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DOI 10.1055/a-2016-9737
Z Geburtsh Neonatol

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70469 Stuttgart, Germany
ISSN 0948-2393

Thieme

Routine Screening for Peripartum Depression in the Gynecologic and Pediatric Setting – Evaluation of an Adapted EPDS Version

Routinemäßiges Screening auf peripartale Depressionen im gynäkologischen und pädiatrischen Setting – Evaluation einer adaptierten EPDS Version

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Key words
peripartum depression, EPDS-plus, violence, traumatic birth, trauma, screening

Schlüsselwörter
Peripartale Depression, EPDS-plus, Gewalt, Traumatische Geburt, Trauma, Screening

received 17.08.2022
accepted after revision 27.12.2022
published online 2023

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Z Geburtsh Neonatol
DOI 10.1055/a-2016-9737
ISSN 0948-2393

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70469 Stuttgart, Germany

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ABSTRACT

Purpose The aim of the study was to investigate the feasibility and acceptability of a routine screening for peripartum depression (PD) by gynecologists and pediatricians. In addition, it was investigated whether two separate Plus Questions (PQ) of the "EPDS-Plus" are valid for screening experiences of violence or a traumatic birth and whether they can be associated with symptoms of PD.

Methods Using the EPDS-Plus the prevalence of PD was investigated in 5235 women. The convergent validity of the PQ with the Childhood Trauma Questionnaire (CTQ) and Salmon's Item List (SIL) was assessed using correlation analysis. The association between the experience of violence and/or traumatic birth experience and PD was subjected to the chi-square test. Furthermore, a qualitative analysis for acceptance and satisfaction by the practitioners was performed.

Results The prevalence was 9.94 %/10.18 % for antepartum/postpartum depression. The convergent validity of the PQ showed strong correlation with CTQ ($p < 0.001$) and SIL ($p < 0.001$). For violence and PD, a significant association was found. There was no significant association for traumatic birth experience and PD. There was a high level of satisfaction and acceptance of the EPDS-Plus questionnaire.

Conclusion Screening for peripartum depression is feasible in regular care and can help to identify depressed as well as potentially traumatized mothers, especially in preparing trauma-sensitive birth care and treatment. Therefore, specialized peripartum "psych" treatment for all affected mothers in all regions has to be implemented.

ZUSAMMENFASSUNG

Hintergrund Ziel der Studie war es, die Machbarkeit und Akzeptanz eines routinemäßigen Screenings auf peripartale Depression (PD) durch Gynäkologen und Pädiater zu untersuchen. Zusätzlich wurde die Validität zweierseparater Plus-Fragen (PQ) des "EPDS-Plus" für das Screening von Gewalterfahrungen oder einer als traumatisch erlebten Geburt und deren Zusammenhang mit PD überprüft.

Methoden Mithilfe des EPDS-Plus wurde die Prävalenz von PD bei 5235 Frauen untersucht. Die konvergente Validität der PQ mit dem Childhood Trauma Questionnaire (CTQ) und der Salmon's Item List (SIL) wurde mittels Korrelationsanalyse überprüft. Die Assoziation zwischen Gewalterfahrung und/oder traumatischer Geburtserfahrung und dem Vorhandensein von PD wurde mit einem Chi-Quadrat-Test berechnet. Eine qualitative Analyse zur Akzeptanz/Zufriedenheit der Behandler wurde durchgeführt.

Ergebnisse Die Prävalenz der ante-/postpartalen Depression lag bei 9,94 %/10,18 %. Es zeigte sich eine hohe konvergente Validität der PQ mit dem CTQ ($p < 0{,}001$) und der SIL ($p < 0{,}001$). Der Zusammenhang zwischen Gewalterleben und PD war hoch signifikant. Für traumatische Geburtserfahrung und PD gab es keinen signifikanten Zusammenhang. Die Akzeptanz und Zufriedenheit mit der Anwendung des EPDS-Plus Fragebogens waren hoch.

Schlussfolgerung Ein Screening auf PD als Routineuntersuchung ist machbar und kann helfen, sowohl depressive als auch traumatisierte Mütter frühzeitig zu identifizieren – für eine traumasensible Geburtsbetreuung und eine spezialisierte Behandlung.

Introduction

Peripartum depression involves symptoms of clinical depression that can occur during pregnancy but also up to 12 months after birth [1]. With a prevalence estimated between 10–15 % [2, 3], depression, along with anxiety disorders, is the most common mental health disorder surrounding childbirth [4] and thus poses a serious threat to the health of affected mothers and their children. If left untreated, not only does the distress of affected mothers grow but also the likelihood for impairments in maternal interactional behavior [2], which in turn can negatively influence the occurrence of infant regulation or attachment disorders [5, 6]. Occurred trauma in the span of an individual's life is considered as a risk factor for the development of peripartum depression [7]. These include, for example, the experience of emotional, sexual, or physical violence [8], but also a traumatic birth experience [9].

In many cases, peripartum depression is not detected early. Affected mothers often tend to avoid seeking help because of ignorance, shame, and fear. For gynecologists and pediatricians, it is often hard to recognize the parental condition by asking open questions. Standardized screening questionnaires represent a great opportunity, as doctors can get an indication of the presence of depression in a relatively short time and can ask specific questions. The most common screening questionnaire for peripartum depression is the Edinburgh Postnatal Depression Scale (EPDS) [10–12], which is internationally established and validated and has been used in routine screening programs in other countries for many years [13]. In Germany, there is a growing awareness of the need for such screening, as shown by large studies of its effectiveness and acceptance, like Mind:Pregnancy, a project dealing with the prevention and treatment of mental illness during pregnancy [14].

A crucial factor for the widespread use of a screening procedure is its acceptance by practitioners and mothers. For this purpose, it should be as time-efficient as possible and offer a gain in information. In our study an adapted version of the EPDS was used to identify previous trauma as a risk factor in addition to depressive symptoms. Especially in the case of screening during pregnancy, for obstetricians it is essential to be informed about any traumatic experiences in making the birth as trauma-sensitive as possible. Childbirth, as a stressful event, can reactivate traumatic experience and thereby cause delivering women to either freeze and let them endure everything or to be hyper-aroused – both cases cause a lot of psychological stress [15].

The goal of this study was to determine whether standard screening for depression symptoms and the experience of interpersonal violence and birth trauma is feasible and useful during peripartum routine examinations. The aim was to have a tightly knit integration into the everyday practice of the gynecologic and pediatric practitioners, which is why a simple screening with feedback of the results was conducted. This included the forwarding of addresses of psychiatric or psychotherapeutic practitioners to affected mothers. To the best of our knowledge, this study is one of the first in Germany to use an adapted EPDS scale as a screening instrument on such a large scale to investigate satisfaction with and acceptance of the questionnaire.

Material and Methods

Study design and sample

Three maternity departments, two gynecological private practices, and one pediatric private practice in and around Nuremberg participated in the study. The survey started in April 2020 and lasted until December 2021. Women who came for treatment or regular examinations completed the paper questionnaire in the waiting room. All adult women were included in the study; they were either still pregnant (mostly around 32–36 weeks gestation) or had already delivered their child (4–8 weeks postpartum). Only one questionnaire per woman was included. Exclusion criterion was insufficient knowledge of the German language or languages in which the EPDS is available. The completed questionnaires were reviewed by the doctors, and they counseled affected women to seek help at suitable institutions. In that case, addresses of the institutions

were given to the women. Because of our interest in whether a quick and uncomplicated identification of depressive mothers during clinical routines is feasible, we had to forgo requesting additional sociodemographic information. The Bayerische Landesärztekammer Ethics Committee confirmed that no ethical approval was required. The recent version of Declaration of Helsinki was taken into account.

Measuring instrument

The EPDS is a self-report screening questionnaire with 10 items describing typical depression symptoms. A German validation of the EDPS has been available since 1998 [16]. The items are coded on a 4-point Likert scale in the value range 0–3 and the total score is 30. In the literature, different cut-off values for the presence of depression can be found. In the present study, depression was considered moderately probable at a total score of 10–12 and highly probable at a score of ≥ 13. The combined sensitivity and specificity of the test is highest for EPDS scores of 11 and above [17]. The depression group included all mothers with an EPDS-Plus score of 10 and above to reduce the number of false negative results. The aim of the screening was not to diagnose depression but to identify as many affected mothers as possible in gynecological and pediatric screening examinations.

For the present study, an adapted version of the EPDS was used, with the addition of two questions about trauma, namely "Have you ever experienced violence?" with four response options, "yes, quite often (3)," "yes, sometimes (2)," "hardly ever (1)," and "never (0)," and "I experienced my birth as," with four response options, "fulfilling (0)," "okay (1)," "unexpectedly difficult/with complications (2)," and "traumatizing (3)." All responses except "never (0)" were scored as experiences of violence, and the responses "unexpectedly difficult/with complications (2)" and "traumatizing (3)" were scored as traumatic births. The values of these two items were not included in the total score but were evaluated separately.

Qualitative assessment of EPDS-Plus

For qualitative data analysis physicians were asked the following standardized questions regarding time expenditure, acceptance, feasibility, and risk of negative consequences:

1) How do you assess the benefit of the questionnaire for your work?
2) How do you evaluate the effort of the questionnaire?
3) How do you assess the feasibility in practice?
4) How do you assess the patients' satisfaction with the questionnaire?
5) Can you imagine any negative consequences for the patients due to the implementation of the questionnaire?

Data analysis

Statistical analyses were performed using IBM SPSS 26 (IBM Corp., Armonk, NY, USA) . The EPDS scores were manually entered into a database, only the EPDS scores and the items of the additional questions were accommodated, whereby the dataset was pseudonymously analyzed. Only the physicians could connect data with participating women. For qualitive data analysis answers were evaluated and summarized.

Results

EPDS-Plus validation

To investigate whether the two additional questions of EPDS-Plus do measure the experience of violence and traumatic birth experience, the convergent validity of the EPDS-Plus with Childhood Trauma Questionnaire (CTQ) [18, 19] and Salmon's Item List (SIL) [20] were calculated in a preliminary study. For that purpose, we took a different sample group of 53 mothers tested at the mother-child day clinic Nuremberg, who administered EPDS-Plus, SIL, and CTQ in clinical routine at the beginning of psychiatric/psychotherapeutic treatment. Here again the Bayerische Landesärztekammer Ethics Committee confirmed that no ethical approval was required because of anonymized data. The recent version of Declaration of Helsinki was also taken into account.

The CTQ requests forms of neglect and maltreatment in childhood. It consists of the five scales *emotional neglect*, *emotional maltreatment*, *physical neglect*, *physical maltreatment*, and *sexual abuse*[18, 19]. The SIL measures satisfaction with the birth experience with the four scales *emotional distress*, *fulfillment*, *physical discomfort,* and *negative emotional experience*20, 21].

When categorically dividing "no violence"/"violence" on the EPDS-Plus and "childhood trauma"/"no childhood trauma" on the CTQ, we found a significant correlation, $\varphi = 0.51$, $p < 0.001$. In a dimensional analysis, strong correlations were found between "Have you ever experienced violence" and the five subscales *emotional neglect*, $r = 0.4$, $p = 0.003$, *emotional abuse*, $r = 0.54$, $p < 0.001$, *physical abuse*, $r = 0.65$, $p < 0.001$, *sexual violence* $r = 0.53$, $p < 0.001$ and *physical neglect*, $r = 0.53$, $p < 0.001$.

In the categorical classification of "no traumatic birth"/"traumatic birth" in the EPDS-Plus and "negative birth experience"/"positive birth experience" on the SIL, a significant correlation was found: $\varphi = -0.49$, $p = 0.002$. A dimensional analysis showed a strongly significant negative correlation for the item "I experienced the birth of my child as" with the total score of SIL, with $r = -0.73$, $p < 0.001$.

Because of the strong correlations, the convergent validity of the two additional "Plus questions" is sufficient, so that it can be assumed that the experience of violence and the experience of traumatic birth could be captured well enough for screening purposes. The "Plus questions" do not influence the EPDS score, rather they can be interpreted as a short screening for traumatic experiences in addition to the screening for depressive symptoms.

Descriptive statistics

The data set included 5.235 questionnaires, of which $N = 64$ (1.22 %) questionnaires could not be included in the analysis because of missing data. In these cases, either the questionnaire could not be evaluated because of missing items or language problems, or the women refused to participate. For antepartum depression there was a prevalence of 9.94 % ($N = 410$), 43.9 % ($N = 180$) of these had EPDS scores above 12. The prevalence for postpartum depression was 10.18 % ($N = 113$), 46.9 % ($N = 53$) of these had EPDS scores above 12. Because not all questionnaires included the items for experience of violence and traumatic birth experience, the total number of women for further analysis was $N = 4607$. 10.87 % ($N = 501$) of these women reported having experienced violence. Of the women who were screened postpartum ($N = 331$), 19.64 % ($N = 65$)

reported having experienced a traumatic birth and 4.53 % (N = 15) reported both experiences of violence and a traumatic birth. ▶ **Table 1** shows absolute and relative frequencies.

Influence of violence and birth experience

To be able to examine the statistical association between the experience of violence and/or traumatic birth experience and the presence of peripartum depression, χ^2-tests were calculated separately for the association between violence and depression, traumatic birth experience and depression, and a combination of violence and traumatic birth experience, and depression. The prerequisites for the calculation of the χ^2-tests were fulfilled. To be able to determine the strength of the association, the phi-coefficients were additionally calculated.

For violence and depression, a significant association was found, $\chi^2(1, N = 4607) = 155.71$, $p < 0.001$, $\varphi = 0.18$. Thus, significantly more experiences of violence occurred in the group of depressed mothers than in the group of non-depressed mothers. There was no significant association for traumatic birth experience and depression for those mothers who had completed the questionnaire six weeks after birth, $\chi^2(1, N = 331) = 2.75$. The association between combined violence and traumatic birth experience and depression was also not significant, $\chi^2(1, N = 331) = 2.95$. Thus, there was no difference in reporting traumatic birth experience in depressed and non-depressed mothers and no difference in reporting combined violence and traumatic birth experience in depressed and non-depressed mothers.

EPDS-Plus

In order to be able to make qualitative statements about the EPDS-Plus questionnaire, the participating practitioners were also asked to answer questions about the subjective feasibility and usefulness in practice. Some of the statements of the gynecologists (N = 3) and pediatricians (N = 5) are shown in ▶ **Table 2**.

▶ **Table 1** Absolute frequencies (sorted by EPDS values).

Plus questions	0–9	10–12	≥ 13	Total
No violence or traumatic birth	3539 (76.82 %)	174 (3.78 %)	102 (2.21 %)	3815
Violence	371 (8.05 %)	62 (1.35 %)	68 (1.48 %)	501
Traumatic birth	53 (16.01 %) pp*	4 (1.21 %) pp*	8 (2.42 %) pp*	
	200 (0.34 %) all**	15 (0.33 %) all**	23 (0.50 %) all**	238
Violence and traumatic birth	11 (3.32 %) pp*	2 (0.60 %) pp*	2 (0.60 %) pp*	
	32 (0.69 %) all**	6 (0.13 %) all**	15 (0.33 %) all**	53
total	4142	257	208	4607

Note: *pp = only women participating after birth; **all = all participating women (incl. experience of previous birth if the women were pregnant).

Applicability

The screening instrument was described as easy to use, with the time required for evaluation and feedback averaging 5 to 10 minutes for mothers with an EPDS-Plus score of 1–9 and 10 to 15 minutes for mothers with an EPDS-Plus score of 10 or more. The time estimates of the obstetric clinics and the gynecologists were very similar; the pediatricians reported a slightly lower overall time expenditure, namely 5 minutes for all women with an EPDS-Plus score below 10 and about 10 minutes for scores above 10. If there was more time needed, they offered an extra telephone appointment. It was uniformly reported that issuing, evaluating, and discussing the results and passing on the psychiatric/psychotherapeutic contact information was easy to integrate into the daily practice routine. Since the mothers completed the questionnaire while waiting in the waiting room, only little additional time expenditure was needed.

Satisfaction

The clinicians stated that the questionnaire represented a clear gain in information and that it made it easier for them to discover the women's psychological problems, especially if the women did not broach them themselves. All practitioners reported that most mothers were happy about the interest in their psychological condition, which made them feel valued and taken seriously. None of the respondents had noticed any negative consequences for the mothers, e. g., that the mothers felt stigmatized using the screening instrument. Concerns of the mothers could be dispelled in most cases, which is why only a few refused to participate.

Plus questions

In many cases, the questionnaire was even suitable as an introduction to difficult topics, such as violence or experiencing the birth as traumatic. The physicians reported more openness from the moth-

▶ **Table 2** Verbatim quotes from participating practitioners.

"I was surprised by the percentage of conspicuous mothers – reflecting thoughtfully on the time before screening regarding undetected mothers"**
"Patients are very satisfied with the screening – they appreciate being asked about their mental state as well"**
"It is quite astonishing that a large proportion of affected mothers do not speak openly about it until the conspicuously completed questionnaire is addressed"*
"The Plus questions help to identify women during pregnancy who need special trauma-sensitive care when giving birth"**

Note: *pediatrician; **gynecologist.

ers after broaching salient trauma items. Some mothers might not have done this on their own. Especially the obstetricians in the hospital valued the information about violence or a traumatic birth in history and used them for more trauma-sensitive communication during the birth.

Discussion and conclusions

The prevalence of 9.94 % for antepartum depression and 10.18 % for postpartum depression is in the lower range of prevalence reported in the literature [2, 3]. The data acquisition began in April 2020 at the same time as the Corona pandemic started. One reason for the lower prevalence could be that pregnant women spent more time at home due to an employment ban and the Corona measures. This might have allowed them to focus in a more relaxed manner on themselves and their newborns. Owing to more home office work, more mothers had more support from their partners. These changes could have led to a reduction in depressive symptoms in relation to prior evaluations.

The present significant association of violence and peripartum depression is supported by the results of other studies [22, 23]. However, no significant association between traumatic birth experience and depression was found. This is not consistent with the findings of other studies [24, 25]. In previous work [26], the experience of pregnancy was shown to be a covariate in the association between the experience of birth and the development of postpartum depression. Since we did not include the pregnancy experience, this could not be considered.

The feedback on the feasibility and usefulness of the questionnaire was consistently positive. The physicians noticed a great acceptance of the EPDS-Plus by the mothers. This is also in line with observations from other empirical studies [27]. For the therapists, the use of the questionnaire is time-efficient, and mothers who initially appear to be psychologically inconspicuous can be identified and offered treatment. Without the questionnaire, many women might not address their depressive symptoms at all, partly for fear of potential stigmatization. In the present study the doctors could not see any danger of stigmatization for the mothers.

If the women were approached by the doctors, they could talk more openly about their mental condition and it was easier to talk about experiences of violence and previous traumatic birth experiences. If obstetricians are informed about previous trauma, they can provide a greater feeling of security, act more transparently, and better involve mothers in the birth process through open communication [28].

The questionnaire enabled the gynecologists to quickly identify the women's depressive symptoms and then address them. For pediatricians, the use of the EPDS-Plus offers the possibility to record the psychological condition of the mothers and still let the children stay in the foreground of the treatment. The fact that in addition to the questionnaire, contact information for the mothers is handed out, is a relief for both mothers and physicians, who can recommend trained personnel for peripartum mental disorders. Since the women filled out the questionnaire on their own, the staff only had to spend more time giving feedback and passing on psychiatric/psychotherapeutic contact information. The availability of "psych" treatment with sufficient knowledge in perinatal mental disorders – as it was provided in Nuremberg – was of great importance in order to treat patients after screening.

The physicians participating in the study were so convinced of the benefits of EPDS-Plus that they carried out the screening despite the lack of remuneration.

Limitations and further directions

The EPDS alone as a screening tool is not sufficient for a diagnosis of depression; other diagnostic instruments would have been necessary. However, since we were interested in the applicability of a routine screening, suspected depression was already sufficient for us and also justifiable from an ethical point of view, since the women received the address of a psychiatrist or psychotherapist from their treating physicians for further clarification.

Due to the pseudonymized data procession, no conclusions on sociodemographic data can be drawn. The main focus of this study was to implement the EPDS-Plus in clinical routines and to investigate satisfaction with and acceptance of it. However, this would have provided an overview of current stressful factors that could have maintained or caused the depression. It might also have been possible to identify protective factors with regard to the development of depression, such as social support of mothers in pregnancy [29]. Furthermore, with regard to the traumatic birth experience, it would have been interesting to compare the women separately according to the type of birth (vaginal/C-section) or the number of births.

Moreover, due to the cross-sectional study design, causal inferences are not possible. Thus, no conclusions can be drawn as to whether the violence preceded the depression or vice versa. To verify whether the experience of pregnancy is a covariate in the association between the birth experience and the development of depression, an additional question related to the pregnancy experience will be included and validated in further work.

We did not check whether the women had sought psychiatric/psychotherapeutic treatment. Therefore, it could not be assessed if mothers who are conspicuous in the screening were diagnosed with depression or if they had any changes in depressive symptoms as a result of psychiatric/psychotherapeutic help. For this purpose, additional EPDS-Plus surveys would be helpful for the remaining preventive examination for children.

We conducted a preliminary calculation of validity, yet we cannot say whether the range of the scale has been sufficiently utilized and whether the gradation of the scale is meaningful. This must be done in further investigations.

Conclusion

Peripartum depression is a serious mental illness that should be detected and treated early. Therefore, the widespread use of a screening procedure by gynecologists in pregnancy – as early as possible – and by pediatricians during the first year postpartum offers a way that is easy to implement in the daily clinical routine. Affected mothers can gain faster access to help and support services, such as pregnancy and educational counseling centers but also to psychiatric and psychotherapeutic professionals. The Plus questions help to identify women who need trauma-sensitive care when giving birth and during postpartum treatment. The results of this

study demonstrate the urgent need for specialized peripartal psychiatrists and psychotherapists who can be reached by every affected mother in every region in a short time.

Acknowledgements

We would like to thank all participating maternity hospitals and medical practices that collected the data over such a long period of time and provided their assessment on feasibility – and who did this without any remuneration! We also thank all the mothers who completed the questionnaires.

Conflict of Interest

The authors declare that they have no conflict of interest.

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