in a final set of 15 articles for in-depth analysis within the literature review.

This methodical approach ensured a high-quality, relevant selection of literature, allowing for a detailed analysis of existing evidence and best practices in postpartum care, especially for cases involving premature rupture of membranes.

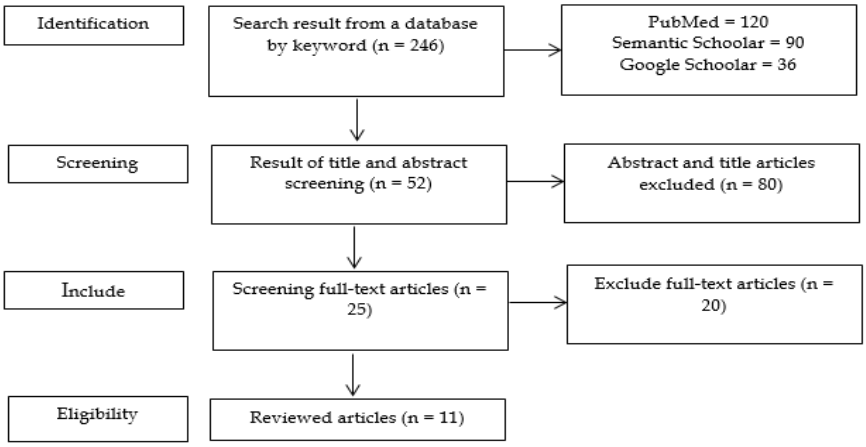

Figure 1. Article screening process using a PRISMA diagram

The article search process is illustrated using a PRISMA diagram based on the keywords "postpartum care," "labor," and "premature rupture of membranes." This study initially analyzed 246 journals, selecting 52 based on titles and abstracts, then filtering further to 25 journals, and finally reviewing 11 in detail. This screening process was carefully conducted to ensure relevance and alignment with the research objectives, thereby providing accurate and informative insights.

RESULTS AND DISCUSSIONS

Table 1. Summary and main finding

Article	Summary	Main Finding
(Morales-Amao et al., 2024)	This paper presents a qualitative clinical case study of a 31-year-old patient who underwent cesarean section for premature rupture of membranes (PROM), and describes the nursing care provided to this patient, including identification of nursing diagnoses, interventions, and outcomes (Morales-Amao et al., 2024).	Eight nursing diagnoses were identified, with acute pain due to the surgical procedure being the primary one. Nursing interventions were proposed based on the main diagnosis of acute pain, using NOC and NIC taxonomies. The nursing care provided had a positive effect on the patient's functional patterns, achieving optimal scores according to NANDA, NIC, and NOC taxonomies (Morales-Amao et al., 2024).
(Aquino-Risco et al., 2024).	This paper describes a case study of a 29-year-old patient who underwent cesarean section for premature rupture of membranes, and the role of nursing care in managing the patient's acute pain and risk of uterine atony in the postpartum period (Aquino-Risco et al., 2024).	Nine nursing diagnoses were identified, with acute pain related to surgical wound as the priority. Nursing interventions based on NOC and NIC taxonomies provided good outcomes for the patient. The study could not determine outcomes related to the risk of uterine atony, as the risk would persist for the following days (Aquino-Risco et al., 2024).
(Castro et al., 2021).	PPROM refers to rupture of the membranes before 37 weeks of gestation, which complicates 2-4% of singleton pregnancies and 7-20% of twin pregnancies, and is managed with confirmation of the diagnosis, exclusion of contraindications, inpatient care, corticosteroids, antibiotics, and fetal surveillance (Castro et al., 2021).	Ensuring diagnosis of premature rupture of membranes (PROM), ruling out contraindications for expectant management (such as stillbirth, non-reassuring fetal assessment, and intrauterine infection), continued inpatient care with perinatology/NICU consultation, antenatal corticosteroids, broad-spectrum antibiotics (to prolong latency), and serial fetal surveillance (Castro et al., 2021).
(Schmitz et al., 2018).	Expectant management is recommended for uncomplicated	PPROM is not associated with increased neonatal mortality and morbidity, except when complicated by

Article	Summary	Main Finding
	PPROM before 37 weeks, but if intrauterine infection occurs, immediate antibiotic therapy and delivery are recommended (Schmitz et al., 2018).	intrauterine infection, which can lead to increased neonatal sepsis and necrotizing enterocolitis. Expectant management is recommended for PROM before 37 weeks' gestation, with antibiotic prophylaxis (Schmitz et al., 2018).
(Ignatko et al., 2021).	Active conservative treatment followed by induction of labor with oxytocin is the most appropriate approach, with the final choice of management left to the pregnant woman in the event of low-risk obstetric and perinatal complications (Ignatko et al., 2021).	Prolonged PROM is associated with significantly increased risk of infection and adverse perinatal outcomes, including high mortality rates without proper care. No clear consensus exists on the best management strategy, as conservative and invasive approaches each have risks and limitations. This study reviews available evidence on various management strategies, including potential outpatient conservative care, use of antibiotics, and uterotonic effectiveness (Ignatko et al., 2021).
(Bouchghoul, 2020).	Initial management of preterm premature rupture of membranes is expected to perform a vaginal swab for GBS on admission, and recommend the use of prophylactic antibiotics for preterm rupture of membranes lasting more than 12 hours (Bouchghoul, 2020).	Home care compared to hospital care may increase the risk of neonatal infection. Repeated digital examinations before and during labor are associated with increased risk of intrauterine infection, so limiting these examinations is recommended. For term PROM lasting over 12 hours, prophylactic antibiotics can reduce intrauterine infection rates without reducing neonatal infection risk, thus their use is recommended (Bouchghoul, 2020).
(Madar, 2018).	Appropriate management of preterm premature rupture of membranes (PPROM) is the detection and medical treatment of maternal and fetal complications (Madar, 2018).	If PPROM is diagnosed, the patient should be hospitalized and evaluated for signs of intrauterine infection. An initial ultrasound should be performed to assess fetal presentation, placental location, fetal weight, and amniotic fluid volume. Antenatal corticosteroids should be given before 34 weeks, and magnesium sulfate should be administered before 32 weeks for women at risk of preterm birth (Madar, 2018).
(Melamed et al., 2022).	Immediate induction of labor is the optimal management strategy to minimize neonatal and maternal morbidity in prepartum rupture of membranes, and induction within the first 15–20 hours is preferred over expectant management (Melamed et al., 2022).	Neonatal and maternal complications increase progressively over time after pre-labor rupture of membranes. Labor induction within the first 15-20 hours after PROM can reduce risks of neonatal and maternal complications without increasing cesarean delivery risk. Less than two-thirds of women with pre-labor PROM experience spontaneous labor within the first 24 hours, supporting the need for active management (Melamed et al., 2022).
(El-Kashif et al., 2020).	Prenatal maternal indicators, such as gestational age, duration of leakage, clinical chorioamnionitis, and white blood cell count, are significant predictors of maternal and neonatal outcomes in preterm rupture of membranes (PPROM), with major neonatal outcomes including NICU admission, respiratory distress syndrome, and early neonatal sepsis (El-Kashif et al., 2020).	The most significant neonatal outcomes are NICU admission, neonatal respiratory distress syndrome, and early neonatal sepsis. More than two-thirds of women studied underwent expectant management, with less than a quarter developing postpartum sepsis. The most common bacteria isolated from upper vaginal swabs was Escherichia coli (53.3%) (El-Kashif et al., 2020).
(Sohai et al., 2023).	Early induction of labor in cases of preterm premature rupture of membranes results in lower maternal and fetal morbidity compared with induction performed at a later stage (Sohai et al., 2023).	Patients with early labor induction (within 12 hours of PROM) had lower rates of maternal complications, such as chorioamnionitis and postpartum hemorrhage, compared to those with delayed induction (12-24 hours post-PROM). Patients with early induction also had lower neonatal complications, including sepsis and poor APGAR scores, compared to those with delayed induction. No cases of early neonatal death were observed among the 164 patients included in the study (Sohai et al., 2023).
(Dussaux et al., 2018).	A randomized study is needed to confirm the safety of outpatient	The outpatient care group had an earlier gestational age at the time of rupture and a longer cervical length upon

Article	Summary	Main Finding
	management of preterm premature rupture of membranes (Dussaux et al., 2018).	admission compared to the hospital care group. No major obstetric complications occurred during home care in the outpatient group. The study concludes that outpatient care appears safe, but a randomized study is necessary to confirm its safety (Dussaux et al., 2018).

Discussion

A comprehensive and evidence-based management strategy is crucial in handling cases of premature rupture of membranes (PROM). Care involving early detection of infection signs, prophylactic antibiotic use, and timely induction of labor can help minimize complication risks and improve health outcomes for both mother and baby (Nikmathul Ali et al., 2021). Further research is needed to explore the effectiveness of various management strategies and to develop clearer guidelines for managing complex PROM cases (Awi et al., 2022). Based on findings indicating positive impacts of nursing care interventions on patient functional patterns, though patients often remain hospitalized and primary nursing outcomes are yet to be fully determined (Morales-Amao et al., 2024), several key aspects for postpartum care in PROM cases are outlined below: Pain Monitoring: Due to acute postoperative pain being a primary diagnosis, regular pain assessments should be conducted using appropriate pain scales. Nursing interventions should focus on effective pain management, utilizing both analgesics and non-pharmacological techniques (Morales-Amao et al., 2024). Early Detection of Complications: Post-cesarean patients are at risk for uterine atony and hemorrhage. Therefore, close monitoring of vital signs and regular uterine assessments are essential to detect complications early (Aquino-Risco et al., 2024). Patient Education on Warning Signs: Educating patients about warning signs of complications, such as excessive bleeding, severe pain, or infection symptoms, can empower them to seek timely medical assistance when necessary (Azhari et al., 2024). Nursing Interventions Based on NOC and NIC: Implement nursing interventions aligned with the Nursing Outcomes Classification (NOC) and Nursing Interventions Classification (NIC) to achieve optimal functional pattern changes. This includes planning and delivering nursing care tailored to the specific needs of the patient (Morales-Amao et al., 2024). Prophylactic Antibiotic Use: In cases of PROM lasting over 12 hours, the use of prophylactic antibiotics should be considered to reduce the risk of intrauterine infection (Bouchghoul, 2020). Emotional and Psychological Support: Providing emotional support to patients is important to alleviate anxiety and stress that may arise postpartum. This also includes support in their new role as a mother and guidance on baby care and breastfeeding (Eka Saudur Sihombing, 2019). Breastfeeding Initiation: Encourage patients to initiate breastfeeding as soon as possible after delivery, if feasible. Breastfeeding benefits the baby and helps stimulate uterine contractions, aiding recovery (Aquino-Risco et al., 2024). Follow-Up Plan: Develop a clear follow-up plan for postnatal assessments, including evaluations of vital signs, infection markers, and ongoing health monitoring for both mother and baby. This should also include oxytocin massage, Benson relaxation, early mobilization, breast compression, and enhanced nutritional intake (Azhari et al., 2024). Multidisciplinary Approach: Engage a multidisciplinary healthcare team to deliver comprehensive care and address the diverse health needs of postpartum patients, ensuring all patient requirements are met in line with the diagnoses and interventions provided (Purmahardini & Hasanah, 2022). Self-Care Education: Educate patients on the importance of self-care, including good nutrition, adequate rest, and hydration, to support their recovery postpartum (Madar, 2018). Risk Evaluation and Complication Management: Conduct a thorough risk assessment to identify factors that may increase the likelihood of complications, and develop appropriate management strategies to address these risks (ACOG Practice Bulletin, 2018). Neonatal Outcome Monitoring: Regularly monitor neonatal outcomes, particularly for infants in the NICU and those at risk for respiratory distress syndrome and neonatal sepsis (El-Kashif et al., 2020).

CONCLUSION

Postpartum care for patients with premature rupture of membranes (PROM) requires a comprehensive, evidence-based approach, with a strong focus on monitoring, pain management, and emotional support. Effective interventions, combined with sufficient emotional and psychological support, aim to facilitate the patient's recovery and minimize the risk of complications. Regular monitoring is essential to detect any signs of infection or hemorrhage early, while tailored pain management strategies ensure patient comfort and promote healing. Additionally, educating patients about postpartum warning signs and self-care practices empowers them to take an active role in their recovery. Through a well-rounded approach involving medical, psychological, and educational support, the postpartum recovery process can be optimized, ultimately enhancing health outcomes for both the mother and the newborn.

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References

Awi, T., Darmawati, & Hermawati, D. (2022). Asuhan Keperawatan Pre Dan Post Sectio Caesarea Dengan Indikasi Ketuban Pecah Dini (Kpd) Dan Hellp Syndrome. Jurnal Ilmiah Mahasiswa Fakultas …, I, 1–9. https://jim.usk.ac.id/FKep/article/view/23476%0Ahttps://jim.usk.ac.id/FKep/article/viewFile/23476/11132

Aquino-Risco, N. ., Cabanillas-Chavez, M. T. ., & Morales-García, W. C. . (2024). Postpartum nursing care for premature rupture of membranes. SCT Proceedings in Interdisciplinary Insights and Innovations, 2, 207. https://doi.org/10.56294/piii2024207

Azhari, Y., Hermawati, D., & Ardhia, D. (2024). Asuhan Keperawatan Post Partum Sectio Caesarea Dengan Indikasi Polihidramnion. Jurnal Peneltian Perawat Profesional, 6(5474), 1333–1336.

Bouchghoul, H. (2020). [Term Prelabor Rupture of Membranes: CNGOF Guidelines for Clinical Practice - Initial management]. Gynecologie, obstetrique, fertilite & senologie.

Dussaux, C., Senat, M.V., Bouchghoul, H., Benachi, A., Mandelbrot, L., & Kayem, G. (2018). Preterm premature rupture of membranes: is home care acceptable? The Journal of Maternal-Fetal & Neonatal Medicine, 31, 2284 - 2292.

Eka Saudur Sihombing, R. S. (2019). Pengelolaan Menyusui Tidak Efektif pada Post Partum Spontan Indikasi Ketuban Pecah Dini. Eka Saudur Sihombing , Rindi Sitepu, 15(11), 102–106.

El-Kashif, M.M., Fathy, A.M., & Elsaba, H.A. (2020). Evaluation of maternal and neonatal outcomes in the case of preterm premature rupture of membranes and their relationship to prenatal maternal indicators: Across -sectional descriptive study. Journal of Nursing Education and Practice.

Ignatko, I.V., Churganova, A.A., Rodionova, A., Baybulatova, S., Silaeva, T., Megrabyan, A.D., & Denisova, Y.V. (2021). Premature rupture of membranes in full-term pregnancy: controversial issues in obstetric management. Voprosy ginekologii, akušerstva i perinatologii.

Madar, H.M. (2018). [Management of preterm premature rupture of membranes (except for antibiotherapy): CNGOF preterm premature rupture of membranes guidelines]. Gynecologie, obstetrique, fertilite & senologie, 46 12, 1029-1042.

Morales-Amao, M., Morales-Romaní, Y., Cabanillas-Chavez, M. T., & Morales Garcia, W. C. (2024). Care of the postpartum patient after premature rupture of membranes. SCT Proceedings in Interdisciplinary

Insights and Innovations, 2, 201. https://doi.org/10.56294/piii2024201

Melamed, N., Berghella, V., Ananth, C. V., Lipworth, H., Yoon, E. W., & Barrett, J. (2023). Optimal timing of labor induction after prelabor rupture of membranes at term: a secondary analysis of the TERMPROM study. American journal of obstetrics and gynecology, 228(3), 326.e1–326.e13. https://doi.org/10.1016/j.ajog.2022.09.018

Muliani, R. H. (2024). Analisis Faktor Resiko Ketuban Pecah Dini Di Puskesmas Margadana. Jurnal Ilmiah Kebidanan Imelda, 10(1), 1–4. https://doi.org/10.52943/jikebi.v10i1.1555

Muhammad, R. (2016). KARAKTERISTIK IBU YANG MENGALAMI PERSALINAN DENGAN SECTIO CAESAREA DI RUMAH SAKIT UMUM DAERAH MOEWARDI SURAKARTA TAHUN 2014. *Naskah Publikasi*, *85*(1), 6.

Nikmathul Ali, R., Aprianti A Hiola, F., & Tomayahu, V. (2021). Faktor-Faktor Yang Mempengaruhi Kejadian Komplikasi Ketuban Pecah Dini (Kpd) Di Rsud Dr Mm Dunda Limboto. Jurnal Health Sains, 2(3), 381–393. https://doi.org/10.46799/jhs.v2i3.130

Purmahardini, N., & Hasanah, M. (2022). Asuhan Kebidanan Komprehensif Pada Ny. S 24 Th G1P0A0 Dengan Ketuban Pecah Dini Bercampur Meconium. Ovary Midwifery Journal, 4(1), 30–34.

Puteri, S. K. K. S., Sumarmi, S., Ernawati, E., & Nuryana, R. (2024). Determinan Yang Berhubungan Dengan Ketuban Pecah Dini Di Rsud H. Padjonga Daeng Ngalle Kabupaten Takalar. Borobudur Nursing Review, 4(1), 9–19. https://doi.org/10.31603/bnur.11087

Rahayuningsih FB. (2024). Indonesian Journal of Global Health Research. *Indonesian Journal of Global Health Research*, 2(4), 3183–3192. https://doi.org/10.37287/ijghr.v2i4.250

Rahayuningsih, F. B., Fitriani, N., Dewi, E., Sudaryanto, A., Sulastri, S., & Jihan, A. F. (2021). Knowledge about care of pregnant mothers during the COVID-19 pandemic. *Open Access Macedonian Journal of Medical Sciences*, *9*(G), 266–272. https://doi.org/10.3889/oamjms.2021.6845

Satria, R., Sukohar, A., Sari, R. D. P., & Rodiani, R. (2023). Perbandingan Induksi Misoprostol dengan Oksitosin terhadap Lama Persalinan pada Kehamilan dengan Ketuban Pecah Dini. Jurnal Penelitian Perawat Profesional, 6(2), 753–762. https://doi.org/10.37287/jppp.v6i2.2302

Schmitz, T., Sentilhes, L., Lorthe, E., Gallot, D., Madar, H., Doret-Dion, M., Beucher, G., Charlier, C., Cazanave, C., Delorme, P., Garabedian, C., Azria, E., Tessier, V., Senat, M.V., & Kayem, G. (2018). [Preterm premature rupture of membranes: CNGOF Guidelines for clinical practice - Short version]. Gynecologie, obstetrique, fertilite & senologie, 46 12, 998-1003.

Sohail, A., M., Muzaffar, T., Saleem, U., Tahir, A.M., & Zulqarnain, H. (2023). Outcome of Early and Late Induction of Labour in Premature Rupture of Membranes. Pakistan Armed Forces Medical Journal.

Sulawati, & Kurniawati, H. F. (2020). Literature Review Faktor-Faktor Yang Mempengaruhi Kejadian Ketuban Pecah Dini (KPD). Naskah Publikasi, 2(2), 1233–1243.

(2018). ACOG Practice Bulletin No. 188: Prelabor Rupture of Membranes. Obstetrics & Gynecology