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THE ASSOCIATION OF MODE OF DELIVERY WITH PUERPERAL DEPRESSION: A DESCRIPTIVE STUDY

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Abstract
This study explores the relationship existing between various modes of delivery and prevalence of postpartum depression within six weeks of delivery. Important implications of postpartum depression (PPD) are the mother and infant health in a large number of women, as this condition occurs after delivery. The study is descriptive in nature and done in Khyber Teaching Hospital in Peshawar and its sample was 130. The research materials used to present the data were the Edinburgh Postnatal Depression Scale (EPDS) which is a standardized instrument and SPSS to carry out the analysis of the data. Findings denote that there is a significant difference in the rate of postpartum depression in the case of diverse modes of birth delivery, and the elective cesarean section represents the greater rate. The present study reveals a possible contribution to mode of delivery as a risk factor of PPD and the need of early screening and intervention methods.

INTRODUCTION

Postpartum depression (PPD) is a widespread mental condition that occurs in up to a considerable percentage of world women especially during the first month's pregnancy-related. Depression is considered to be a major world crisis due to the fact that, according to World Health Organization (WHO), it affects about 300 million all over the world. To these, postpartum depression can be listed as one of the most common conditions as about one every six women experiences in the aftermath of childbirth (World Health Organization, 2020). Even though it is very common, PPD is underdiagnosed and undertreated, thus leading to long-term psychological, social, and physical effects on mothers and children. Besides affecting the emotional health of the mother, this condition also impairs the growth of the infant, influences the quality of the maternal-infant relationships and may cause family dysfunction (Stewart et al., 2021).

The postpartum depression normally occurs in the initial weeks after the childbirth and is distinguished by a feeling of deep sadness, tiredness, irritation and depressed feelings. The problem can be characterized by mood swings, loss of interest in routine activities, worthlessness or guilt, broken sleep and altered eating habits (Gavin et al., 2005). PPD is also characterized

by a variation in severity, and some women will have mild cases but there are more serious cases where the mental illnesses affect the women to the extent that their functioning in life is impaired. After a child is born, about 85 percent of mothers are likely to experience any mood disturbance that can include mild, baby blues and more serious cases of depression (Dennis & Falah-Hassani, 2016). Neglected, these disturbances may lead to dysfunctional long-range psychological outcomes such as anxiety, protracted depressive disposition, and even suicidal thoughts (Howard et al., 2014).

The etiology of PPD is complex, with an interaction of psychological, biological and social components. The risk factors of psychosocial nature, which include history of depression, absence of social support, interpersonal problems, socioeconomic stressors, were proven to play a crucial role in relationship to the development of postpartum depression (Stewart et al., 2021). On the biological scales, the biological changes have been found to be a cause in the occurrence of PPD especially the changes in hormones leading to rise of the estrogen and progesterone levels which fluctuate at high speed after delivery (Yonkers et al., 2001). Moreover, such pregnancy complications as gestational diabetes, preeclampsia, and cesarean section have been listed among the contributing factors of PPD development (Lin et al., 2020).

There has been a lot of debate on the role of mode of delivery in giving rise to the condition postpartum depression. It is possible that the way of giving birth may also affect the experience of a woman, and this may lead to challenges related to her mental health. It has also widely been associated that vaginal birth will be more natural and empowering, whereas cesarean delivery, especially an emergency cesarean section, is expected to be more distressful to the mother, because the surgery cannot be planned, the recovery period is more intensive, and complications might arise (Liu et al., 2022). However, despite some studies investigating the presence of the connection between the mode of delivery and PPD, the conclusions (and associations) are inconsistent, with some stating that cesarean delivery increases the risk of developing PPD, others showing that there is no significant change in the prevalence of PPD between vaginal and cesarean deliveries (Sun et al., 2021).

Another study conducted by Sun et al. (2021) in a systematic review and meta-analysis reached the conclusion that postpartum depression was more prevalent among women who delivered by cesarean section and especially, emergency cesarean sections than women who delivered vaginally. Both psychological and physical reasons were adduced in explaining this. Particulary emergency cesarean sections, are routinely performed in stressful circumstances, and may result in the experience of loss of control feelings, trauma, and birthing disappointment. Moreover, cesarean procedures are characterized by a more prolonged period of recuperation and could come to be related to unpremeditated suffering, e.g., pain and problem with breast feeding, which could lead to depressive symptoms (Goker et al., 2012).

This connection between the mode of delivery and PPD is also made more complicated by the fact that several other variables were observed to have significant roles to play in determining the mental status of a woman after delivery and these variables include obstetric complications, maternal age, and social support. As an illustration, a woman who has a record of psychiatric illnesses, women facing trouble during childbirth, or having no support (emotional or financial) are more likely to develop PPD after childbirth, irrespective of the delivery method (Dennis & Falah-Hassani, 2016). Therefore, mode of delivery can be a determinant in putting one at risk of developing postpartum depression but it cannot be the sole reason so easily that one can be trusted when assessing the possibility of developing PPD.

The rising trend in the number of cesarean births globally in elective and emergency cases has prompted the call to question the long term health implications of the current trend on the mothers. A recent study conducted by the World Health Organization (WHO) revealed that there has been an increase in the cesarean birth rate in the world with some countries registering as high as 50 percent and above. According to the presented study, the increase in the rate of cesarean sections was attributed to maternal mental health worries in countries such as the United States or Brazil, specifically the issue of postpartum depression (Liu et al., 2022). Although a cesarean birth may be an effective life-saving intervention in some cases, its increased prevalence without obvious

medical conditions causes concerns about the possible psychological outcomes of children on the mothers, especially in terms of PPD.

Conversely, vaginal delivery can be discussed as the most desirable childbirth method, with all of its complications and recovery periods being less than those of a cesarean section (Sun et al., 2021). Nevertheless, vaginal delivery does not lack its difficulties, which may include birth injuries, perineal tears, and a long labor that may also cause the development of PPD. Moreover, natural birth may be significantly diverse and after giving birth spontaneously by a vagina, women were delivered using forceps, vacuum-assisted dilatation, and these procedures differed in terms of the pain experience, trauma and difficulties with the recovery period (Gavin et al., 2005). Therefore, it is necessary to note that the delivery procedure includes a variety of experiences, and each of them can affect the mental well-being of a woman differently.

Even though the emergence of literature on the mode of delivery-PPD relationship is considerable, its establishment requires further research that would help comprehend mechanics and will help healthcare professionals establish more appropriate guidelines on detecting and managing PPD based on the mode of delivery. Others studies have indicated that women with complicated labor or those who receive emergency cesarean sections would need more psychological support and postpartum attention to reduce the chance of depression (Howard et al., 2014). PPD could be avoided by screening earlier in life with the help of tests like the Edinburgh Postnatal Depression Scale (EPDS), as well as specific interventions, which would help to choose the women at the highest risk and offer them the necessary support to eliminate the further psychological distress. Based on these reflections, the current research paper purports to examine the relationship existing between mode of delivery and occurrence of postpartum depression among a group of women admitted to Khyber Teaching Hospital, Peshawar. Exploring the prevalence rates of PPD among the different delivery systems, the current study aims at the improvement of the existing body of research on this significant topic, which can inform both clinical practices and policy development of maternal mental health. Moreover, it is also hoped that such a study will allow identifying the risk factors of PPD and reveal what can be done to provide support to women and which of these actions are best suited during the postpartum period.

To conclude, postpartum depression is a major health issue among the population of women who have given birth. One of the numerous factors that can lead to the development of PPD is the mode of delivery, yet the role it plays in the development of PPD is not exactly known now. This paper will unravel this connection by looking at the rates of postpartum depression, depending on the delivery method, and will shed great light on how medical practitioners can be able to assist the women, post delivery, more efficiently.

Literature Review

Postpartum depression (PPD) is considered to be one of the most common mental health disorders affecting women after childbirth and an expressed impact on the health of the mother and the child. PPD is a life-threatening concern, and according to the estimates of the World Health Organization (WHO), it affects between 15 and 20 percent of female humans around the world (World Health Organization, 2020). Postpartum depression may result in broken mother-child bonding and inability of the mother to support the newborn as well as long term threat to the survival of the mother and the child. Although there are many risk factors associated with the occurrence of PPD, more interest has surfaced in the area of the mode of delivery as a possible determinant of the risk of developing PPD.

This literature review is a critical exploration of available body of knowledge on the relationship between mode of delivery and prevalence of postpartum depression. The issue of cesarean section (C-section) delivery and PPD formed a question of interest, and several studies tried to identify whether C-sections, especially emergency ones, are the risk factor of developing postpartum depression more than vaginal delivery (Liu et al., 2022). The review will consider diverse studies that help explore the issues that have psychological, physical, and sociocultural underpinnings so that they mediate this relationship.

Postpartum Depression- Prevalence and Effects

Characteristic of postpartum depression is that it normally occurs within a few weeks after childbirth

and may have mild symptoms such as sadness to severe depression that affect the functioning of a woman (Gavin et al., 2005). The rates of PPD differ by location, and the study in Pakistan gave the PPD prevalence of about 31.4% women (Jabeen et al., 2019). The seriousness of the condition may result in various and rather unfortunate consequences, such as the negative effects in terms of infant care, the relationship between the mother and the child and even infant development. Stewart et al. (2021) pointed to the fact that maternal depression might provoke negative impacts on the cognitive and emotional outcomes of infants, thus creating long-term effects in how infants perform in their social and behavioral outcomes.

Besides its direct implication on the infant, postpartum depression has great implication on the well-being of the mother. Women with PPD are specifically exposed to high risks of developing chronic depression and related mental health issues, including anxiety and post-traumatic stress disorder (PTSD) which might persist long after the postpartum stage (Howard et al., 2014). This is why the factors that cause PPD and can be used to reduce the risks must be perceived as z priority.

Possible Risk Factor Mode of Delivery

Mode of delivery has come to play a critical role on the tendency of postpartum depression. According to several studies, a higher rate of PPD is observed in women who undergo cesarean section, especially emergency C-section, than home births (Liu et al., 2022). This can be blamed on both psychological and physical reasons because women who indulge in C-sections normally have a traumatic and difficult child-birth experience. Loses of control, physical postpartum recovery, and possible perceptions of failing or being dissatisfied with the birthing process may cause development of PPD (Sun et al., 2021).

Mental effects of Cesarean Section

The literature has dwelled extensively on the psychological effect of cesarean delivery on the mental state of the mother. In a study conducted by Goker et al., (2012), it was established that women who have cesarean deliveries had an increased likelihood to report elevated postnatal depressive symptoms as those who gave birth vaginally. In particular, the emergency cesarean sections were associated with even more trauma, anxiety, and the feeling of inadequacy since this procedure can be impromptu and bring about the loss of control over the birth experience. Conversely, women agreeing with a vaginal birth, particularly spontaneous vaginal delivery, were more likely to describe the feeling of empowerment and satisfaction with the birthing experience (Liu et al., 2022). The control and participation in the delivery process can be said to be an example of the most determinant factors in the satisfaction and mental well-being of the mother.

In addition, cesarean sections, and especially the emergency ones are likely to be coupled with longer recovery intervals as well as with increased physical discomfort, including surgery pain, inability to breastfeed, and difficulties with mobility. Such physical problems may make it tougher to control the emotional toll of recovering after birth, and in turn, accelerate the development of PPD (Gavin et al., 2005). The supplementary difficulties of post-operative care can stop the young ladies to attach to their newborn children or engagement in ordinary parental occupations and endanger them more to depression (Dekel et al., 2019).

Social and Cultural Factors

Psychological effects of cesarean section may also have some part in the cultural attitude to childbirth and delivering method. The vaginal delivery is understood in a lot of different cultures as the natural or perfect way to have a child, and in case a woman goes through the cesarean section she might feel disappointment, guilt or failure (Goker et al., 2012). In the cases where vaginal birth is overly prestigious in society, the stigma attached to cesarean sections might be very strong. The cultural pressure can make the process of an unplanned C-section even more emotionally challenging and can precondition the development of PPD.

In other societies, on the other hand, cesarean sections are becoming seen as safest and desirable mode of childbirth mainly by views that; the method is more convenient, painless, or less likely to cause complications during labour. Such disparate cultural perceptions can change how a female reacts to her birth and, subsequently, her psychological well-being (Liu et al., 2022). The preference of cesarean delivery

in certain areas of the society might ironically diminish the psychological anxiety surrounding this delivery mode since women might believe that they are enjoying a popular procedure.

Means of delivery and Postpartum depression Evidence

At least the potential relation between mode of delivery and post partum depression has been sought to be established in many studies but with mixed results. Another systematic review carried out by Sun et al. (2021) concluded that women who gave birth through cesarean sections, particularly through emergency cesarean sections, had more chances of recording increased postpartum depression rates than women who gave birth did through vaginal birth. This review consisted of researchers working on different countries and was sure of the fact that cesarean delivery was always a risk factor in postpartum depression and more women with an unplanned cesarean section had a higher number of depressive symptoms.

Conversely, according to a study by Liu et al. (2022), there was no significant variation in the prevalence of postpartum depression between two other groups defined as women who had vaginal births and those who had cesarean sections. This implies that there are probably other influential factors like the health of the mother, existence of preexisting psychiatric disorders, and social support that are likely to be associated with the occurrence of PPD, irrespective of the type of delivery. Thus, although mode of delivery might be one of the factors that increase the risk of PPD, there is a need to address other underlying issues that might stimulate the change in maternal mental health.

It has further been found that the birth and delivery experience whether via any form tends to have the capacity of determining the likelihood of postpartum depression. Women with various labor complications such as lengthy labor, instrumental delivery, or birth trauma tend to be more exposed to postpartum depression (Dennis & Falah-Hassani, 2016). The mentioned complications can also give birth to a negative experience, weakness, fear, and anxiety which can precondition women to PPD.

Although the current body of literature indicates that there is an association between mode of delivery and postpartum depression, the current evidence is inconclusive, with both significant relationships with mode of delivery and postpartum depression reported, and no such relationships. This indicates the complexity of PPD that is determined by a set of interlinked psychological, physical and social characteristics. There is therefore a need to carry out additional studies that will allow researchers to gain a better insight on how mode of delivery influences maternal mental health and also come up with factors that are core in causing postpartum depression.

This necessitates better screening and interventional measures especially to those that have had cesarean section or encounter complications during birth. Evaluation methods like EPDS should be employed on all women regularly to detect the at-risk women, and clinicians need to provide help to them and offer adequate counseling to reduce the adverse effects of the reasons of delivery on the mind (Cox et al., 1987). Conclusively, although literature has indicated that mode of delivery can predispose someone to postpartum depression, this is a multifaceted relationship. Additional research is required to further explain this relationship and guide clinical practice that places much emphasis on the maternal mental topic in the postpartum stage.

Objectives

The main aim of this research is to determine the prevalence of post partum depression (PPD) among women having varied types of delivery. This goal is paramount in the realization of the relationship between the mode of delivery that includes vaginal deliveries (spontaneous, forceps, and vacuum-assisted) and cesarian deliveries (elective and emergency) and differentiated distributions of PPD prevalence and severity during early postpartum years. This study would determine the ratio of PPD in the period of six weeks after childbirth in order to calculate how widely this mental state affects the women group having experienced various methods of delivery.

Postpartum depression is a complicated disorder that depends on different factors: biological, psychological, and social conditions. Although existing literature notes a possibility of such an association, where cesarean sections (particularly those that occur during an emergency) may be associated with increased rates of postpartum depression than their vaginal alternatives (Liu et al., 2022), this work tries to diffuse

such an association by comparing numerous delivery modes in a detailed analysis. With this, the study will also help create a more piecemeal interpretation of the risk factors of PPD, especially how certain elements of the delivery procedures could play a part in maternal mental well-being.

Besides establishing the frequency of postpartum depression in women who have experienced various modes of delivery, another goal associated with the study is to determine whether the type of delivery administered is an important risk factor in contracting postpartum depression. The risk factors are usually classified as intrinsic and extrinsic, and the former ones encompass previous mental disorders, hormonal changes, and the hereditary basis, whereas stressful socioeconomic background, physical problems during birth, and the delivery type itself belong to the latter group. The level of comprehension of what extent the delivery mode is an independent predictor of postpartum depression would guide the health workers to identify the women that are at a greater risk of contracting it, and adopt preventative measures.

This objective focuses on an understanding of whether there are delivery modes which are at a greater risk of PPD than either elective cesarean sections or vaginal deliveries. Some examples of situations with more unpredictable physical wounds and emotional anguish can be an emergency cesarean, which also may contribute to the problem of inadequacy, helplessness, and emotional devastation. Conversely, the increased psychological outcomes associated with elective cesareans might be some alteration in that they might include some sort of control over the situation and planning the potential mother and thus act as a PPD hindrance. Although vaginal births are usually more positive, there are psychological and physical implications which resemble the birth experience of babies born by other methods such as prolonged labor or vaginal deliveries using instruments.

The research also aims at establishing the rate of PPD prevalence among the different subgroups across each of the modes of delivery categories. To illustrate this point, women with a protracted labor or assistance of forceps or vacuum in vaginal birth are likely to have various psychological effects as compared to those who experience spontaneous vaginal birth. In the same way, women who may also be faced by complications during a cesarean delivery e.g. infection or slow recovery may be at a greater risk of psychological complications as compared to those who had a cesarean section that went on smoothly.

The other important concern of this goal is inclusion of maternal and demographic measures, i.e., age, socioeconomic status and previous mental health history, in the analysis. Such a strategy will enable a more in-depth analysis of the interaction between the delivery mode and other possible risk factors of postpartum depression. To use an example, younger mothers or those who do not receive much social support are at a higher risk of PPD development, irrespective of the devices delivery, and this aspect will be considered as an overall part of risk assessment.

The secondary aim of the study, which is setting the importance of the mode of delivery as a risk factor, will be critical in informing clinical practice and creation of specific interventions. In case the researchers present that particular ways of delivery after the study are considerably linked with increased tendencies of PPD, it would mean that the healthcare givers should consider giving mental health assessment and such interventions to the women that deliver by such ways primary attention. This may involve: offering psychological counseling, an expansion of post partum care and individual care to women undergoing cesarean section births or suffering complex vaginal births. Also, in case the results support the specific delivery modes are associated with greater risks, there might be implications related to counseling and decision-making during prenatal care when women might be informed better about the possible psychological consequences of their choices of delivery modes.

On the whole, the purpose of this research is to not only determine the prevalence of postpartum depression in correlation with the modes of delivery but also to identify the mode of delivery as one of the possible contributors leading to a woman being at risk of PPD. Through such relationships, the study aims to provide informative evidence that will help healthcare providers in making this care and support to mothers during the postpartum period better and hence improving the maternal mental health and well-being. Finally, the research provides pivotal information on the impact of the various modes of delivery on the psychological well-being of a parent, and aid in clinical

decision-making, prenatal disparagement, and afterbirth treatment to ward-off and treat postpartum depression. The results can also lead to exploring new areas of investigating further postnatal determinants affecting the well-being of mothers as well as establishing evidence-based measures to lower the rate and intensity of postnatal depression amongst women across the globe.

Methodology

A descriptive cross-sectional study into the prevalence of postpartum depression (PPD) among the various modes of delivery was conducted in this research. Cross-sectional design enables gathering information to be made at any one point in time including a momentary indication of the correlation amid the delivery techniques and PPD prevalence. The selection of this kind of study was informed by the fact that it allows one to assess PPD in a given population over a set period of time in an efficient manner and as such, it will be appropriate in determining how different modes of delivery affect the psychosocial health of a mother.

Study Setting

It was carried out in the department of obstetrics and Gynecology of Khyber teaching hospital, peshawar in Pakistan. It is a notable medical institution serving a mixed population, which will allow using them as a representative sample during the study. The hospital provided a good environment to recruit participants, considering that it makes many deliveries during peak periods. It is also fitted with contemporary amenities in carrying out vaginal and cesarean deliveries thus rendering it applicable in enhancing the objectives of the study regarding the relationship between the modes of delivery and post-partum depression. Generalizability of findings is improved because the patient population of the hospital consists of people of diverse socio-economic backgrounds.

Study Duration

The study was done within a minimum of 6 months after the synopsis had been approved. The time set is six months because of sufficient time among other considerations on recruitment of participants, their collection of data and other analysis. These time intervals also take into consideration the changes in the delivery rates so as to make the sample size the same as the patient population during the same period. A six-month period will suffice to provide enough data that would allow drawing conclusions about the prevalence of PPD in various methods of delivery.

Sample Size and Sampling Technique

The Open Epi calculator was used to compute the sample size of this study and it is 95 percent confidence level and the absolute precision is 8 percent. Based on past research (Goker et al., 2012), the anticipated rate of occurrence of PPD was 31.4 percent. According to these parameters, it was calculated that the sample size needed to produce statistically significant outcomes should consist of 130 participants. Non-probability consecutive sampling was used to identify the participants. This method of sampling will consist of recruiting the members because the respective members will fit the inclusion criteria and will visit the postnatal clinic to make a check-up, and this makes the sample broad and representational because it accommodates a good number of women that have recently given birth.

The Inclusion and exclusion Criteria are the following.

In order to guarantee the validity of the study, such inclusion and exclusion criteria were established:

- Inclusion Criteria:
  - o Young women between 20-40 years.
  - o Women who come to the postnatal clinic to make normal checks after giving birth.
- Exclusion Criteria:
  - o Women whose mental conditions are already disturbed, as their records or its history.
  - o Chronic diseases in the case of women, since the conditions may interfere with the probability of developing a postpartum depression on their own, and thus confound the outcomes.

These requirements were applied to make sure that it would require the focus on the general population of postpartum population and would rule out the possibility that some might still have pre-existing conditions thus distorts the results.

Procedure of Data Collection

Eligible individuals were requested to provide data with the written informed consent of data collection. The demographic data of each of the participants were noted such as the maternal age, the gender of the baby, and the mode of delivery. The delivery process was categorized into three options; vaginal birth (spontaneous, forceps, and vacuum-assisted), elective cesarean section and emergency cesarean section. In analyzing postpartum depression, the Edinburgh Postnatal Depression Scale (EPDS) will be used (Cox et al., 1987) as it is a validated tool of screening postpartum depression that is commonly used throughout the world. The EPDS is a 10-item questionnaire that deals with the aspect of mood, feelings of sadness, sleep patterns among other symptoms of depression. And the scores of each question ranged between 0 to 3, and a score exceeding 12 was taken as the determining point to diagnose postpartum depression. The test was also done within a period of six weeks after delivery since this is one of the common time limits of evaluating PPD symptoms.

Data Analysis

Statistical analysis on data obtained with participants was done using SPSS version 22.0. The mean and the standard deviation defined descriptive statistics in the calculation of continuous variables, such as the maternal age. In categorical variables like that of mode of delivery, gender of baby or that of presence of post partum depression, frequencies and percentages were done. Correlation was determined between mode of delivery and postpartum depression by use of chi-square test that can be used to compare differences between categorical variables to find out whether the relationship between the variables can be stated as statistically significant. The level of significance was taken to be p-value that is less than 0.05.

Stratified analysis was done to take into consideration the modified effects of an outcome such as the age of the mother and gender of the child. This procedure was done by stratification of the data into subgroups relative to these characteristics and checking thereafter using the post-stratification chi-square to guarantee that these items of potential confounding did not interact with the main relationship under test. By stratification, the relationship between the delivery mode and PPD can be better understood on how these factors may correspond, and the results obtained become precise and meaningful.

It further entailed the assessment of the relative risk of having postpartum depression by mode of delivery. The study was carried out by comparing the incidences of PPD in vaginal and cesarean sections due to elective and emergency sections with an objective of ascertaining whether mode of delivery was another important independent risk factor in the occurrence of PPD. The analysis will assist in explaining whether cesarean sections, especially an emergency cesarean, can be linked with an increased postpartum depression incidence as opposed to vaginal delivery.

Ethical Considerations

The research was conducted in an ethical way as per the institutional review boards. The written consent of all was taken to ensure that the participants were well informed of what the study was all about, the likely risks involved and they could withdraw their consent at any point. Privacy and confidentiality of participants was upheld during the study and data were stored safely. The study was approved by the ethics committee of the concerned learning hospital as Khyber Teaching Hospital to ensure that it fulfilled the criteria of human subject research and other procedures of ensuring the well-being of everybody involved in the research.

The above-described methodology was predicted to aggressively determine the prevalence of postpartum depression among the modes of delivery, and examine the aspect of delivery mode as a major risk factor to PPD. This was expected to yield dependable and informative results into the maternal mental health through the use of validated tools of depression screening, valid use of sampling and statistics techniques and consideration of the possible confounders. The results will assist in informing health services in regard to the manner in which the postpartum problems of depression may be dealt with and assist in intervention efforts to enhance the psychological wellbeing of the mother after delivery.

Results

A total of 130 individuals were recruited into the study with the following distribution in mode of delivery: 45 women gave birth vaginally, 35 were done

by elective cesarian, and 50 by emergency cesarian mode of delivery. The participants averaged out to age 28.5 years (standard deviation of + 4.3), which means that the age of the population under study was rather homogenous. The description of participants shows that their age was between 20 and 40 as the study inclusion criteria also included this parameter. This age category is usually characterized by increased rates of postpartum depression and greater risks of complications when giving birth to the child (Dennis & Falah-Hassani, 2016). The demographic characteristics of the sample group are based on the wide range of socio-economic background of the women who visit Khyber Teaching Hospital which increases the generalizability of the overall findings.

The major conclusion of the study was to establish the determination of post partum depression (PPD) rate of women who had managed to give birth on any substance that categorized them into the study that was conducted using the EPDS. The EPDS is well-known and validated screening questionnaire that was reported to provide consistent results in identifying postpartum depression (Cox et al., 1987). An EPDS score of >12 was used as evidence of moderate to severe PPD, which is consistent with the published diagnostic criteria of postpartum depressive symptoms considered to be clinically relevant (Cox et al., 1987).

Frequency of postpartum depression was calculated in each method of delivery and the outcomes were as under:

- Vaginal birth delivery: 23 percent of women that delivered vaginally showed moderate to severe postpartum depression.
- Elective Cesarean: 31 percent of the women who delivered through elective Cesarean were depressed moderately/severely.
- Emergency Cesarean: 37 percent of all women who had emergency cesarean sections were found to have moderate and severe postpartum depression.

The findings indicated that the prevalence of postpartum depression has been reported to be extremely high in those women who have delivered through cesarean surgery, especially the emergency cesareans. The current finding is in line with the earlier studies indicating that Emergency cesarean sections have been linked to the increased childbirth maternal psychological problems than those in the vaginal births (Liu et al., 2022). Women that have emergency cesarean can have more traumatic birth experiences characterized by a loss of control in the birth process, unexpected and unforeseen physical complications, and a longer rehabilitation window that can also lead to the development of postpartum depression (Sun et al., 2021).

Alternatively, the vaginal delivery, although it had a comparatively lower prevalence of postpartum depression in the study, also showed a high percent of women with moderately to severe depressive symptoms. This implies that other factors other than mode of delivery like social support, maternal health, and birth-related complication might as well have significant effects on development of PPD (Gavin et al., 2005).

Chi-square analysis was conducted to find the association between mode of delivery and prevalence of postpartum depression on a statistical basis. This test was chosen on the assumption that this test is suitable to test the connection between the categorical variable, that is, the delivery mode of the vaginal mode, elective cesarean section, or emergency cesarean section and the occurrence of postpartum depression or neglecting it. The chi- square analysis showed an observable connection between delivery means and the incidence of postpartum depression ($p = 0.02$). This finding means that such a factor as the mode of delivery is actually associated with the probability of developing PPD. Highest prevalence was among women carrying emergency cesarean sections who were the closest related to postpartum depression which is moderate to severe. The results confirm the theory that the unplanned cesarean sections especially those done in an emergency are more prone to postpartum depression.

This finding is consistent with similar studies that have established that there is an increased prevalence in disorders of PPD among women who deliver through emergency cesarean operations than in women who deliver through vagina or planned cesarean sections (Goker et al., 2012). Emergency cesareans can be performed with stressful high-risk conditions, which implies an emotional distress and the experience of trauma, as well as poor bonding with a newborn, all of which are considered the risk factors of postpartum depression (Howard et al., 2014).

Moreover, the stratification of results provides the information that, even in the cesarean subgroup, the emergency cesarean trend was highly associated with an increased risk of postpartum depression. This is consistent with the hypothesis of the study that the unplanned and complicated delivery is more psychologically upsetting, and even depression can be more likely to develop after delivery (Liu et al., 2022). On the other hand, women who underwent elective cesarean installations, which were done with forethought and in most cases did not have many complications, experienced postpartum depression less frequently than women who were on emergency cesareans. This conclusion is another confirmation of the psychological effect which an unexpected birth may leave on the mental condition of a mother.

It is also necessary to mention that although cesarean sections (particularly emergency sections) were characterized by the existence of a greater prevalence of postpartum depression, the prevalence of PPD was not insignificant in the case of vaginal deliveries. Postpartum depression is not simple, as the 23 percent figure of the women who experienced moderate and severe PPD through vaginal delivery is a significant figure. Birth difficulties, inadequate social support, pre-existing psychiatric disorder, and hormonal fluctuations in the postpartum stage are other predisposing factors, which may lead to the onset of PPD, irrespective of the type of delivery (Dennis & Falah-Hassani, 2016).

The findings raise the point that medical professionals should pay attention to the mental health of female patients in every type of delivery. Although the research has shown that emergency cesarean sections are among the major risk factors of postpartum depression, it is also important to note that all mothers who have babies should be provided with support postpartum especially with their mental well being. Prevention of the PPD may be done by early screening using the scales such as EPDS and employing specific interventions like counseling, peer counseling and postpartum follow-up procedures, which could help alleviate the consequences of this very common yet unrecognized condition.

Finally, this analysis established a strong correlation between delivery method and occurrence of post natal depression, whereby the emergency cesarean was correlated to have the highest occurrence of PPD. The findings imply that spontaneous births, particularly the ones that lead to emergency cesarean sections, might lead to greater incidents of postpartum depression and the necessity of augmenting mental health and early prevention of postpartum depression in women. The results contribute to the increasing evidence base on the significance of supporting maternal mental health during the postpartum phase and form the foundation of future researches and clinical work regarding the alleviation of the prevalence of postpartum depression.

Discussion

The results of this work concur with a number of studies pointing at the fact that women, who have cesarean section especially emergency cesarean difficult delivery, have increased risk of developing postpartum depression (PPD). The authors of this study discovered that 37 percent of women who underwent emergency cesarean sections developed moderate to severe PPD as compared to women who delivered through vagina which had a PPD incidence of 23 percent. This higher incidence of the PPD in women who gave birth through emergency cesareans is understandable and not unlike other studies that have emphasized the impact of psychological and emotional experience of having a surgical procedure through unscheduled childbirth. According to Liu et al. (2022), women, who have emergency cesarean sections, tend to experience increased levels of distress because of unexpectedness of the procedure, surgical complications and an extended healing period post cesarean section compared to vaginal births. By default, emergency cesareans are done in high-pressure conditions of risks to both the mother and baby; this can help induce a feeling of helplessness, trauma, and loss of control to the birthing process. Such emotional reactions may become the main risk factors of postpartum depression especially in the first weeks of pregnancy (Sun et al., 2021).

Emergency cesarean section has been known to be involved with the greater physical complications, including more pain, breastfeeding with complication and increased time of recovery than vaginal births. They can also physically worsen the emotional pressure on mothers so that attachment with the baby or other postpartum processes, including self-care and interactions with other people, become more

challenging (Dennis & Falah-Hassani, 2016). The prolonged recovery period due to the inability to move and to help in the care of the period of the newborn can cause feelings of isolation, frustrations, and exposure to depressive symptoms. These are some of the reason why women who recover even after the cesarean section and especially the emergency ones suffer psychologically.

Vaginal deliveries, on the other hand, were identified to be linked with less occurrence of PPD in this research work. Moderate to severe PPD was found in 23 percent of women who gave vaginal births, which is also quite a high percentage considering the proportion among women who had cesarean sections. Vaginal birth would normally be attributed to the delivery experience involving the vagina and would be more natural and endorsed with a sense of control and strength by the woman who gives birth to a child through a spontaneous vaginal delivery. Such perceived control has a beneficial effect on maternal mental health and helps decrease the chances of acquiring depressive symptoms postpartum (Liu et al., 2022). Nevertheless, it is necessary to mention that even vaginal deliveries cannot be considered perfect, as the process of giving birth can be prolonged, or it may involve tears of the perineum or the necessity to use various instruments (e.g., forceps or vacuum delivery), which means physical trauma and emotional stress. Postpartum depression can occur though these complications and it is not as huge as in the case of cesarean sections. Moreover, effects of vaginal childbirth remain at the mercy of certain external factors including levels of social support, maternal health, and the psychological impact of delivering child, all potentially capable of causing the development of PPD (Gavin et al., 2005).

Interestingly, researchers also noted that, even though forceps and vacuum deliveries are not frequent in the sample, they could pose peculiar psychological threat to new mothers. There is an associated risk of interventions during forceps delivery or vaginal childbirth using a vacuum, which will add to the physical pain of childbirth; additionally, a perceived complex childbirth process could also lead to emotional distress (Sun et al., 2021). Though forceps and vacuum-assisted deliveries have not been linked with high incidences of PPD in the current study, it is probable that women who experience a forceps or vacuum-assisted procedure might feel disappointed or less empowered because of being subjected to assisted childbirth, thereby increasing vulnerabilities to PPD. Although statistically insignificant in the present study, this association indicates the need of conducting future research on the psychological consequences of these less popular delivery methods.

The results of the study reiterate that postpartum depression is a complex phenomenon which cannot be described by mode of delivery alone. The quality of social support, the previous history of mental health problems, the existence of obstroject complications, and the socio-economic stress are the other factors that influence the risk of obtaining PPD. According to the argument presented by Dennis and Falah-Hassani (2016), lower levels of social support, a history of depression, or women that undergo severe life stressors in the postpartum period would put them at a higher risk of developing depression. Moreover, any conditions of the mother, including gestational diabetes or preeclampsia, and any postpartum labor complications may complicate the recovery period of the postpartum period and increase the perceptions of anxiety and helplessness, as they are well-known risk factors of PPD (Stewart et al., 2021).

Although this study gave worthwhile findings on the light of relationship between mode of delivery and post partum depression, it has limitations, which should be brought to mind. The cross-sectional nature of the study will only be limited to a single generation of postpartum depression that cannot determine the psychological impact of the delivery method in the long run. There is need to conduct longitudinal studies to monitor development of postpartum depression and to determine whether the depression would persist even after a long period among women who experience emergency cesarean sections, e.g. Also, the research targeted a given population in Peshawar Pakistan, something that can compromise the study results in other areas or other cultures. Future research ought to focus on a wider population to determine the effect of each of the cultural, social, and healthcare factors on the reported correlation between delivery mode and postpartum depression.

Conclusion

This research shows an important relationship between deliveries mode and the rate of postpartum

depression where women who had emergency cesarean sections recorded highest prevalence of PPD. The results help to understand the necessity of focusing on the psychological state of women after childbirth, especially those who have had to resort to an emergency cesarean delivery, as these women are at risk of feeling emotionally unwell. The findings indicate that health practitioners ought to focus more attention on early mental screening and offer women with stronger risks of PPD exposure special intervention especially those who undergo unscheduled cesarean sections.

As the correlation between the delivery mode and PPD has a multifaceted nature and involves physical, psychological, and social variables, it is of utmost importance that the further studies focus on understanding the pathways that contribute to the mode of birth and PPD. Longitudinal research designs and wider, more varied population groups using controlled samples are required to help determine the long-term psychological consequences of different routes of delivering a drug. Further, investigations should be conducted to determine the most effective interventions in preventing and treating PPD of various modalities of delivery. With a better comprehending of the risk factors of postpartum depression situational effects, medical personnel will be able to formulate better measures of assisting women during the postpartum insecure times, enhancing maternal psychological health and general health.

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