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Comparison of Depression Scores between Teenagers with Unintended Pregnancy Who Underwent Medical Abortion and Those Who Underwent Delivery in Ramathibodi Hospital using the Thai Edinburgh Postnatal Depression Scale

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ABSTRACT

Objectives: The aim of this study was to compare teenagers with unintended pregnancy that terminated their pregnancy and those who delivered using the Thai Edinburgh Postnatal Depression Scale (EPDS) and determine predisposing factors for depression.

Materials and Methods: This cross-sectional study was conducted at a tertiary hospital between September 2018 and July 2019. Only data for unintended teenage pregnancies that underwent medical abortion or delivery were included. Exclusion criteria were intended pregnancy, history of major deressive disorder diagnosis, and refusal to participate. All participants completed the EPDS within 2 weeks after termination or delivery.

Results: In total, 131 teenage pregnancies were recorded over the study period. We excluded 10 intended pregnancies and one woman with history of major depressive disorder diagnosis. Sixty-five women underwent medical abortion (abortion group) and 55 underwent delivery (delivery group). Overall, there was no statistically significant difference in the total EPDS score between the two groups. There were 23 women (19.2%) with an EPDS score ≥ 11. The delivery group was more likely to have developed depression compared with the abortion group (25.4% vs 13.8%, risk ratio [RR] 0.87, 95% confidence interval [CI] 0.72-1.04). The delivery group was more likely to live with a partner than the abortion group (54.5% vs 9.2%, $p < 0.01$). Significant protective factors for postpartum depression were having family support (RR 2.26, 95%CI 1.16-3.27), continuing education (RR 1.27, 95%CI 1.07-1.51), and living with a partner (RR 1.20, 95%CI 1.03-1.41).

Conclusion: More teenagers with unintended pregnancy who delivered had postpartum depression than those who terminated their pregnancy, although the difference was not statistically significant. No family support, dropout from school, and living alone were predisposing factors for depression.

Keywords: abortion, unintended pregnancy, teenage pregnancy, postpartum depression.

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การศึกษาเปรียบเทียบระดับความซึมเศร้าระหว่างหญิงวัยรุ่นตั้งครรภ์ไม่พึงประสงที่เข้ารับการยุติการตั้งครรภ์โดยการใช้ยา และกลุ่มหญิงวัยรุ่นตั้งครรภ์ที่เข้ารับการคลอดบุตร โรงพยาบาลรามาธิบดี โดยใช้แบบสอบถาม Thai Edinburgh Postnatal Depression Scale

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บทคัดย่อ

วัตถุประสงค์*: เพื่อศึกษาเปรียบเทียบระดับความซึมเศร้า Edinburgh Postnatal Depression Scale (EPDS) ระหว่างหญิงตั้งครรภ์วัยรุ่นไม่พึงประสงค์ที่เข้ารับการยุติการตั้งครรภ์ เทียบกับหญิงตั้งครรภ์วัยรุ่นที่เข้ารับการคลอดบุตร และศึกษาถึงปัจจัยเสี่ยงต่าง ๆ ที่ทำให้เกิดภาวะซึมเศร้าหลังคลอดในหญิงตั้งครรภ์ทั้งสองกลุ่มนี้*

วัสดุและวิธีการ*: การศึกษาวิจัยนี้เป็นการศึกษาเก็บข้อมูล ณ จุดเวลาใดเวลา ในหญิงตั้งครรภ์ไม่พึงประสงค์ที่โรงพยาบาลรามาธิบดี ตั้งแต่ เดือนกันยายน 2561 – เดือนกรกฎาคม 2562 โดยหญิงวัยรุ่นตั้งครรภ์ไม่พึงประสงค์ที่เข้ารับการยุติการตั้งครรภ์ หรือ เข้ารับการคลอดบุตรจะได้รับการเข้าร่วมการวิจัย ส่วนหญิงตั้งครรภ์พึงประสงค์ หญิงที่มีโรคประจำตัวทางจิตเวช หรือปฏิเสธเข้าร่วมการวิจัยจะถูกคัดออกจากการวิจัยนี้ ซึ่งผู้เข้าร่วมการวิจัยทั้งสองกลุ่ม จะได้รับการทำแบบสอบถามเพื่อประเมินภาวะซึมเศร้า EPDS ภายใน 2 สัปดาห์ หลังยุติการตั้งครรภ์ หรือ หลังคลอด*

ผลการศึกษา*: ในหญิงตั้งครรภ์วัยรุ่นทั้งหมด 131 ราย พบว่า มีจำนวน 10 รายที่เป็นการตั้งครรภ์พึงประสงค์ และ 1 ราย มีภาวะซึมเศร้ามาตั้งแต่ก่อนตั้งครรภ์แล้ว ซึ่งในทั้ง 2 กลุ่มพบว่า มีหญิงตั้งครรภ์วัยรุ่นที่เข้ารับการยุติการตั้งครรภ์ทั้งสิ้น 65 ราย และมีหญิงตั้งครรภ์วัยรุ่นที่เข้ารับการคลอดบุตรทั้งสิ้น 55 ราย โดยมีหญิงตั้งครรภ์วัยรุ่นทั้งหมด 23 ราย (ร้อยละ 19.2) ที่มีคะแนน EPDS score ≥ 11 ซึ่งมีแนวโน้มที่จะเกิดภาวะซึมเศร้าหลังคลอด และพบว่า ในกลุ่มหญิงตั้งครรภ์วัยรุ่นที่เข้า*

รับการคลอดบุตร มีแนวโน้มจะเกิดภาวะซึมเศร้าได้มากกว่ากลุ่มยุติการตั้งครรภ์ ร้อยละ 13 (ร้อยละ 25.4 เทียบกับร้อยละ 13.8, RR 0.87, 95%CI 0.721-1.039) โดยในกลุ่มที่เข้ารับการคลอดพบว่า ยังอยู่ร่วมกันกับสามีมากกว่ากลุ่มที่ยุติการตั้งครรภ์อย่างมีนัยะสำคัญ (ร้อยละ 54.5 เทียบกับ ร้อยละ 9.2, p < 0.01) และพบว่าปัจจัยส่งเสริมที่จะไม่ทำให้เกิดภาวะซึมเศร้าในหญิงตั้งครรภ์ทั้งสองกลุ่มนี้ ประกอบไปด้วย การได้รับการสนับสนุนจากครอบครัว (RR 2.26, 95%CI 1.158-3.269) ยังเรียนอยู่ในสถานศึกษา (RR 1.27, 95%CI 1.065-1.508) และการยังอยู่ร่วมกันกับสามี (RR 1.20, 95%CI 1.030-1.405)

***สรุป**: ในหญิงวัยรุ่นตั้งครรภ์ไม่พึงประสงค์ที่เข้ารับการคลอดบุตร มีแนวโน้มที่จะมีความเสี่ยงต่อภาวะซึมเศร้าหลังคลอดมากกว่าหญิงตั้งครรภ์ที่ตัดสินใจยุติการตั้งครรภ์ แต่ไม่ได้มีนัยยะสำคัญทางสถิติ และการที่ไม่ได้รับการสนับสนุนจากครอบครัว, เลิกเรียน, เลิกกับสามีของตน เป็นความเสี่ยงที่จะทำให้เกิดภาวะซึมเศร้าหลังคลอดในกลุ่มตัวอย่างนี้*

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Introduction

A common primary cause of the adverse psychological effects following pregnancy and childbirth are maternal complications, fetal anomalies, fetal deaths, and abortion[1]. Postpartum depression (PPD) is an important complication during pregnancy and the postpartum period[2]. Women with PPD may experience intense feelings of sadness, anxiety, or despair that prevent them from performing their daily tasks. PPD occurs in the perinatal period, which ranges from conception to 1 year after delivery. However, it commonly occurs within 1-3 weeks postpartum. In the same way as postabortion depression, especially unintend pregnancy, women may experience intense feelings of sadness, guilt, and anxiety, which are common in postpartum depression[3]. Unintended pregnancy is based on the World Health Organization (WHO), which defines unintended pregnancy as a pregnancy that is either mistimed and occurs earlier than desired[4]. Several factors had been proposed to be the etiologies and risk factors for psychological effects and depression after postpartum or postabortion especially unintended pregnancy[1, 5]. First, changes in hormone levels; for example, declining levels of estrogen and progesterone after delivery affect the expression of the Gamma-Aminobutyric Acid A Receptor (GABAAR) subunit in the hippocampus that may lead to mood changes among women[6]. This may also explain the mood swings in the premenstrual period. Second, women with a history of depression or being treated for depression may have an increased risk for psychological effects and depression after postpartum or postabortion. Third, emotional factors also play a role, as unplanned or unintended pregnancy can affect a woman's feelings about her unborn baby or give rise to guilt about not raising the child. Fourth, various lifestyle factors are important contributors, such as lack of family support or stress from life events. Finally, age is a major risk factor, as the risk for depression is higher in teenage pregnancy than among women in other age groups[7]. American College of Obstetricians and Gynecologists (ACOG) recommended that obstetrician-gynecologists and other obstetric care providers should screen patients for depression at least once during the perinatal period using a standardized and validated tool.

The Edinburgh Postnatal Depression Scale (EPDS) is the most frequently used tool for PPD screening, and it was also used for screening depression after abortion in many previous studies[8-10]. It consists of 10 self-reported items and takes 5-10

minutes to complete. The EPDS has been translated into more than 50 different languages. The Thai version of the EPDS has been validated in a Thai population[11], with the cutoff point reduced from 13 to 10; this resulted in sensitivity of 100%, specificity of 88%, and degree of agreement of 0.38[12]. A meta-analysis of 59 studies showed the incidence of PPD within 12 weeks postpartum was around 13%[13]. Another systematic review and meta analysis demonstrated the estimated incidence of PPD was 6.5% - 12.9%[14]. Several studies fo-cused on perinatal depression have been conducted in Thailand. The incidence of PPD in mothers who had postpartum complications in Thailand was 13.7%[15], which was similar to previous studies[14]. However, the incidence of PPD among teenage mothers rose to 25.5%[16], which confirmed teenage pregnancy was a risk factor for PPD. Interestingly, the meta-analysis revealed that the overall pooled prevalence of post-abortion depression was 34.5% and varied based on geographic location and World Health Organization (WHO) regions. Asia exhibited the greatest percentage of post-abortion depression (37.5%)[17]. Women with unintended pregnancy who undergo pregnancy termination may experience stigma, including feelings of guilt, shame, and fear of judgment from society.

In this study, teenage pregnancy was defined as pregnant women under the age of 20 years at the time their pregnancy ended. Our primary objective was to compare depression scores between teenagers with unintended pregnancy who underwent medical abortion and those who underwent delivery using the Thai version of the EPDS. The secondary outcomes were to investigate the prevalence of PPD in these two groups and clarify predisposing factors for PPD.

Materials and Methods

This cross-sectional study compared Thai EPDS scores between teenagers with unintended pregnancy who underwent medical abortion and those who underwent delivery at Ramathibodi Hospital between September 2018 and July 2019. The present study was approved by the Research Ethics Committee of the Faculty of Medicine, Ramathibodi Hospital, Mahidol University (IRB number MURA2018/357). We included unintended teenage pregnancies which was defined as pregnant women under the age of 20 years at the time their pregnancy ended that underwent medical abortion or underwent delivery. The definition of unintended pregnancy in this study is based on the World Health Organization (WHO), which defines unintended pregnancy as a pregnancy that is either mistimed and occurs earlier than desired or unwanted and occurs when no children, or no more children, were desired at all. All participants were confirmed to be compatible with the definition. The patients who had postpartum or postabortion complications for either mother or baby were excluded from this study. The exclusion criteria were participants who refused to participate from the protocol, or had underlying psychiatric diseases. Participants were recruited from obstetrics and gynecology clinic using hospital recruitment. Participants were able to ask questions of investigators who were trained in all trial procedures. The researchers ensured that the participants meet the inclusion and exclusion criteria. After the consent form was signed at the beginning of termination of pregnancy process, participant was invited to attend as the protocol. All participants completed Thai EPDS within 2 weeks after delivery or pregnancy termination (Fig. 1). Demographic data and Thai EPDS scores were collected and analyzed. Women that had screened positive for PPD were advised to make an appointment with a psychiatrist. A higher Thai EPDS score indicated a higher level of depression.

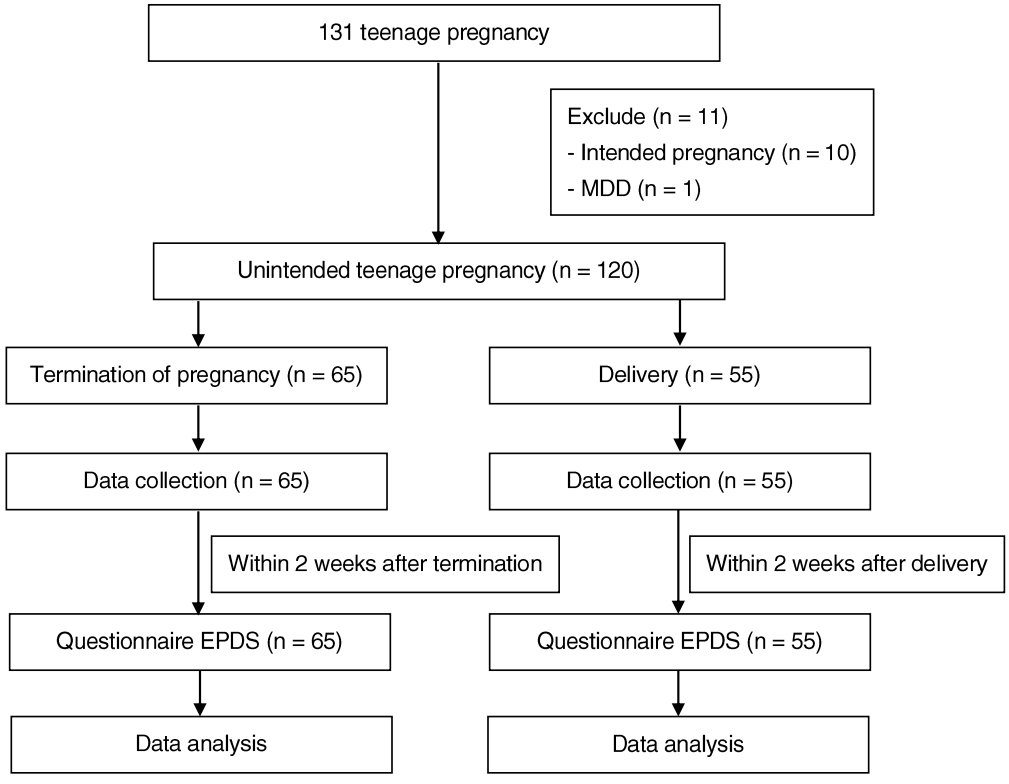
Among women who delivered, only those with a gestational age more than 36^{+6} weeks were included in this study. Any route of delivery was included (e.g., normal labor, cesarean section, forceps extraction, and vacuum extraction). In women who had a termination, the termination of pregnancy protocol started before a gestational age of 24 weeks. Women received mifepristone and then misoprostol within 24-48 hours to decrease the chance of complications[17].

Statistical analysis was performed using SPSS version 18.0.0. Quantitative data were first analyzed using percentages, means, and standard deviations,

and compared using student's t tests. We then performed chi-square tests and multivariate logistic regression analysis. The level of statistical significance was set at $p < 0.05$.

Results

Over the study period, 131 teenage pregnancies were included in this study, 10 participants were excluded because of intended pregnancy and one was excluded because of an underlying major depressive disorder. There were 65 participants in the group that terminated pregnancy (abortion group) and 55 in the delivery group; giving a total of 120 unintended teenage pregnancies. Demographic data were collected, and all participants completed the questionnaire within 2 weeks after termination or delivery (Fig. 1).



MDD: major depressive disorder, EPDS: Edinburgh postnatal depression scale

Fig. 1. Protocol flow diagram.

In both groups, participants' mean age was 18 years and that of their partners was 20 years. More than half of the participants had dropped out of school, and most were Buddhist. The mean daily income was lower in the abortion group than the delivery group (353 Baht vs 1,509 Baht). Overall, there were few married participants (none in the abortion group and 5.5% in the delivery group). The only significant difference between the two groups was living with a partner; the delivery group was more likely to live with a partner than the abortion group (54.5% vs 9.2%, $p < 0.001$). All participants reported not using illicit drugs. Two-thirds reported having family support (72.3% in the abortion group vs 65.5% in the delivery group). In terms of pregnancy-associated symptoms, the delivery group was statistically significantly more

likely to suffer from muscle pain than the abortion group (47.3% vs 21.5%, p = 0.003) (Table 1). Most participants in this study reported not using contraception (63.1% in the abortion group vs 49.1% in the delivery group). Among those that used contraception in the delivery group, oral contraceptive pills were most common, followed by condoms and the emergency pill. In contrast, emergency contraception was the most common in the abortion group followed by condoms and oral contraceptive pills.

Table 1. Participants' demographic data and clinical characteristics.

	Abortion (n = 65) n (%)	**Delivery (n = 55) n (%)**	**p value**
Age (years)*	17.60 ± 1.08	17.92 ± 1.05	0.098
Personal income per day* (Baht)	353.84 ± 1,429	1,509 ± 4,662	0.518
Partner's age (years)*	19.93 ± 2.39	20.63 ± 2.50	0.122
Being in school	31 (47.70)	25 (45.50)	0.807
Buddhist	65 (100)	51 (92.70)	0.042
Marriage certificate	0 (0)	3 (5.50)	0.093
Living with partner	6 (9.20)	30 (54.50)	< 0.001
Not use contraception	41 (63.10)	27 (49.10)	0.230
History of abortion	0 (0)	1 (1.80)	0.458
Substance use	0 (0)	0 (0)	-
Family support	47 (72.30)	36 (65.50)	0.418
Symptoms at the time of abortion (medical abortion)/delivery.			
Frequency of urine	42 (64.60)	39 (70.90)	0.463
Backache	21 (32.30)	22 (40.00)	0.381
Muscle pain	14 (21.50)	26 (47.30)	0.003
Cramp	18 (27.70)	20 (36.40)	0.309
Fatigue	20 (30.80)	25 (45.50)	0.098
Nausea	22 (33.80)	18 (32.70)	0.897

* mean ± standard deviation

In the delivery group, 91% underwent vaginal delivery and 9% underwent cesarean section because of cephalopelvic disproportion, breech presentation, or non-reassuring fetal status. Of the 55 infants, 24 were boys (43.6%) and 31 were girls (56.4%). The mean birth weight was 2,992 ± 346.71 grams. The mean time for the first stage of labor was 477.20 ± 232.63 minutes and that of the second stage was 28.54 ± 16.59 minutes. The mean blood loss was 254.54 ± 64.02 ml.

All participants in the abortion group underwent a successful medical abortion. There were no major complications. The delivery group had significantly higher mean scores on the Thai

EPDS for questions 3, 6, and 8 than the abortion group. However, there was no statistically significant difference in the total EPDS score between the two groups (Table 2).

The prevalence of PPD was 13.8% in the abortion group and 25.4% in the delivery group (RR 0.87, 95%CI 0.72–1.03). Overall, the prevalence of PPD in this study was 19.1%. The secondary outcome was predisposing factors for PPD. We found three statistically significant protective factors for PPD: family support, living with a partner, and being in school (Table 3). After controlling for possible confounding factors, the only significant risk factor for PPD was no family support (adjusted odds ratio 0.02, 95%CI 0.01–0.09, p < 0.01).

Table 2. Comparison of mean Thai Edinburgh Postnatal Depression Scale scores between the groups.

	Abortion group (mean)	Delivery group (mean)	p value
Q1: I have been able to laugh and see the funny side of things	0.46	0.58	0.387
Q2: I have looked forward with enjoyment to things	0.52	0.61	0.511
Q3: I have blamed myself unnecessarily when things went wrong	0.58	0.85	0.049
Q4: I have been anxious or worried for no good reason	0.44	0.69	0.103
Q5: I have felt scared or panicky for no very good reason	0.35	0.45	0.403
Q6: Things have been getting on top of me	0.46	0.80	0.024
Q7: I have been so unhappy that I have had difficulty sleeping	0.66	0.69	0.840
Q8: I have felt sad or miserable	0.35	0.61	0.036
Q9: I have been so unhappy that I have been crying	0.38	0.58	0.117
Q10: The thought of harming myself has occurred to me	0.27	0.16	0.220
Total score	4.49	6.05	0.067

Table 3. Factors associated with postpartum depression.

	Screen positive n (%)	Screen negative n (%)	RR (95%CI)	p value
With family support	2 (2.40)	81 (97.6)	2.26 (1.16 - 3.27)	< 0.001
Living with partner	3 (8.30)	33 (91.7)	1.20 (1.03 - 1.40)	0.048
Being in school	5 (8.9)	51 (91.1)	1.27 (1.07 - 1.51)	0.008

CI: confidence interval, RR: risk ratio.

Discussion

In a study examining the EPDS scores of 120 women, 65 underwent medical abortion (abortion group) and 55 underwent delivery (delivery group). Among these women, 23 (19.2%) had an EPDS score of 11 or higher, indicating potential depression. The delivery group exhibited a higher prevalence of depression compared to the abortion group (25.4% vs 13.8%). Additionally, the delivery group was more likely to live with a partner (54.5% vs 9.2%). Significant protective factors against postpartum depression included having family support, continuing education, and living with a partner.

Teenage pregnancy is a complicated problem in many countries, particularly in developing countries such as Thailand. The prevalence of teenage pregnancy in Thailand was 14.2% - 16.9% in 2012 - 2016. The Thai government issued the "Adolescent Pregnancy Bill" in 2016 to prevent unintended pregnancy and reduce adolescent childbearing; however, the number of teenage pregnancies has increased. Many factors are related to teenage pregnancy, including personal factors, family factors, peer pressure, social issues, and environment problems. Our study suggested that most unintended pregnancies resulted from not using contraception. Correcting misconceptions and attitudes about sex and contraceptive use in this age group should be addressed. This may be an effective method to improve adolescents' sexual health.

Our study showed that less than 10% of those in the abortion group still lived with their partner. In contrast, more than 50% of the delivery group lived with their partners. This suggested that being a single mother might have impacted the decision to terminate their pregnancy.

Teenage pregnancy has major impact on the physical and mental health of affected adolescents. It is not only teenage mothers that are affected by pregnancy, as it also affects newborn babies, families of adolescent mothers and society. PPD is one of the most common psychiatric problems among teenagers that fall pregnant. The prevalence of PPD in the delivery group in this study was 25.4%. This result was comparable with a previous study[10] that reported a prevalence of PPD among unintended teenage pregnancy of 29.9% in the first 2 weeks postpartum and 25.5% after 4-6 weeks postpartum. Known risk factors for PPD include young age, a woman's prenatal psychopathological characteristics, level of prenatal attachment to child, quality of the woman's romantic relationship, and clinical delivery difficulties[18]. For women that had an abortion, the risk factors for PPD included a younger age, low education level, an older gestational age at abortion, being single, an assisted mode of conception and prior miscarriage[19]. Unintended teenage pregnancies without family support had a 2.3 times higher risk for PPD than those with family support (RR 2.26, 95%CI 1.16–3.27). The other two significant protective factors for PPD in this study were living with a partner and being in school. These findings emphasized that support from a partner, friends, and family play important roles in preventing PPD.

The prevalence of PPD was slightly higher in the delivery group compared with the abortion group (25.4% vs 13.8%); however, the difference was not statistically significant. This may be explained by both physical and psychological aspects. The decrease of estrogen and progesterone may impact depressive mood; therefore, the delivery group tended to show more impact than the abortion group. A systematic review demonstrated that inadequate support from significant others was a major factor for PPD[20]. Our study showed similar results. In addition, the delivery group demonstrated lower family support than the abortion group.

Mothers need support from health professionals because PPD has a major influence on the well-being of mothers and children. Therefore, health professionals should pay attention to pregnant teenagers who do not have family support, have quit school, or separated from their partners. For prevention of PPD, we should screen all pregnant women who undergo hospital-based delivery.

The strength of this study was that we used a prospective cohort design that had no recall or selection bias. We investigated a specific population; this was a pioneering study in Thailand about PPD in a postabortion group. A limitation of this study was that it was only a single site study and was conducted in a tertiary hospital; therefore, the results may not be generalizable to rural areas or other settings.

Conclusion

More teenagers with unintended pregnancy who delivered had PPD than those who terminated their pregnancy, although this finding was not statistically significant. No family support, dropout from school and living alone were predisposing factors for PPD.

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Potential conflicts of interest

The authors declare no conflicts of interest.

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