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Comparison of pain, depression and sexual dysfunction following vaginal delivery and caesarean section

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Abstract

Objective: To compare of pain, depression, sexual dysfunction following vaginal delivery and caesarean section. **Methods:** A prospective, observational cohort study in Beni-suef university hospital, consisted of 260 nullipara women. Follow-up questionnaires will be filled at 7 days, 4-6 weeks, 3 and 6 months postpartum. The primary outcome were maternal depressive symptoms, sexual dysfunction and postpartum pain secondary outcomes was tiredness. The data was analyzed by using Chi square (x2) and regarding small sample sizes, Fisher's Exact Test was applied as applicable. **Results**: Follow-up examination of depressive symptoms, sexual dysfunction and postpartum pain within 7 days, 6 weeks and 6 months showed that

Postpartum depression: There is a clinical significance at 7DS as women who gave birth by caesarean section underwent more EPDS compared to women who gave birth by vaginal delivery. There is no clinical significance between EPD after vaginal delivery and caesarean section at 6ws and 6ms. Postpartum sexual dysfunction:

There is clinical significance at 6ws as there is sexual dysfunction after vaginal delivery and caesarean section but women who gave birth by vaginal delivery experienced more sexual dysfunction than women who gave birth by caesarean section. There is no clinical significance at 6ms between sexual dysfunction after vaginal delivery and caesarean section. Postpartum pain: There is clinical significance as at time of discharge women who gave birth by caesarean section experienced more pain than women who gave birth by vaginal delivery. Tiredness: There clinical significance as women who gave birth by caesarean section experienced Tiredness more than women who gave birth by vaginal delivery. **Conclusions**: Postnatal Depression and postpartum sexual dysfunction is highly significant after caesarean section as compared to after vaginal delivery .

1. Introduction:

Childbirth has a major impact on maternal health. Pain, depression, and sexual dysfunction are major postpartum maternal health problems **(1).**

Caesarean delivery rate is increasing worldwide. It has increased risks of infant mortality and complications in subsequent pregnancies **(2)**.

Postpartum depression (PPD) is a mood disorder that affects ten to twenty percent of women. It can begin any time during the first year after delivery and may last for several months. Postpartum depression affects not only maternal health but also infant growth and development **(3)**. Factors associated with postpartum depression include demo-graphic and obstetric characteristics, endocrine aspects, genetic factors and the social support **(4).** Some studies have identified a correlation between the mode of delivery and the severity of postpartum depression **(5)**, while others have found no such association **(6).**

Postpartum pain—such as headache, back pain, perineal pain, nipple pain, and abdominal pain—is among the most commonly reported symptoms

following childbirth and is negatively associated with postpartum quality of life **(7).** Anticipated pain during vaginal delivery or after cesarean section may influence the preferred mode of childbirth **(8).** One study reported that 79% of women who had cesarean deliveries experienced abdominal incision pain, whereas 48% of those who had vaginal deliveries reported perineal pain during the first two months postpartum **(9).** Differences in the prevalence of perineal and abdominal pain have also been observed at three months postpartum among women who delivered via cesarean section and those who delivered vaginally **(10).**

Sexual function after childbirth is a significant concern for both women and their partners. Childbirth often results in anatomical changes to the lower genitourinary tract **(11),** and many women experience sexual dysfunction postpartum. Postpartum depression may also contribute to impaired sexual function **(12)**. The mode of delivery has been linked to dyspareunia and other sexual dysfunctions (Gommesen D et al., 2019). Concern over potential sexual dysfunction due to loss of vaginal muscle tone may lead some women to prefer cesarean delivery. Cesarean section is often believed to preserve sexual function by avoiding genital tract trauma. However, empirical findings on the relationship between delivery mode and postpartum sexual function remain inconsistent **(13).**

2. Aim of the Study:

To compare maternal health outcomes specifically pain levels, symptoms of depression, and sexual function at 7 days, 4–6 weeks, and 6 months postpartum between women who underwent vaginal delivery and those who had a cesarean section.

Subjects and Methods Study Design

prospective, observational cohort study

❖ **Study Site:**

Participants were recruited from the Department of Obstetrics and Gynecology at Beni-suef University.

❖ **Study period:**

The study was conducted from June 2021 till November 2021..

❖ **Study Population:**

he study population included nulliparous women, ability to read Arabic. Women were recruited for enrollment when they have delivery at the department.

Sample size:

GPower software, version 3.1.9.2 (Franz Faul, Kiel, Germany), was used to calculate the required sample size. A power analysis for the chi-square test was conducted using GPower, with the

following parameters: an alpha level of 0.05, a power of 0.95, a medium effect size (w = 0.3), and 1 degree of freedom. Based on these assumptions, the minimum required sample size was determined to be 145 participants. Accounting for an anticipated dropout rate of 75%, the adjusted minimum total sample size was set at 260 participants, with 130 individuals allocated to each group.

Inclusion criteria:

- Age(18:35)
- Nulliparous (i.e. no previous live births or pregnancies ending in a stillbirth).
- Delivery of a single alive baby at term.
- Able to complete self-administered questionnaire and telephone discussions.

Exclusion criteria:

- multipara
- Preterm birth.
- Maternal psychiatric disorders.
- Mothers of infants hospitalized in neonatal or intensive care.
- Acute and chronic medical sickness for example uncontrolled hypertension, uncontrolled diabetes mellitus.
- History of self-reported sexual dysfunction.
- Genito-pelvic pain disorders.
- Complicated vaginal delivery or caesarean section with intra or post-operative complication..

Study Procedure:

The patients were submitted to:

Full history taking comprising: obstetric and gynecological history, socio-demographic background, medical records.

Structured Interview: An organized interview was accomplished by the investigator to gather knowledge about participant sexual , socio-demographic, medical, and relationship history, also way of delivery, genital trauma were collected from participants' self-report and also gained from their medical files. The standard questionnaire and a consent form and a separate sheet for providing contact information.

Postnatal visits, phone interviews, WhatsApp group chats, and online surveys were used to complete follow-up questions at 7, 4, and 6 weeks postpartum. Information on perineal injuries and the timing of cesarean sections (classified as elective, first stage, or second stage) were culled from hospital medical records that dealt with labor and delivery events.

❖ **Outcomes:**

The primary outcome measures are:

❖ **Maternal Depressive Symptoms**

A 10-item measure known as the Edinburgh Postnatal Depression Scale (EPDS) was used to evaluate maternal depressed symptoms. This scale has shown to be sensitive and specific in detecting likely cases of clinical depression in general populations (14). among order to identify postpartum depression among Arabic-speaking women, the Arabic version is a viable and reliable screening tool, as shown by Ghubash et al. (15). We utilized a score of 13 or above on the EPDS as a cutoff for potential severe depressive disorder.

❖ Sexual Function

The Arabic version of the Female Sexual Function Index (FSFI), which was validated in Arabic by Anis et al. (16), was used to assess sexual function. The original Arabic version was translated from the English version by Rosen et al. (17). For the purpose of assessing a woman's sexual function over the previous month, the FSFI has been validated and consists of 19 items. This test evaluates six different aspects: desire, arousal, lubrication, orgasm, pleasure, pain, and satisfaction and orgasm. On a 5-point Likert scale, people may choose the answer that most accurately describes how they've been feeling over the last four weeks. Female sexual dysfunction was indicated by a total score of 26 or less. Additionally, the research will look at how breastfeeding, obstetric variables, and sexual response and self-reported sexual function are related.

❖ Postpartum Pain

An 11-point Numerical Rating Scale (NRS) was used to quantify postpartum pain, which encompasses both abdominal and perineal discomfort. A score of 0 indicates no pain, while a score of 10 reflects the most excruciating agony conceivable.

❖ Secondary Outcomes

Fatigue

An indication checklist that enquired about frequent physical health symptoms after giving birth was used to measure fatigue. "Since the birth, have you experienced extreme fatigue or tiredness?" was the exact question posed to the participants. Never, seldom, sometimes, and frequently were the available response possibilities. The replies were categorized as either "rarely/never" or "occasionally/often" for the sake of analysis.

3. Methods for Feeding Infants

A battery of questions designed to elicit responses on the mother's breastfeeding

habits were used to evaluate infant feeding behaviors. No differentiation was made between predominant, exclusive, or complementary nursing for the sake of analysis. Breastfed infants were those who received either breast milk or a combination of the two.

Ethical Considerations

The institutional ethics committee gave its stamp of approval to the research.

Process for Informed Consent

After thoroughly explaining the study's aims, we made sure to secure written informed permission from every participant. Everyone involved understood that taking part was completely optional and would have no impact on the quality of care they got regardless of their choice to stay or go. A certified research assistant went over the whole study procedure with the participants and made it clear that they might stop at any moment without penalty. The anonymity of the participants was guaranteed, and data pertaining to birthing and obstetric records were retrieved from medical records.

Statistical Analysis

For continuous variables, the data will be shown as the mean plus or minus the standard deviation (SD). For categorical variables, it will be shown as the number of instances or relative frequencies as a percentage, depending on the situation. For continuous demographic data, the normality of distribution was evaluated using the Kolmogorov-Smirnov test.

The independent samples t-test was used to examine any discrepancies in numerical variables across the research groups, assuming that the data was normally distributed. We used the Mann-Whitney U test for data that didn't fit the normal distribution. When comparing categorical variables, the Chi-square (χ^2) test was used. In cases where the anticipated frequencies were modest, Fisher's Exact Test was employed.

For statistical purposes, a p-value less than or equal to 0.05 was deemed significant. An analysis of statistical significance was carried out using SPSS, version 22 (SPSS Inc.), for all data sets.

4. Results:

Table (1): Postpartum depression at 7days, 6weeks and 6months after vaginal delivery and caesarean section

EPD	7DS			6WS			6MS		
Depressed cases (score ≥13)	NVD N %	CS N%	P-value	NVD N%	CS N%	P-value	NVD N%	CS N%	P-value
	17 (13.1%)	42 (32.3%)	0.002	36 (27.7%)	41 (31.5%)	0.497	15 (11.5%)	20 (15.4%)	0.363

NB: Edinburgh Postnatal Depression Scale (EPDS)< 13 means there is indicative of probable major depression problem.

There was statistical significant difference at 7 days as women who delivered birth through caesarean section experienced more depressive symptoms (32.3%) compared to women who delivered birth through vaginal delivery(13.1%), with P-value =0.002(Chi square (χ^2) test)

No significant difference reported between the depressive symptoms reported by Edinburgh Postnatal Depression Scale after vaginal delivery and caesarean section at 6weeks and 6months of delivery.

Table (2) postpartum depression after vaginal delivery at 7ds, 6ws and 6ms

EPD	**7DS**	**6WS**	**6MS**	**P**
Depressed cases (score ≥13)	17 (13.1%)	36 (27.7%)	15 (11.5%)	**0.0007**

There was statistical significant difference when comparing depressive symptoms of women who gave birth through vaginal delivery at follow up 13.1% at 7 days ,27.7% at 6 weeks and 11.5% at 6 months after delivery with more women experienced depressive symptoms at 6 weeks and P-value =0.0007(Chi square (χ^2) test)

Table (3): Postpartum depression after caesarean delivery at 7ds, 6ws and 6ms

EPD	7DS	6WS	6MS	P
Depressed cases (score ≥13)	42 (32.3%)	41 (31.5%)	20 (15.4%)	0.002

There was statistical significant difference regarding women who showed depressive symptoms after caesarean delivery at follow up 32.3% at 7 days ,31.5% at 6 weeks and 15.4% at 6 months after delivery with less women experienced depressive symptoms at 6 months and P-value =0.002(Chi square (χ^2) test).

Table (4) sexual dysfunction after vaginal delivery and caesarean section at 6weeks and 6months

	6WS			**6MS**		
Total score FSFI	NVD M (SD)	CS M (SD)	P	NVD M (SD)	CS M (SD)	P
	20.24 (12.91)	22.85 (2.78)	0.025	21.52 (12.78)	23.00 (2.78)	0.199

There is statistical significant difference at 6weeks regarding sexual dysfunction after vaginal delivery and caesarean section but women who gave birth by vaginal delivery experienced more sexual dysfunction than women who gave birth by caesarean section. (p=0.025) (Independent t-test)

No significant difference reported at 6months between sexual dysfunction after vaginal delivery and caesarean section

Table (5) pain intensity after vaginal delivery and caesarean section at delivery and at time of hospital discharge

Intensity	**At time of discharge**		
Score	**NVD *Mean (SD)**	**CS *Mean (SD)**	**P**
	2.02 (0.85)	6.52 (1.14)	0.0001

There is statistical significance as at time of discharge women delivered by caesarean section experienced more pain than women who gave birth by vaginal delivery (P=0.0001)

Table (6) : Tiredness after vaginal delivery and caesarean section at 6ms after delivery

At 6 months			
Tiredness	**NVD / N %**	**CS/ N%**	**P**
Often	16 (12.3%)	33 (25.4%)	0.007
Rarely	114 (87.7%)	97 (74.6%)	

There significant difference regarding tiredness after 6 months as women delivered by caesarean section experienced Tiredness 25.4% which is more than women who gave birth by vaginal delivery 12.3% with P-value =0.007 (Chi square (χ^2) test)

5. Discussion:

Mode of delivery plays a significant role in shaping maternal health outcomes. Postpartum depression, pain, and sexual dysfunction are among the primary health concerns experienced by women following childbirth (18). Maternal depression in the postpartum period represents a serious public health concern, with documented negative consequences for both the mother and her child (19).

Concerns related to sexual function after childbirth are also prevalent. These include reduced frequency of sexual activity, decreased sexual desire and arousal, vaginal dryness, dyspareunia, and dissatisfaction with one's sexual life (20). Persistent postpartum pain has been reported following both vaginal delivery (VD) and cesarean section (CS). Pain resulting from episiotomy or perineal trauma during VD and from the Pfannenstiel incision during CS has frequently been identified as a source of discomfort (8).

In the present prospective observational cohort study involving 260 women, pain levels, depressive symptoms, and sexual dysfunction were compared between those who delivered vaginally and those who underwent cesarean section. Participants were assessed at 1 week, 6 weeks, and 6 months postpartum. There were no significant differences between the two groups in terms of geographic location, age, education, body mass index (BMI), gestational age, breastfeeding status, use of epidural anesthesia, or duration of hospital stay. These similarities support the interpretation that observed outcomes are primarily attributable to the mode of delivery.

Regarding postpartum depression, at one week postpartum, 17 out of 130 women (13.1%) in the vaginal delivery group and 42 out of 130 women (32.4%) in the cesarean section group exhibited depressive symptoms. This difference was statistically significant ($p = 0.002$), suggesting an early association between cesarean delivery and elevated depressive symptoms. However, at six weeks postpartum, 36 women (27.7%) in the vaginal delivery group and 41 women (31.5%) in the cesarean group reported depressive symptoms, with no statistically significant difference observed ($p = 0.497$). By six months postpartum, symptoms were reported by 15 women (11.5%) in the vaginal delivery group and 20 women (15.4%) in the cesarean group, again with no significant difference ($p = 0.363$).

Similarly, a meta-analysis conducted by Lei Sun et al. (21), which included 43 studies with a combined sample size of 1,827,456 participants, demonstrated an elevated risk of postpartum depression among women who delivered via cesarean section. Specifically, the analysis found that, compared to spontaneous vaginal delivery, emergency cesarean section was associated with an odds ratio (OR) of 1.53 (95% CI: 1.22–1.91), while elective cesarean section compared to unplanned vaginal delivery yielded an OR of 1.47 (95% CI: 1.16–1.86). These findings suggest that women who undergo cesarean delivery—particularly in emergency situations—face a higher risk of developing mild postpartum depression. This highlights the need for proactive monitoring and timely access to mental health services for women delivering by cesarean section.

In contrast, A. Faisal-Cury and P.R. Menezes (22) conducted a study involving 482 women reassessed between 6 and 16 months postpartum. Of these, 250 (51.8%) had undergone unassisted vaginal delivery (UVD), 85 (21.7%) had experienced complicated vaginal delivery (CVD), and 147 (30.5%) had delivered via cesarean section (CD). The study found that 18% of participants exhibited depressive symptoms, but no significant association was reported between mode of delivery and postpartum depression. Notably, women who underwent cesarean delivery or experienced perinatal trauma (e.g., episiotomy) did not exhibit a higher risk of postpartum depression in the medium to long term compared to those who had uncomplicated vaginal deliveries.

Regarding postpartum sexual dysfunction, the current study found that at six weeks postpartum, the mean Female Sexual Function Index (FSFI) score was 20.24 ± 12.91 in the vaginal delivery group and 22.85 ± 2.78 in the cesarean section group, with a statistically significant

difference (p = 0.025). However, by six months postpartum, the mean FSFI score was 21.52 ± 12.78 in the vaginal delivery group and 23.00 ± 2.78 in the cesarean section group. At this point, the difference was no longer statistically significant (p = 0.199), indicating a convergence in sexual function outcomes over time.

These results align with findings from Doaa M. Salah et al. (23), who studied 684 primiparous women (320 vaginal deliveries and 364 cesarean sections). Their results showed that women with a history of cesarean section had significantly higher total FSFI scores compared to those who delivered vaginally (30.97 vs. 29.97; p < 0.001).

In terms of postpartum pain, the present study revealed a significant difference in pain scores at hospital discharge. Women in the vaginal delivery group reported a mean pain score of 2.02, whereas those in the cesarean section group reported a substantially higher mean score of 6.52. This difference was statistically significant (p = 0.0001), underscoring the higher immediate postoperative pain burden associated with cesarean delivery.

In the present study, 16 out of 130 women (12.3%) in the vaginal delivery group (Group A) and 33 out of 130 women (25.4%) in the cesarean section group (Group B) reported experiencing persistent tiredness at six months postpartum. This difference was statistically significant (p = 0.007), indicating a higher incidence of fatigue among women who underwent cesarean delivery.

Supporting evidence from Enaruna NO and Edomwonyi NP (8) reported postpartum pain prevalence at six weeks to be 18% among women who delivered vaginally and 42% among those who underwent cesarean section. Their study included 1,390 women, of whom 459 (33%) had cesarean sections and 931 (67%) had vaginal deliveries. While pain was notably more frequent in the cesarean group at six weeks, persistent pain beyond six months was infrequent in both groups. The authors emphasized that persistent postpartum pain is closely linked to inadequately managed acute peripartum pain, especially in primiparous women, and advocated for individualized screening and pain management strategies.

A notable strength of the present study is its prospective design and high follow-up rate, made possible through the efforts of a dedicated research team and the collection of accurate contact information for participants.

Nevertheless, the study has several limitations. The analysis did not account for various contributing factors that may influence postpartum depression, sexual

dysfunction, or pain—factors that could potentially inform preventive or therapeutic strategies in clinical practice. Additionally, the study did not distinguish between major and minor forms of postpartum depression, nor did it follow up on severe cases or detail the types of treatment these participants may have received. The relatively small sample size also limits the generalizability of the findings. Expanding the sample to include participants from both public and private healthcare sectors would enhance the reliability and applicability of the results.

6. Conclusions and Recommendations :

Women who undergo cesarean section appear to be at greater risk for postpartum depression in the short term compared to those who experience uncomplicated vaginal delivery. Evaluating the factors associated with postpartum depressive symptoms necessitates well-designed, multicenter, controlled trials with larger sample sizes. Such research can support healthcare professionals, particularly midwives, in counseling women more effectively about delivery options and improving care strategies for women undergoing both types of childbirth.

Postpartum pain is more commonly reported among women who deliver via cesarean section. The authors advocate for increased awareness and implementation of effective analgesic techniques during and after cesarean delivery, including multimodal analgesia approaches such as intra-wound infiltration and parietal blocks, to ensure adequate peripartum pain control. Furthermore, there is a need for an established, standardized protocol to assess chronic pain and depressive symptoms in the postpartum period to facilitate early identification and follow-up for those at risk.

Future research should also focus on postpartum sexual health, aiming to identify women experiencing sexual dysfunction and to explore factors that may promote positive sexual well-being after childbirth. In addition, interventions that support healthy sexual adjustment during the postpartum period should be prioritized.

Finally, the authors recommend the development and promotion of national programs that support vaginal delivery, given its comparatively lower impact on maternal mental health and sexual function.

7. References:

1. **Cappell J, Bouchard KN, Chamberlain SM, et al (2020):** Is Mode of Delivery Associated With Sexual Response? A Pilot Study of Genital and Subjective Sexual Arousal in Primiparous Women With Vaginal or Cesarean Section Births. J Sex Med; 17:257e272

2. **Asadi M, Noroozi M, Alavi M(2021):** Exploring the experiences related to postpartum changes: perspectives of mothers and healthcare providers in Iran. BMC Pregn Childbirth;21(7):1–31
3. **Eckerdal P, Georgakis MK, Kollia N, et al. (2018)** Delineating the association between mode of delivery and postpartum depression symptoms: A longitudinal study. Acta obstetricia et gynecologica Scandinavica 97: 301–311
4. **Kim Y and Dee V (2018)** Sociodemographic and obstetric factors related to symptoms of postpartum depression in Hispanic women in rural California. Journal of Obstetric, Gynecologic & Neonatal Nursing 47: 23–31
5. **Lei Sun, Su Wang and Xi-Qian Li (2021):** Association between mode of delivery and postpartum depression: A systematic review and network meta-analysis. Australian & New Zealand Journal of Psychiatry, Vol. 55(6) 588–601
6. **Smorti M, Ponti L, Tani F (2019).** Maternal depressive symptomatology during pregnancy is relevant risk factor affecting newborn's health: a longitudinal study. J Reprod Infant Psychol. 39:492–7.
7. **Banaei M, Alidost F, Ghasemi E, Dashti S (2019).** A comparison of sexual function in primiparous and multiparous women. J Obstet Gynaecol
8. **Enaruna NO, Edomwonyi NP(2019):** Persistent pain after caesarean and vaginal delivery: Experience at a public tertiary hospital, Benin city, Nigeria. Tropical Journal of Obstetrics and Gynaecology (36)1: 73-79
9. **Brandsborg B, Nikolajsen L (2018).** Chronic pain after hysterectomy. Curr Opin Anaesthesiol;31:268–73
10. **Bijl RC, Freeman LM, Weijenborg PT, Middeldorp JM, Dahan A, van Dorp EL(2016).** Aretrospective study on persistent pain after childbirth in the Netherlands. J Pain Res ;9:1–8
11. **Jansson MH, Franzén K, Hiyoshi A, Tegerstedt G, Dahlgren H, Nilsson K (2020).** Risk factors for perineal and vaginal tears in primiparous women - the prospective POPRACT-cohort study. BMC Pregnancy Childbirth.;20(1):749
12. **Hajimirzaie SS, Tehranian N, Razavinia F, Khosravi A, Keramat A, Mirzaii M, et al .(2021)** Evaluation of couple's sexual function after childbirth with the biopsychosocial model: A systematic review of systematic reviews and meta-analysis. Iran J Nurs Midwifery Res ;26:469-78
13. **Dawson SJ, Vaillancourt-Morel M-P, Pierce M, Rosen NO (2020) ,** Biopsychosocial predictors of

trajectories of postpartum sexual function in first-time mothers. Health Psychol;39:700–10

14. **Cox J. Perinatal Mental Health(2003):** a Guide to the Edinburgh Postnatal Depression Scale (EPDS). London: Gaskell, 2003.
15. **Ghubash, R.et al. (1997) :** The validity of the Arabic Edinburgh postnatal depression scale .Soc Psychiatry Epidemiol, 32, 474-476.
16. **Anis TH, Aboul Gheit S, Saied HS, and Al_kherbash SA (2011):** Arabic translation of female sexual function index and validation in an Egyptian population. J Sex Med 2011;8:3370–3378.
17. **Rosen, R., Brown, C., Heiman, J., Leiblum, S., Meston, C., Shabsigh, R., D'agostino, R.J.R., (2000):** The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. J. Sex Marital Ther. 26, 191–208.
18. **Cappell J, Bouchard KN, Chamberlain SM, et al (2020):** Is Mode of Delivery Associated With Sexual Response? A Pilot Study of Genital and Subjective Sexual Arousal in Primiparous Women With Vaginal or Cesarean Section Births. J Sex Med; 17:257e272
19. **Stuart-Parrigon K, Stuart S (2014) Perinatal depression:** an update and overview. Curr Psychiatry Rep 16:468
20. **Schlagintweit HE, Bailey K, Rosen NO (2016).** A new baby in the bedroom: frequency and severity of postpartum sexual concerns and their associations with relationship satisfaction in new parent couples. J Sex Med;13:1455-1465
21. **Lei Sun, Su Wang and Xi-Qian Li (2021):** Association between mode of delivery and postpartum depression: A systematic review and network meta-analysis. Australian & New Zealand Journal of Psychiatry, Vol. 55(6) 588–601
22. **A. Faisal-Cury, P. R. Menezes (2019).** Type of delivery is not associated with maternal depression. Archives of Women's Mental Health 22:631 635
23. **Doaa m salah, fatma hossam, taiseer m mohamed (2019)**, effect of mode of delivery on female sexual function 1143_1147.