Research Article

Prevalence of Post-partum Depression among Sudanese Women Using Edinburgh Postnatal Depression Scale (EPDS) in Two Major Delivery Hospitals in Khartoum State

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Abstract

Background: Postpartum depression is a mood disorder that can affect women after childbirth; it can occur at any time during the first year after delivery. Mothers experience depressive symptoms that may make it difficult for them to complete daily care activities. The aim of this study was to find out the prevalence of postpartum depression among Sudanese women as well as determining the association between postpartum depression (PPD), socio-demographic, and obstetric characteristics.

Method: In this cross-sectional study, 129 women selected through convenient sampling technique were interviewed; the participants were recruited from the postnatal and child welfare clinics at the Saad Abueleella and the Dream International Hospitals. To assess any possible depression, information was collected at six weeks postpartum using a structured questionnaire in addition to a screening tool.

Results: At a cutoff score of ≥ 12, the prevalence of PPD was found to be 10.9% (Confidence Interval 6.5–17.3%); while 79.1% of mothers revealed no signs of PPD and scored <9 points, 10.1% scored 9–11, indicating a need for extra visits. Interestingly, 59.7% of the respondents were aged between 25 and 35 years, 76% were university graduates, 64.3% housewives, 20.9% had obstetric complications, 3.1% reported a history of PPD, and almost 97.7% breastfed their babies. Moreover, PPD was found to be associated with occupational status (p = 0.01) and a previous history of PPD (p = 0.01).

Conclusion: The prevalence of postpartum depression was 10.9% among the studied sample. Interventions to address its risk factors should be implemented, physicians and health personnel should be qualified on screening and referring depressed mothers for further clinical assessment.

Keywords: Postpartum depression, Prevalence, Screening, Sudanese

1. Introduction

1.1. Background

Depression is a serious public health problem that occurs more commonly in women than men during their childbearing years [1]; depressive disorders are believed to be the leading cause of global disability burden worldwide in 2020 [2].

Since the risk of developing mental disorders during pregnancy and postpartum period is higher for a large number of women, motherhood tends to bring serious emotional disturbances and sad times rather than happiness and joy [3].

Postpartum depression (PPD) includes feeling of sadness, exhaustion, fear, and mood instability. Although it usually occurs within four weeks after delivery, it has also been reported to occur in the month prior to delivery, which is known as "depression with peripartum onset" [4].

The possible risk factors for PPD may include: a past history of anxiety and depression "vulnerability," poor social support, adverse life events, unplanned pregnancy, low income, and immediate hormonal changes following the birth [5]. In addition, several studies have demonstrated a decreased prevalence of breastfeeding among depressed mothers compared to non-depressed ones [6].

The interaction of these factors is likely to play a role in causing PPD, and addressing these modifiable risk factors may prevent its development. A collaborative-care approach between mental health professionals and obstetricians would be appropriate to identify the mothers who are at high risk for developing PPD. Settlement of marital and family conflicts before conception, helping the mothers to set up a support plan, to have a realistic expectation of birth and parenting, resolving self-esteem issues, and encouraging them to quit smoking might help to decrease their chances of acquiring PPD [7].

This should illustrate the need for raising awareness among women, their families and their communities about the symptoms, causes, treatment, and consequences of maternal depression. Support programs and group classes may help women to form social connections, build a social network to make them feel supported and to promote their comfort with care services. The clinician should also pay attention to those women at risk to provide help as early as possible and to discuss treatment options in a sensitive and culturally appropriate way to insure cooperation [8].

1.2. Problem statement

The prevalence of non-psychotic post-partum depression in Western countries is approximately 10–15% [9], while in the developing countries, it varies between 4.9 and 59%; in Sudan, it was estimated to be 9.2% in 2015 [10].

Maternal mental health studies aim to increase the availability of information needed to take evidence-based policy decisions concerning the mother and child development, as well as improving services for both. Although important, it isn't readily available in Sudan [1].

PPD not only affects mothers but also their babies and families which makes it a social and community concern as a whole rather than an individual one. Moreover, it could be an indirect cause of maternal morbidity and mortality if untreated [1], and the presence of high prevalence of PPD may interrupt the attainment of the Millennium Developmental Goal 4 concerning the reduction in child mortality and the Millennium Developmental Goal 5 related to maternal reproductive health improvement; therefore, planning interventions are needed to be carried out [9].

1.3. Justification

Maternal mental health has not been well-studied in Sudan, the numbers and information available on PPD is not enough to reflect the actual picture. More studies need to be conducted to fill the knowledge gap and reach accurate statistics and to know the exact risk factors and the psychosocial effects of PPD in Sudan.

Moreover, PPD is becoming a serious under-diagnosed condition, mostly because of the lack of screening tests for it in the primary health care units and also due to the feeling of embarrassment in women due to which they do not voluntarily admit this kind of emotional distress or seek help. The reasons behind the inadequate treatment may include failure to recognize the symptoms or underestimating their severity.

Some women experience major depression and persistent depressive symptoms that can cause life impairment, so it is important to get those mothers identified and treated without delay to avoid developing long-term impairments in both mother and child.

Women should know that several treatments such as supporting groups, counseling, and medications actually exist for the disorders, and that they need not suffer in silence anymore.

1.4. Objectives

1.4.1. General objective

To determine the prevalence of PPD among Sudanese women attending two major delivery hospitals in Khartoum State – Saad Abueleella and Dream International Hospitals – using the Edinburgh Postnatal Depression Scale (EPDS) for a duration of six weeks.

1.4.2. Specific objective

To determine if there is a significant association between PPD and age, educational level, occupational status, obstetric complications, breastfeeding, and a previous history of similar condition.

1.5. Hypothesis

There is a significant association between PPD and age, educational level, occupational status, obstetric complications, breastfeeding, and a previous history of similar condition.

2. Materials and Methods

2.1. Study design

This study was a descriptive hospital-based cross-sectional research.

2.2. Study area

This study was conducted at two major delivery hospitals in Khartoum State, Sudan.

1. The Dream International Hospital in the Al-Manshiya neighborhood, Khartoum locality. It is a private hospital specialized in obstetrics and childbirth.

2. The Saad Abueleella Hospital in the Al-Sahafa neighborhood, Khartoum locality. It is a teaching hospital of the University of Khartoum, established in 2013 and specialized in obstetrics and childbirth. It also provides services such as in vitro fertilization.

The Dream hospital was selected in the current study because the women attending private hospitals were not included in the only research conducted in Sudan regarding PPD in 2015 and also because it has a high patient flow. The Saad Abueleella hospital on the other hand was selected conveniently for its high patient flow. Mothers were recruited from postnatal and child welfare clinics.

2.3. Study population

All Sudanese ladies included in the study were present at the selected hospitals, at six weeks following the delivery, and were aged between 18 and 45 years old. Because the prevalence of PPD among women aged 14–18 years has been found to be high, indicating that they will be confounded by many factors [1], they were excluded from the current study.

2.4. Inclusion criteria

A female, aged between 18 and 45 years and at six weeks after the delivery.

2.5. Exclusion criteria

Those who refused to participate in the study and mothers with a language barrier.

2.6. Variables

1. Independent variables: the age, educational level, occupational status, obstetric complications, breastfeeding, and previous history of PPD

2. Dependent variable: PPD

2.7. Sampling

To determine the sample size, the following equation was used:

$$n = \frac{Z^2 P(1 - P)}{d^2},$$

where n = sample size, Z = standard deviation = 1.96 at 95% confidence level, P = prevalence, and d = maximum tolerable error for the prevalence estimate (0.05).

*The prevalence in Sudan was found to be 9.2%(10), so p = 0.092

$$n = \frac{(1.96)^2 \times 0.092 \times (1 - 0.092)}{(0.05)^2}$$

$$n = 128.3$$

So, the sample size was 129.

A convenient sampling technique was used, due to the difficulty in finding women at six weeks postpartum at postnatal clinics.

2.8. Data collection

The participants were asked to fill a questionnaire by the principal investigator at the time of the interview. Because direct interviews are considered to yield the best information and result in a higher response rate from patients, it was selected as the appropriate methodology.

The questionnaire was composed of two sections:

Section A: Socio-demographic and reproductive profile

This was developed by the researcher to record personal information, past obstetric history, past history of similar psychological condition, and status of breastfeeding.

Section B: Edinburgh Postnatal Depression Scale (EPDS)

This is a standard scale of 10 items scored from 0 to 3, as the score goes higher, the higher the score, the more depressive the are symptoms [11]. The scale has been validated in many languages [12], and is widely used in screening PPD for epidemiological concerns. It was validated in Sudan in 2015, where the Cronbach's coefficient of the EPDS was 0.83 [10]. Scoring the questionnaire takes only a few minutes with experience. A cut-off score of 12.5 has been shown to detect major depression, and a woman who scores this threshold needs further evaluation.

2.9. Data analysis

Data were analyzed using the SPSS software, version 20. The data analysis plan included: master sheet, data cleaning, descriptive statistics like percentages and frequency tables, summary measures, data display in tables and figures, calculating the prevalence, odd ratios, and determining the associations using the Chi-square test and multiple linear regression test. A p-value < 0.05 was considered as significant.

3. Results

3.1. Socio-demographic characteristics

TABLE 1: Socio-demographic characteristics of mothers screened for PPD at the Saad Abueleella and Dream International Hospitals; *n* = 129.

Characteristic	Frequency	Percentage
Age		
<25	18	14.0
25–35	77	59.7
>35	34	26.3
Level of education		
Not educated	5	3.9
Primary	6	6.4
Secondary	20	15.5
University and above	98	76.0
Occupational status		
Housewife	83	64.3
Employed	42	32.6
Worker	4	3.1

Of the total 129 mothers included in the study, 59.7% were aged between 25 and 35 , 14% were <25, and 26.4% were >35 years. Additionally, 76% of them were university graduates and some had post-graduate degrees. Thus, a majority of them has completed their university education. Of the remaining, 64.3% of mothers were found to be housewives, while 31.8% were employed, as shown in Table 1.

3.2. Obstetric data

As shown in Figure 1, 20.9% of the mothers confirmed having complications during or after the delivery, while 79.1% didn't mention any complications for them or their babies. Four mothers reported having a previous history of PPD and mentioned that they were on medications. Almost all mothers (97.7%) reported breastfeeding their babies.

As presented in Figure 2, while 79% of the mothers revealed no signs of PPD and scored <9 points in EPDS, 10.1% scored 9–11, indicating a need for extra visits and 10.9% scored 12 or more (Confidence Interval 6.6–17.3%) indicating a possible PPD.

3.3. Association between PPD and mother's characteristics

This study aimed at determining the association between the socio-demographic, economic, and obstetric characteristics and PPD, which included the age, level of education,
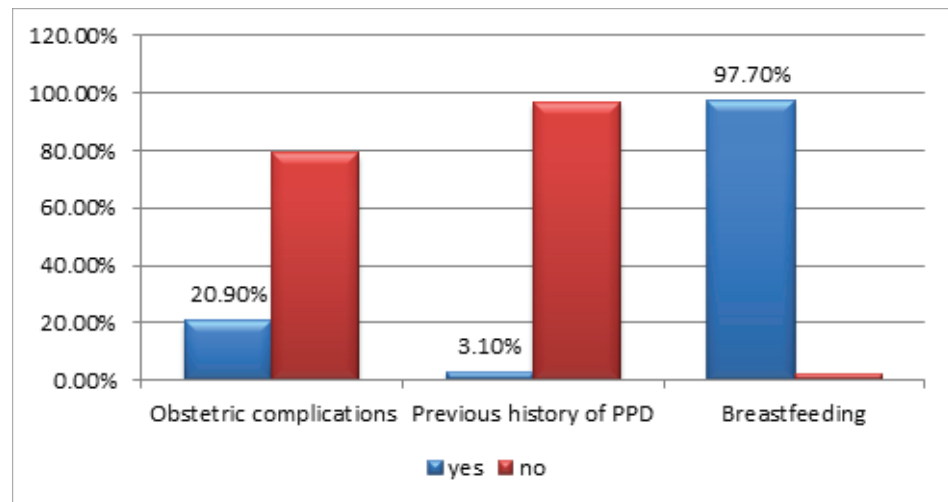
Figure 1: Percentages of mothers' obstetric complications, history of PPD, and breastfeeding status, who were screened for PPD at the Saad Abueleella and Dream International Hospitals; *n* = 129.
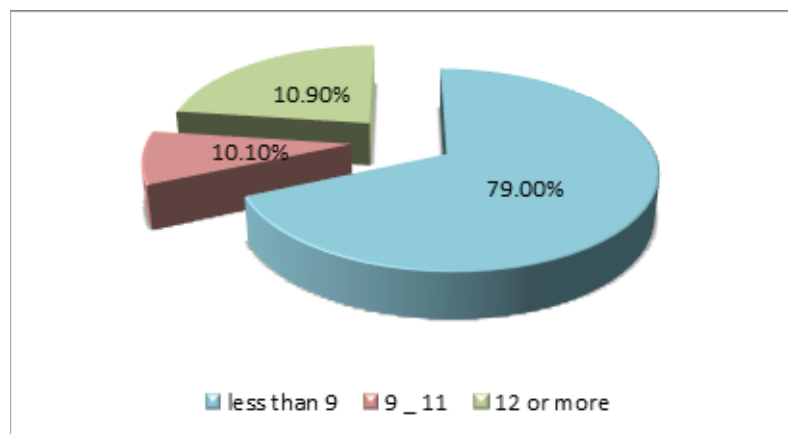

Figure 2: Percentages of mothers' EPDS points screened for PPD, at the Saad Abueleella and Dream International Hospitals; *n* = 129.

occupational status, complications during or after delivery, breastfeeding, and a previous history of PPD. Associations were done using the Chi-square test and multiple linear regression results were considered significant if p-value < 0.05.

The Chi-square test analysis showed a significant association between the EPDS scores and occupational status (*p* = 0.01), it was higher in housewives compared to working mothers. It was also found to be associated with a previous history of PPD (*p* = 0.01), indicating the possibility of further episodes of the disease in affected mothers, as shown in Table 2.

Multiple linear regression analysis found that the history of PPD was significantly associated with EPDS scores (*p* = 0.045), as shown in Table 3.

TABLE 2: Results of the Chi-square test on factors associated with EPDS scores; $n = 129$.

Variable	Test positive EPDS score $\geq$ 12	Test negative EPDS score < 12	Crude OR (95% CI)	P-value	Mean
Occupational status					
Housewife	10	73	2.67	0.01	1.36
Employed	2	39	(0.55–12.80)		1.21
History of PPD					
Yes	2	2	9.42	0.01	2.00
No	12	113	(1.21–73.03)		1.30

CI: Confidence interval; OR: Odd ratio; and *P*-value from the Chi-square test.

TABLE 3: Results of the multiple linear regression on factors associated with EPDS scores; $n = 129$.

Variable	Coefficient	Standard Error	t	P-value
History of PPD	−0.179	0.335	−2.028	0.045
Yes				
No				
Obstetric complications	−0.155	0.147	−1.706	0.091
Yes				
No				

4. Discussion

The prevalence of PPD in the study area based on EPDS scores was found to be 10.9%, this indicates that PPD is a common problem in developing countries like Sudan and that EPDS can be used as a screening tool. There is a notable resemblance in the prevalence of PPD based on the EPDS across different societies, the fact that EPDS is highly dependent on the timing makes the comparison of the studies more difficult. The advantage of using it is that it measures symptoms of anxiety in addition to symptoms of depression. This is critical because of the key symptoms as excessive worry, lack of concentration, and restlessness [13].

Although in this study, the PPD was observed only at six weeks postpartum, according to the literature, the peak time for PPD is four–six weeks following the birth [6] but the onset can happen anytime earlier, which could be as early as the first trimester of pregnancy. Knowing that a lot of mothers conceal or deny their depression symptoms during childbearing or the postpartum period, the possibility of a past history of depression cannot be eliminated [14].

The prevalence of PPD in this study was in close proximity to the prevalence in Nigeria (10.6%), Uganda (6.1%), and several other African and Arabic countries [15]. The figures do vary slightly between our study and those similar regional studies, but this could be due to the methodological differences, timing, and socioeconomic conditions in those countries compared to Sudan.

The total number of respondents was 129. Women aged <25 (14% in this study) are the most affected age group according to the literature [16]. Although our study has shown no significant association between PPD and maternal age, many previous studies in Sudan have reported PPD to be associated with maternal age, that is, younger mothers, aged "<30," carry more depression probability than older ones [13].

Some studies have stated that socioeconomic variables such as low level of education and unemployment are evident to play a small role in developing PPD [13]. In our sample, 76% of the screened mothers were university graduates and 64.3% were housewives. Moreover, PPD was found to be associated with occupational status (p = 0.01, OR = 2.67) and was higher among the housewives than the working mothers, which is consistent with the previous study conducted in Sudan [16]. Moreover, no significant association was found between educational status and PPD. It is likely that the Sudanese mothers are vulnerable to PPD because even after being well-educated and having a university degree, they have stay at home as housewives and raise their children, which may have contributed to their mental health.

About 20.9% of mothers had obstetric complications such as pre-eclampsia, post-partum hemorrhage, and some had an emergency caesarian section. In our study, and similar to other studies, obstetric complications were not found to be significantly associated with PPD [17]. Some studies have shown that insufficient pain treatment and emergency CS largely anticipate dissatisfaction with labor, but does not increase the risk of PPD, although the emergency CS mothers were younger and their children were more likely managed at the neonatal intensive care unit compared to other children [13].

Moreover, 3.1% of the mothers reported a past history of PPD which was evident to be strongly associated with PPD and found to increase the probability of PPD in our sample (p = 0.01, OR = 9.42), this is in consistent with the literature and with the previous study in Sudan. In addition, 97.7% of mothers breastfed their babies and no association was found between PPD and breastfeeding status, which is also in line with the literature [17]. This is expected because in Sudanese culture, breastfeeding is a favorable attitude and mothers tend to exclusively breastfeed their babies up to four months.

The sample in this study was taken from two major delivery hospitals in Khartoum State, the Dream International Hospital (60% of the sample) and the Saad Abueleella Hospital (40% of the sample). Initially, we had planned to include samples from the St. Mary's Maternity Hospital and Bashayir Teaching Hospital as well, but due to the lack of family planning utilization in these hospitals, our target mothers were unavailable there.

Depressed mothers are insufficiently recognized in primary health care. There are numerous reasons for poor recognition. PPD may be thought as insignificant and a normal part of postpartum time. This is not surprising specially when we think of our mothers, because they deal with these feelings silently, discreetly, smiling at it. They try hard to protect their infants from these negative emotions, perhaps by denial and expressing optimistic affections (reaction formation). This makes it difficult to investigate because mothers with mental health problems are often stigmatized in our society and are less likely to participate in any preventive healthcare. We have to change this and start by implementing screening programs in primary healthcare units for early detection and treatment of such mothers.

Facilitating questionnaire and interview measures are not used adequately and the mother and the nurse at the well-baby clinic may not be able to detect depressive symptoms [13]. Many self-rated questionnaires are available now, of which EPDS is the most often used. The easiest way to detect PPD would be a more frequent use of such questionnaires to detect mothers who need to be referred for more precise clinical evaluation [18], as WHO states, "no health without mental health" [15].

5. Study limitations

The study was limited by exclusion of mothers below 18 years, selection bias caused by the use of convenient sampling, PPD women were more likely not to attend a six-week follow up, so the 10.9% figure is less likely to accurately estimate the true PPD prevalence. The sample was selected conveniently due to the difficulty in finding six-weeks postpartum women at postnatal clinics, as the utilization of family planning in Sudan is very weak. They were captured while visiting child welfare clinics for the vaccination purpose.

6. Conclusions

PPD is a fairly common healthcare problem in the studied area, that was addressed by using the EPDS as a screening tool. Several risk factors of PPD were studied, including the age, educational level, occupational status, obstetric complications, a previous history of PPD, and breastfeeding status. Of these, the occupational status and the previous history of PPD were significant determinants in depressed mothers in comparison with non-depressed ones.

7. Recommendations

1. The researcher recommends routine admiration of EPDS to all mothers at the time of discharge and six-weeks' follow-up.

2. It is important to recognize mothers with symptoms of depression, as there are many successful studies on the treatment of PPD suitable for use in the primary healthcare.

3. It is crucial to provide sufficient knowledge and resources at the well-baby clinics to enhance maternal mental health.

4. Encouraging the parents to start family planning with their doctors, this will support the parents in both aspects – psychologically and socially – to prevent PPD as well as improving the parent–infant relationship.

5. Future researches including mothers below 18 years and exploring potential link between PPD and female genital mutilation (FGM)

6. To conduct a qualitative exploration of mothers with PPD and to use a longitudinal study design.

Acknowledgements

Ethical consideration

1. The current research has been approved by the research committee of the Khartoum University.

2. Permission was taken from the administrations of the selected delivery hospitals in Khartoum State.

3. Participation was voluntary and confidentiality was assured to all respondents. Women were informed about the study's objectives and procedures and that the data collected would be used only for the stated research purposes.

4. Women who showed symptoms of PPD were advised to follow-up with either social workers, psychologists, or psychiatrists, as appropriate.

Availability of Data and Material

The study materials are available with the author upon request.

Competing Interests

None to declare.

Funding

Appendices

EDINBURG POSTNATAL DEPRESSION SCALE (EPDS)
J.L.Cox, J.M. Holden, R. Sagovsky
Department of Psychiatry, University of Edinburgh

NAME: _____

Address: _____

Baby's Age: _____

As you have recently had a baby, we would like to know how you are feeling. Please UNDERLINE which comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

Here is an example, already completed.

I have felt happy:

> Yes, all the time.
>
> Yes, most of the time.
>
> No, not very often.
>
> No, not at all.

This would mean, "I have felt happy most of the time" during the past week. Please complete the other questions in the same way.

In the Past 7 Days:

1. I have been able to laugh and see the funny side of things as much as I always could.

    0 – As much as I always could

    1 – Not quite so much now.

    2 – Definitely not so much now

    3 – Not at all

2. I have looked forward with enjoyment to things.

    0 – As much as I ever did

    1 – Rather less than I used to

    2 – Definitely less than I used to

    3– Hardly at all

3. I have blamed myself unnecessarily when things went wrong.

    3 – Yes, most of the time.

    2 – Yes, some of the time

    1 – Not very often

    0 – No, never

4. I have been anxious or worried for no good reasons.

   0 – No, not at all.

   1 - Hardly, ever

   2 – Yes, sometimes

   3 - Yes, very often

5. I have felt scared or panicky for no very good reason.

   3– Yes, quite a lot

   2 – Yes, sometimes

   1 – No, not much

   0 – No, not at all

6. Things have been getting on top of me.

   3– Yes, most of the time I haven't been able to cope at all

   2 - Yes, sometimes I haven't been coping as well as usual

   1 – No, most of the time I have coped quite will

   0 – No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping

   3– Yes, most of the time

   2 – Yes, sometimes

   1 – Not very often

   0 – No, not at all

8. I have felt sad or miserable

   3-Yes, most of the time

   2- Yes, quite often

   1- -Not very often

   0- -No, not at all

9. I have been so unhappy that I have been crying

   3-Yes, most of the time

   2- Yes, quite often

   1 -Only occasionally

   0 – No, not at all

10. The thought of harming myself has occurred to me.

   3-Yes, quite often

   2-Sometimes

   1-Hardly ever

   0-Never

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جامعة الخرطوم

كلية الطب

قسم طب المجتمع

بحث بعنوان: انتشار اكتئاب ما بعد الولادة بين النساء السودانيات باستخدام مقياس إدنبرة في مستشفيات الولادة الرئيسية في ولاية الخرطوم

أعد هذا الاستبيان بغرض البحث العلمي وستتم المحافظة على السرية التامة للبيانات.

رقم الاستمارة: □□□

١- العمر: □□

٢- التعليم:

١) غير متعلمة ٢) أساس ٣) ثانوي ٤) جامعي فما فوق □

٣- المهنة:

١) ربة منزل ٢) عاملة ٣) موظفة ٤) أعمال حرة □

٤- هل حدثت أي مضاعفات أثناء فترة الولادة: □

١) نعم ٢) لا

٥- هل عانيت من حالات نفسية سابقة: □

١) نعم ٢) لا

٦- هل أرضعت طفلك رضاعة طبيعية: □

١) نعم ٢) لا

خلال الأسبوع السابق:

٧- كان في استطاعتي أن أضحك وأن أرى الجوانب الطريفة في الأشياء: □

٠) بنفس القدر كما كنت دائمًا

٢) ليس تماما بنفس القدر الآن

١) بالتأكيد ليس بنفس القدر الآن

٣) لا إطلاقا لم يكن في استطاعتي

٨- كنت أنظر للأمور بمتعة وانشراح: □

٠) بنفس القدر كما كنت في السابق

٢) بدرجة أقل من السابق نوعا ما

١) بالتأكيد بدرجة أقل من السابق

٣) لا أكاد أشعر بمتعة وانشراح

٩- كنت ألوم نفسي دون مبرر عندما تسوء الأمور: □

٣) نعم، معظم الوقت

١) نعم، بعض الأحيان

٢) لا، ليس في أغلب الأحيان

٠) لا، لم يحدث إطلاقا

١٠- كنت أشعر بالقلق والحذر دون سبب واضح: □

٠) لا، لم يحدث إطلاقا

٢) لا، أكاد أجزم

١) نعم، بعض الأحيان

٣) نعم، في أغلب الأحيان

١١- كنت أشعر بالخوف والفزع دون سبب واضح: □

</div>

٣) نعم، كثيرا جدا

١) نعم، أحيانا

٢) لا، ليس كثيرا

٠) لا، إطلاقا

١٢- أصبحت مغلوبة على أمري وفاقدة للحيلة: ☐

٣) نعم، في معظم الأحيان لم أستطع التعامل مع الأحداث إطلاقا

١) نعم، أحيانا لم أستطع التعامل مع الأحداث كما كنت أفعل في السابق

٢) لا، تعاملت مع الأحداث في معظم الأحيان بصورة جيدة

٠) لا، كنت أتعامل مع الأحداث بنفس القدر كما كنت في السابق

١٣- كنت غير سعيدة لدرجة أنني وجدت صعوبة في النوم: ☐

٣) نعم، في معظم الأحيان

١) نعم، أحيانا

٢) لا، ليس كثيرا

٠) لا، إطلاقا

١٤- كنت أشعر بالحزن والكآبة: ☐

٣) نعم، معظم الأحيان

١) نعم، كثيرا جدا

٢) أحيانا فقط

٠) لا، إطلاقا

١٥- كنت غير سعيدة لدرجة أنني كنت أبكي: ☐

٣) نعم، معظم الأحيان

١) نعم، أحيانا

٢) أكاد أجزم، لم يحدث ذلك

٠) إطلاقا لم يحدث ذلك

١٦- لقد مر بخاطري فكرة إيذاء نفسي: ☐

٣) نعم، كثيرا جدا

١) نعم، أحيانا

٢) أكاد أجزم، لم يحدث ذلك

٠) إطلاقا لم يحدث ذلك

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