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Prevalence and risk factors of Postpartum depression and anxiety after COVID-19 pandemic: A systematic review

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PREVALENCE AND RISK FACTORS OF POSTPARTUM DEPRESSION AND ANXIETY AFTER COVID-19 PANDEMIC : A SYSTEMATIC REVIEW

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PREVALENCE AND RISK FACTORS OF POSTPARTUM DEPRESSION AND ANXIETY AFTER COVID-19 PANDEMIC : A SYSTEMATIC REVIEW

By

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A Research project submitted to the Department of Physiotherapy,
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PREVALENCE AND RISK FACTORS OF POSTPARTUM DEPRESSION AND ANXIETY AFTER COVID-19 PANDEMIC : A SYSTEMATIC REVIEW

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ABSTRACT

Background and Objective: Postpartum depression (PPD) is a harmful mental health condition that may affect the person's thoughts and behavior. It may be experienced by the mother after giving childbirth. Many of these studies were conducted during the COVID-19 lockdown which could be one of the possible confounding factors. There have been no systematic reviews conducted in journals pertaining to this topic after the COVID-19 lockdown. This systematic review primarily aims to collate and critically analyze research studies on the prevalence and risk factors of postpartum depression and anxiety. **Methods:** A comprehensive search will be conducted in PubMed, Scopus, and Google Scholar on related studies on the prevalence of postpartum depression with the following keywords: (1) risk factors 'AND' (2) depression 'AND' (3) postpartum 'AND' (4) anxiety 'AND' (5) prevalence from the year 2022 to the present, 2024. Original research related to the prevalence of postpartum depression, randomized controlled trials, cohort studies, cross-sectional studies, and studies conducted after covid-19 lockdown period will be included in this study. The article selection is following PRISMA flow chart and all of the studies will be undergo critical appraisal by JBI critical appraisal list.
Results: This systematic review included 17 studies that carried out in various countries worldwide after COVID-19 lockdown period. Out of the 17 studies, the mean prevalence of PPD is around 29.55%.
Conclusion: 17 studies are included in this study and the mean prevalence of PPD is around 29.55%. PPD is more common in the high-developed nations than developing and least-developed countries. Most of the studies showed that PPD was less common after COVID-19 lockdown period. The most prevalent risk factors among the 17 studies are younger maternal age, lack of social support, single status mother, prenatal psychiatric disorders, adverse life events, intimate partner violence, caesarean sections, and postpartum problems.

Keywords: PPD, Prevalence, Risk factors, Covid-19 lockdown period

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APPROVAL SHEET

This Research project entitled "**Prevalence and risk factors of Postpartum depression and anxiety after COVID-19 pandemic: A systematic review**" was prepared by LEE SHI EN and submitted as partial fulfilment of the requirements for the degree of Bachelor of Physiotherapy (HONOURS) at Universiti Tunku Abdul Rahman.

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PERMISSION SHEET

It is hereby certified that **LEE SHI EN** (ID No: **21UMB03870**) has completed this Research project entitled "PREVALENCE AND RISK FACTORS OF POSTPARTUM DEPRESSION AND ANXIETY AFTER COVID-19 PANDEMIC: A SYSTEMATIC REVIEW" under the supervision of PUAN NADIA SAFIRAH BINTI RUSLI (Supervisor) from the Department of Physiotherapy, M. Kandiah Faculty of Medicine and Health sciences.

Yours truly,

(LEE SHI EN)

DECLARATION

I hereby declare that the Research project is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

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PPD	Postpartum depression
EPDS	Edinburgh Postnatal Depression Scale
WOICE	Women's Outcome Instrument for Maternal Health Care
UTAR	Universiti Tunku Abdul Rahman
SERC	Scientific and Ethical Review Committee
MMWG	Maternal Morbidity Working Group
WHO	World Health Organization
AHDH	Attention Deficit Hyperactivity Disorder
BAI	Beck Anxiety Inventory

CHAPTER 1

BACKGROUND

1.1 Chapter Overview

This chapter provides an overview of the study's background and outline the problem statement and research question. Next, it will discuss the research objectives and operational definition of terms for the research study. The rationale and the scope of the research also will be discussed in this chapter.

1.2 Background of Study

Postpartum depression (PPD) is a type of serious and harmful mental health condition that impacts a person's thoughts and behavior (Stewart & Vigod, 2016; Liu et al., 2021). PPD usually starts within 4–6 weeks after childbirth, but it may last several months or even a year (Alshikh Ahmad et al., 2021). According to the research by O'Hara and McCabe (2013) and, Tebeka et al., (2021), PPD is more likely to occur in the first six months following childbirth. In addition, symptoms of PPD could persist after the initial postpartum phase (Zhao & Zhang, 2020). The PPD mother's mood and behavior will be persistently impacted by the PPD symptoms which may last for weeks, months, or even years. The incidence of depression in postpartum mother and others close to them, including their husband and children may continue to rise if the public did not take it

seriously. Furthermore, severe PPD may raise the death rates since postpartum suicide attempts are associated with anxiety problems, depression and insomnia (Akaishi et al., 2023a). Although PPD prevalence varies greatly between nations, it has been observed that in Asian countries, the prevalence ranges from 3.5% in Malaysia to 63.3% in Pakistan (Klainin and Arthur, 2009). In other countries, the overall prevalence was reported to ranges from 2.9% in Turkey and 35% in the United Arab Emirates (Atak et al., 2023; Hababa & Assarag, 2023). According to a recent cross-sectional study which carried out in Kuala Lumpur had also reported the prevalence rate of probable postpartum depression was 14.29% among 350 participants (Hairol et al., 2021). However, the majority of these research' data collection dates was during COVID-19 lockdown period. Accordingly, one of the main confounding factors for PPD may be the Covid-19 lockdown (Renaud- Charest et al., 2021). Since COVID-19, we are unable to generalized past findings considering COVID-19 to be a confounding factor. Hence, systematic review on studies during and after COVID-19 is required in this topic, and this is the first systematic review pertaining to this, the last systematic review in this area was done before COVID-19 on such and such date which does not include COVID-19 as a confounding factor. This shows we have a different objective and justify the novelty of this systematic review. In addition, the dates of data collection were not clearly stated in some of the studies. As a result, there are not many researchers conducted on PPD specifically.

The intensity of PPD symptoms might vary from moderate to severe. According to Bradshaw et al. (2021), postpartum mothers may experience depressive mood changes and anxiety after giving birth. Sadness, mood swings, impatience and hypersensitivity to other people are some of the signs and symptoms of PPD (O'Hara, 2009; Li, 2022; Yu et al., 2021). The postpartum depression population may also have trouble sleeping which is insomnia and diminished concentration. Besides, they could minimize breastfeeding and strungle to form a relationship with their child (Pope and Mazmanian, 2016; Kawai et al., 2023). Moreover, PPD mothers may experience anxiety and hopelessness.

According to Soe et al. (2016) and Sutin et al. (2022), symptoms of PPD may impact the mother's mood and behaviors in addition to the newborn babies. Furthermore, the mother's PPD may raise their children's chance of developing depression in childhood or adolescence (Srinivasan et al., 2020). PPD in mothers may raises the possibility of children developing cognitive and behavioral issues as well as insecure attachment (Klauser et al., 2023). The children's development is mostly impacted by the family's experiences with parental mental illness, which might include financial problems, internal family conflict and child placement outside the home. In certain serious cases and situations, the PPD population may develop the conception of hurting their family, baby, and even themselves, and they may also have suicidal or infanticidal thoughts (Shi et al., 2018).

PPD can arise due to several risk factors. Adewuya et al.(2005) and Ghaedrahmati et al. (2017) state that the baby's female sex, preterm birth, instrumental delivery, cesarean section hospital admissions during pregnancy, and single status are the risk factors that are highly associated with postpartum depression. Besides, the women who experience domestic violence and marital dissatisfaction are more likely to experience PPD (Adamu & Adinew, 2018). In addition, the findings showed a strong link between antenatal mental health and intimate relationship violence (Paulson, 2020). Sundaram et al. (2014) and Koutra et al. (2018) state that nausea, early labor, bed rest, gestational hypertension, and breastfeeding problems are extremely important morbidities that may raise the risk of PPD.

As an additional information, physiotherapists can use techniques like acupressure as an alternative option to lessen symptoms of PPD. According to Salama et al. (2022), a reduction of postpartum depression was achieved using acupressure. The results of the study showed that acupressure can effectively reduce EPDS scores (Nurul Hidayah Bohari et al., 2020). Additionally, acupressure has been demonstrated to reduce the severity of low back pain, minimize limitations on daily activities and reduce PPD symptoms (Cheng et al., 2020).

Nevertheless, the interventions that physiotherapy may do are not enough. The lack of knowledge and statistics on PPD may be linked to this. Hassan et al. (2020) found that physiotherapists and other medical professionals had a low degree of understanding and a moderate awareness

of perinatal depression. Insufficient understanding and consciousness of PPD within a support system can result in the normalisation and denial of the condition making it more difficult for women to express their emotional problems and deterring them from seeking therapy (Sealy et al., 2009). Therefore, by methodically presenting current papers about the topics, this review aims to increase community understanding and awareness. The results of these studies will be used as an indicator to assess the severity of the PPD both in Malaysia and globally which will support the decision to send our physiotherapist for this kind of training.

The lack of recent statistics on PPD that do not include the COVID-19 lockdown as a confounding factor further reduced the awareness of the public and scientific. A previous systematic review attempted to find out how common prenatal depression is in Africa and what characteristics are linked to it (Dadi et al., 2020). The written observational studies carried out in Africa between 2007 and 2018 were searched in this systematic review. All of the studies included in this systematic review were conducted prior to the COVID-19 lockdown period, and some of them were too old. This systematic review did not present PPD among different countries, it just demonstrated the prevalence of PPD in Africa. The goals of the previous research were to thoroughly assess the literature on hair hormone levels and depression throughout the peripartum period (Hill et al., 2024). Studies carried out both before and during the COVID-19 lockdown period were included in this systematic review. In addition, one of the earlier

studies looked at several risk factors for postpartum depression and estimated the prevalence of the illness in Indian mothers (Upadhyay et al., 2017). This study includes research that was published between 2000 and March 31, 2016. This study is too old and did not demonstrate the prevalence of PPD in the recent past. This demonstrated that there are no thorough systematic reviews that present the total prevalence of PPD and its risk variables following the COVID-19 lockdown period. In order to close the gaps in the literature, this systematic review is required.

1.3 Problem Statement

During postpartum, a mother may have PPD which is a common mental condition that negatively affects the mental health. Unfortunately, as postpartum suicide attempts have been connected to anxiety problems, insomnia and depression, a severe PPD may raise the mortality. Although a lot of research has been done in this field, a lot of it was done during the COVID-19 lockdown or before COVID-19 lockdown, which may have introduced some confounding factors. In contrast, another systematic review and meta-analysis was carried out to assess the pooled prevalence of prenatal depression and its causes in Ethiopia to give current data at a national level, considering the burden of the issue on the entire family (Rtbey et al., 2024). However, this analysis did not exclude the research done both before and during the COVID-19 lockdown. Furthermore, the prevalence and risk factors of PPD in various countries throughout the world were not compared in this study. Another previous systematic review

examined the prevalence of depression during pregnancy or up to 12 months after giving birth using a validated method in countries classified by the World Bank as poor, lower-middle, and upper-middle income (Mitchell et al., 2023). From the database's creation until April 15, 2021, this study was searched. However, this report includes research that was done both before and during the COVID-19 lockdown. Furthermore, a systematic review by Chorwe-Sungani et al. (2022) aimed to determine Malawi's pooled prevalence of prenatal depression. All of the studies included in this systematic review were conducted prior to and during the COVID-19 lockdown period, and some of them were too old. This systematic review did not identify PPD risk factors; it simply demonstrated the prevalence of PPD in Malawi. Therefore, this current systematic review did not consider COVID-19 as confounding factors. Since there are some studies considering COVID-19 as confounding factor but we are unable to generalized the findings since there are no systematic review on that which justify why we conduct this systematic review. There haven't been any systematic review of this subject published in journals since the COVID-19 lockdown periods. Thus, the purpose of this study is to compile and evaluate research studies on the prevalence and risk factors of postpartum depression and anxiety that were carried out after the COVID-19 lockdown period. This is to provide a broad overview of PPD prevalence and risk factors across nations following the COVID-19 lockout.

1.4 Research Question

What is the prevalence and risk factors of depression and anxiety among postpartum delivery women in different country?

1.5 Objectives

Primary Objectives

To collate and critically analyze research studies on the prevalence and risk factors of postpartum depression and anxiety.

Secondary Objectives

1. To determine the prevalence of postpartum depression and anxiety after COVID-19 lockdown period which is from 2022 to 2024.
2. To identify the risk factors associated with the development of postpartum depression and anxiety after COVID-19 lockdown period which is from 2022 to 2024.

1.6 Operational Definition

1.6.1 Anxiety

Anxiety is defined as a mood state that is centred on the future and is linked to fear (Chand & Marwaha, 2022). It involves an advanced defence system that incorporate behavioural, physiological, and cognitive mechanism linked to detect the future perceived dangers.

1.6.2 Edinburgh Postnatal Depression Scale (EPDS)

The Edinburgh Postnatal Depression Scale is a valid tool for screening for mother depression during or after pregnancy and it consists of 10 self-report items (Levis et al., 2020; Park & Kim, 2022; Fellmeth et al., 2019)

1.6.3 Postpartum depression

Following childbirth, a mother may develop PPD which is a severe mental health illness that impacts thoughts and behaviour (Stewart & Vigod, 2016; Moraes et al., 2017).

1.6.4 Pregnancy

Pregnancy is the period that baby develops within a woman's uterus and it terminates with either an elective or spontaneous abortion (Spong, 2013; Bjelica et al., 2018).

1.6.5 Post COVID-19 lockdown

The COVID-19 lockdown is the social distancing measures that prohibits outside activities and social gathering. During the lockdown citizens must remain in their home under quarantine (Lau et al., 2020). The term post COVID-19 refers to the time after COVID-19 lockdown when citizens are permitted to resume their regular daily activity as their did prior to the lockdown. The time frame of this studies is from year 2022 to 2024 which is after COVID-19 lockdown period.

1.7 Rationale of Research

The majority of recent research was carried out either prior to or during the COVID-19 pandemic, it is unknown how many investigations were carried out without the Covid-19 lockdown as confounding factors. Moreover, the general public and medical professionals are also not well-informed about PPD. Therefore, this study examines and concludes the prevalence of PPD and risk variables in various nations. Data was collected following the COVID-19 lockdown period, which lasted from 2022 to 2024.

1.8 Scope of the Research

In order to avoid using COVID-19 lockdown as a confounding factor, this study aims to determine the prevalence and risk factors of PPD after the COVID-19 lockdown periods. Additionally, this project aims to increase community awareness and education of PPD.

CHAPTER 2

LITERATURE REVIEW

2.1 Chapter Overview

This chapter will discuss about the different topic through past journal and literature which related to the current study and thus provided the framework for the research project.

2.2 Epidemiology of postpartum depression and anxiety

The epidemiology of postpartum anxiety and depression is covered in this subsection. This subsection reviews the prevalence of PPD in various countries before and after the COVID-19 lockdown phase. The purpose of this subsection is to provide an overview of the prevalence of PPD in different nation. Different countries and regions have different PPD and anxiety epidemiology. According to research that published between 2020 to 2023 itself, the prevalence of depression in postpartum woman various by country and location, ranging from 2.9% to 70% (Atak et al., 2023; Kiewa et al., 2022). The reason for this wide variation is that different outcome measures are employed in these studies. For example, some of the studies utilise Edinburgh Postpartum Depression Scale (EPDS) while some of them use the Women's Outcome Instrument for maternal health Care

(WOICE) (Moya et al., 2023; Hababa & Assarag, 2023). An additional aspect is that some of this research recruit and examine participants during the COVID-19 lockdown period (Boisvert et al., 2023; Moya et al., 2023; Nwoke et al., 2023). According to the reports, COVID-19 lockdown is one of the main causes of anxiety, depression, and other mental and psychological conditions (Bareeqa et al., 2020; Lakhan et al., 2020; Salari et al., 2020). Therefore, if the subjects were recruited and examined during COVID-19 lockdown period, this might be a major confounding factor that could be result in an increase of PPD and postpartum anxiety. Additionally, various nations will have varying different policies for COVID-19 lockdown. The previous research showed that stricter lockdown measures have been linked to higher depression rates, particularly among women which helps to explain why PPD rates among postpartum women are higher in certain countries and regions (Fernandes et al., 2022; Bu et al., 2020).

Furthermore, the prevalence of PPD and anxiety among postpartum women was also significantly influenced by national variations in educational level, social policies, social status, and cultural background (Di Florio et al., 2016; O'Mahony et al., 2012). Related to cultural background in different country, Yaqoob et al. (2024) assert that there is a long-standing cultural bias in favor of males in a number of cultures, including those of the Arab world, Turkey, India, China, Japan, Korea, Taiwan, and Vietnam. This is because sons are expected to support their families financially in the future, there is a predisposition in favor of having them. Most communities have traditionally expected male children to take on the financial responsibility of providing for their parents as they age. The girl is seen as a

burden by the groom's family, especially in the financial sphere (Dindar & Erdogan, 2007 ; Priya et al., 2022). Therefore, women's mental health was severely impacted by giving birth to a daughter, which raised their likelihood of developing PPD. Additionally, in China, Taiwan, Hong Kong, Singapore, and Vietnam, women are urged to take part in a 30-day postpartum convalescence period, also referred to as "doing the month" (Klainin & Arthur, 2009 ; Norhayati et al., 2015). Women will have assistance from their own mother or mother-in-law with childcare, cooking, and other household chores, and they will prefer to sleep in bed. Some activities such as hair washing, leaving the house, and being blown by the wind should be avoided to protect the women from potential health issues. In other Arab culture and country, like Turkey, women and their infants are never left alone during the 40-day postpartum period; instead, they must be constantly attended by their mother, mother-in-law, or other female family members (Stuchbery et al., 1998 ; Klainin & Arthur, 2009). All of these cultural differences will result in a distinct risk of PPD development.

Studies that were carried out both before and during the COVID-19 lockdown period are utilized to compare the prevalence of PPD with that which was found after the lockdown. In Dhaka, Bangladesh, Alam et al. (2021) carried out cross-sectional research to ascertain the prevalence of PPD among women who were delivered at the facility. In this study, 291 moms in the first 12 months following childbirth took part between January and May 2019. Fifty-nine percent of the 291 moms had symptoms of PPD. Researchers in Iraq's Kurdistan Region assessed the prenatal mental health needs of women residing in camps for internally displaced people (Seidi et

al., 2022). This study comprised 122 Yazidi women who were either pregnant or had just given birth within the last 12 months. According to reports, 53% of participants experience moderate to severe depression, with an EPDS score of greater than 12. The frequency of PPD among Syrian refugee women was examined in another study by Ahmed et al. (2017), which included twelve of these women who had moved to Saskatoon, Canada, between 2015 and 2016. Of the women, 58.33% screened positive for likely depression and half screened positive for a potential anxiety subscale score. In order to assess their risk for PPD, 864 women who were 6–12 weeks postpartum completed an anonymous online survey between March and April 2020 (Liang et al., 2020). The results indicated that between six and twelve weeks after giving birth, 30% of individuals had PPD.

According to recent published research from China, Morocco, Turkey, Lao PDR and Australia which did not take the COVID-19 lockdown as confounding factor, the frequency of PPD is relatively lower. Wu et al. (2022) have carried out a cross-sectional study in China with 296,756 individuals. The results showed that 4.3% of individuals reported to have PPD which the EPDS scores higher than 10. According to this study, stressful life events, a family history of mental illness, and low socioeconomic position are risk factor for PPD. In Morocco, Hababa and Assarag (2023) carried out a cross-sectional study. Of the 253 individuals, 17.78% of them had depressive symptoms while 29.24% of individuals reported having anxiety symptoms. The risk factors of PPD that stated in this study are the participant's sense of sexual dissatisfaction and exposure

to violence. According to Atak et al. (2023), among 172 migrant women living in Turkey, 2.9% of them had the Edinburgh Postpartum Depression Scale (EPDS) scores that were over the cut-off threshold. Every participant in this research had a Beck Anxiety Inventory (BAI) of 21 or lower. This study looks at lower income and education levels as risk factors for PPD and postpartum anxiety. Additionally, PPD symptoms were recorded by 21.3% of participants in the cross-sectional study which carried out in Lao PDR (Xayyabouapha et al., 2022). According to this study, having conflicts with family members, having mental health issues during pregnancy, suffering intimate partner abuse, and having moderate social support are the risk factors of PPD. Kiewa et al. (2022) reported the prevalence of PPD among the postpartum women was 70% in Australia. Nevertheless, the study might not reflect the PPD among women without a history of depression and other mental and psychological disease because it was conducted on individuals who had experienced depression throughout their life.

Therefore, the frequency of PPD is still low even after including research done during the COVID-19 lockdown. However, results are not conclusive as the presence of COVID-19 as confounding factors. While PPD does occur, a systematically reviewing of publications regarding the incidence and risk factors of PPD in Malaysia and other countries, will give an overview of how Malaysians are handling in prevention, intervention, and management in comparison to other countries across the world. Furthermore, with this information, actions may also be developed and implemented to lessen PPD in women who do not have a history of

depression or other mental and psychological condition

2.3 Impact of postpartum depression and anxiety

The impact of postpartum depression and anxiety is discussed in this subsection, which informs the reader of the severity of PPD and its effects. Mothers who suffered from PPD typically experience mood swings, difficulty sleeping feeling of doubt, guilt, and helplessness (Patel et al., 2012). Additionally, that could experience impulsivity, hallucinations, delusions, paranoia, lack of interest in hobbies and daily tasks. The present of these symptoms may cause the clinical distress or impairment in social, occupational or other critical areas of functioning (Stewart & Vigod, 2016b). Other physical sign of PPD also included extreme exhaustion and lack of energy. In addition, their appetite may vary, which might result in abnormal weight loss (Hartley et al., 2017). If PPD symptoms are not addressed, they may eventually result in chronic or recurring depression.

Kim et al. (2015) and Lee et al. (2022) state that the emergence of suicidal thoughts and ideation is independently associated with both anxiety and depression. Postpartum suicidality has been connected to PPD, according to research on the topic (Islam et al., 2019). Suicide has been recognised as one of the leading causes of mortality in this depressed group and pregnant woman who experience depression are significantly more likely to have suicidality (Lindahl et al., 2005; Chin et al., 2022). According to Boisvert et al. (2023), 30% of participants had positive PPD screening results and 8% of them had positive suicidality risk screening findings. One of the Japanese cohort studies

found that 1202 postpartum mothers were admitted to the hospital for suicidal attempts and deliveries (Akaishi et al., 2023b). Within a year of giving birth, 111 postpartum mothers were readmitted for suicidal attempts. Apart from that, the results of Li et al. (2022) and Almuqbil et al. (2022) demonstrate that the several behavioural and psychological characteristics were associated with a worse health-related quality of life in the PPD.

Mother's stress and depression can alter their hormone levels, which can impact the mother's health and development of the foetus. Breastfeeding's self-efficacy dropped and mother with PPD were more likely to employ less healthy feeding techniques with their infants (Mercan & Tari Selcuk, 2021). According to Dennis and McQueen (2007) and Butler et al. (2020), mothers who experience PPD were significantly more likely to stop breastfeeding, be unhappy with the infant feeding technique, and report lower levels of breastfeeding self-efficacy. The infant feeding problems may include low appetite and unwillingness to eat. The physical health of the newborn whose mother suffered from PPD also being impacted with more physical health issues, less weight growth, and more frequent nighttime awakening (Gress-Smith et al., 2011). Children can also show the irregular sleeping patterns and struggle to stick to a regular sleep routine. Inadequate sleep has an impact on growth and general physical health. Other than that, Rotheram-Fuller et al. (2018) also discovered a sustained correlation between maternal depression and children stunted height and weight, as well as increase symptoms of internalising an external behavioural disorder. The child’s decreased linear development was also associated with maternal PPD (Farías-Antúnez et al., 2018).

Quevedo et al. (2011) stated that children of PPD mothers were more likely to experience difficulties with language acquisition when they in 12 months old. The children intellectual and physical coordination may be affected and there is a chance that motor and cognitive skill development may be delay. According to previous research, woman suffering from PPD are less positive and dependent, which explain why their play and vocal interaction were lacking (Righetti-Veltema et al. 2003; Obikane et al., 2024). In addition, to have impact on the quality of care that infants get, PPD can also affect the newborn by causing low cognitive function, decrease social interaction, and disorder behaviour in the first year of life (Grace et al. 2003; Richards et al., 2024).

Morales-Munoz et al. (2022) examine that adolescent offspring of PPD mothers were more likely to have depression and anxiety symptoms. The findings showed correlation between the offspring's cognitive, emotional, and biological impairments that are connected to a depression risk and the mother's PPD (Slomian et al., 2019). Abdollahi et al. (2017) state that both current and past parent are PPD are correlated with the childhood developmental issues in the domains of communication, gross motor abilities, and personal social development. Furthermore, Hay et al. (2003) and Closa-Monasterolo et al. (2017) **s**tate that children whose mothers suffered from PPD were more likely to grow aggressive, become violent and the risk of developing psychological problems is increased. The children's inability to regulate their emotions and concentration were linked to a relationship between postnatal depression and violence. Children of depressed mothers displayed signs of anger and

inattention. According to Christaki et al. (2022), maternal PPD increase the likelihood Attention Deficit Hyperactivity Disorder (ADHD) on their children.

Although the number of research completed without these confounding factors is unknown, recent studies that were conducted with COVID-19 lockdown does occur. Therefore, to evaluate the impact of PPD on society, we try to ascertain the prevalence and risk factors of the PPD after the COVID-19 period was uplifted.

2.4 Current awareness of postpartum depression in the community

This subsection examines the current state of postpartum depression awareness in the community, which is indicative of the general level of PPD awareness. Despite being very uncommon globally, PPD does occur as well (Wu et al., 2022; Atak et al., 2023). As a result, its prevalence will be influenced by its awareness. The PPD population can benefit greatly from a supportive network that is knowledgeable in PPD symptoms, risk factors, and interventions (Highet et al., 2011). A support network can help postpartum woman to identify the sign and symptom of depression, providing them information, and urge them to seek for therapy. Poreddi et al. (2020) found that 54% of the individuals had a respectable degree of knowledge and 69.7% of them had positive opinions of women who experience PPD. Besides, the findings demonstrated that medical professionals had a moderate level of knowledge and a poor degree of comprehension of PPD (Hassan et al. ,2020). According to Wang et al. (2023), mothers' knowledge, attitudes, and practise

about PPD are poor. Additionally, only 50.7% of postpartum mothers had sufficient knowledge about postpartum depression (Poreddi et al., 2021).

Nevertheless, there were not enough research has been done to assess the present level of PPD awareness the community. In addition, the population has a poor degree of awareness and information about the severity and symptom of PPD. As a result, by methodically reviewing the body of research on the topic this study seeks to raise the awareness and knowledge among the scientific community.

CHAPTER 3

METHOD AND METHODOLOGY

3.1 Study Design

This study was a systematic review study. Systematic review aims to compile all available evidents in relation to this topic and unbiased synthesis of numerous relevant studies into a single document (Aromataris and Pearson, 2014). Systematic review provides an overview of the current state of knowledge about a topic by combining findings of several studies. Systematic review can point up gaps or inconsistent research results in the literature.

3.2 Study Population

The population of the study was postpartum mothers in different nations. The mothers whose within previous 2 years postpartum are involved in our study. The study which conducted in high-developed, developing and least-developed nations are all considerable for this systematic review.

3.3 Search Strategies

A comprehensive search of journals in PubMed, Scopus, and Google Scholar to identify related studies to the prevalence of postpartum depression will be conducted. The keywords that will be used are risk factors ‘AND’ depression ‘AND’ postpartum ‘AND’ anxiety ‘AND’ prevalence from the year 2022 to the present, 2024.

3.4 Inclusion criteria

The inclusion criteria for this study will be original research related to the prevalence of postpartum depression, randomized controlled trial, cohort study, cross-sectional study, and study conducted after COVID-19 lockdown period.

3.5 Exclusion criteria

The exclusion criteria will be any form of review including systematic review, meta-analysis, narrative review, case studies, news, letters, editorials, conference proceedings, study conducted during COVID-19 lockdown period, or studies unrelated to postpartum depression.

3.6 Procedure

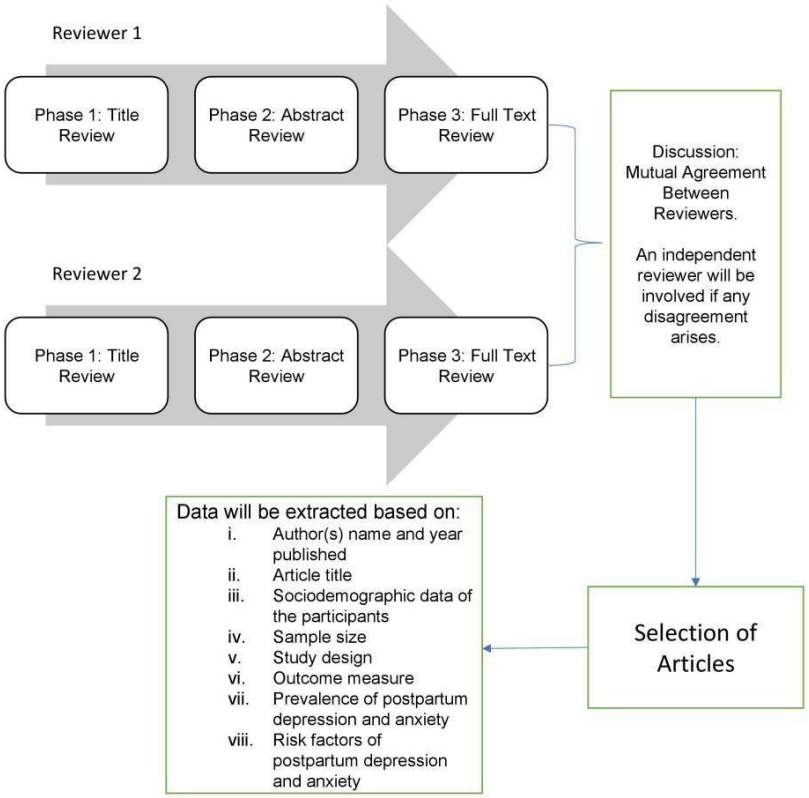

Figure 3.1 Procedure of article selection and data extraction in systematic review

3.7 PRISMA statement and flow chart

The PRISMA guidelines will be applied in this investigation. One of the most often references reporting rules in the biomedical literature is the PRISMA statement, which attempts to improve the openness of meta-analysis and systematic review (Page & Moher, 2017). PRISMA statement encourage transparent and complete reporting of systematic review through an evidence-based minimum set of guidelines (Sarkis-Onofre et al., 2021). The prejudice was lessened by these rules. This guideline guaranteed that all elements of this type of study correctly and openly record it and help the authors provide different knowledge synthesis procedure.

Furthermore, one popular technique for reporting original systematic review is the PRISMA flow diagram. According to Kahale et al. (2022), PRISMA flow diagram show how research move through the various stages of a systematic review. The selection process and the rationale for the exclusion of research at each stage are also made clear by the flow chart. This study is using Shiny apps to do PRISMA flow diagram, Shinny apps is available from Haddaway et al. (2022).

3.8 Rayyan AI Tool

Rayyan is a research tool that is used for filtering and recording the include or exclude studies. Rayyan will also give details about how many records were examined, how many are rejected, and the rationale behind each decision. This study is going to use Rayyan in our searching and decision procedure which is available in Rayyan (2022).

3.9JBI critical appraisal checklist

In order to critically assess each of the articles we choose for this study, we have chosen to employ the JBI critical evaluation checklist. JBI critical appraisal checklist are available in Moola et al. (2020). JBI critical appraisal employed as a scale for appraising literature, and it was predominantly based on the study designs (Barker et al., 2022). The tool is intended to be used as a checklist by users to access if a study meets the predetermined set of requirements. The JBI critical assessment checklist aids in assessing an articles' dependability relevance and outcomes. JBI critical appraisal checklist assesses the paper based on several factors, including the research participants, exposure strategy, and outcome measure. Furthermore, JBI critical appraisal checklist also evaluate a study's methodology and ascertain how well it has handled the potential bias in its planning, execution and analysis. Barker et al. (2023) state that the goal of this checklist is to ascertain whether the study has taken specific measures to address the likelihood of bias or to address other concerns about the validity and quality of the research.

3.10 Data Extraction and Management

Three stages will be used to review the literature as shown in the Figure 3.1. In stage one, articles will be chosen based on their titles and in phase two there will be review based on their abstracts. Those who did not meet the requirements for inclusion criteria will be disqualified. Prior to publication, the chosen particles whole text will undergo a third step of evaluation. Two reviewers will be appointed to examine the articles from the first to the third phase to reduce bias. The present of the third reviewer

will settle any disagreement. Hence, both reviewers will agree on the literature that is included in this study.

All data extraction will be done separately using a common data collection form to standardise our data gathering. In summary, the following data was gathered from the works of literature: (1) name and year of publication of the authors or author; (2) Article Title; (3) Sociodemographic data (nation and mean age of the mother); (4) Sample size; (5) Design (study design, number of groups and description of groups); (6) Tool used to assess postpartum depression; (7) Prevalence of postpartum depression and anxiety; (8) Risk factors of postpartum depression and anxiety.

3.11 Ethical approval

This study was participated to ethical approval by the Scientific and Ethical Review Committee (SERC) of Universiti Tunku Abdul Rahman (UTAR).

CHAPTER 4

RESULTS

4.1 Chapter overview

This chapter will be presented the findings and the mean prevalence after the data collection process for the research project. The PRISMA flow chart that illustrates the article selection process will be displayed first, followed by the explanation of article selection process. Then, the systematic review table will be displayed to show the information of articles that included in this systematic review. The JBI critical appraisal table is also shown and explained. The prevalence of PPD among different nations after COVID-19 lockdown period will also be calculated.

4.2 PRISMA flow chart

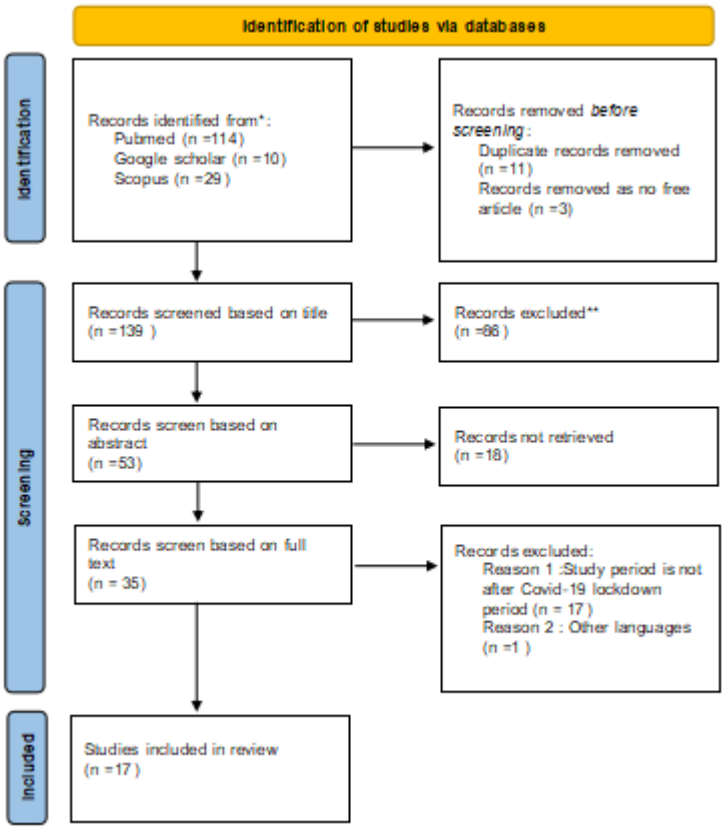

Figure 4.1 PRISMA flow chart

In this research, PRISMA flow chart was used to illustrate the exacting process of choosing studies for a systematic review. The stages of study identification, screening, eligibility evaluation, and final inclusion were all facilitated by PRISMA flowcharts. The main goal is to give readers a clear, detailed visual representation of the filtration and selection of studies.

Figure 4.1 showed the PRISMA flow chart that showed the article selection process. During the identification phase of this flowchart, 153 records in all were collected from three databases which are 114 records from PubMed, 10 records from Google Scholar and 29 records from Scopus. This phase seeks to gather a throughout collection of research on the topic, used a variety of sources to enhance coverage and reduce bias. Following the first search, 14 records were eliminated prior to screening which consist of 11 records that duplicates and 3 that could not be accessed as full-text articles. Therefore, 139 distinct records were remaining, and they advanced to the following phase.

The next screening phase were consisting of title screening and abstract screening. During the title screening phase, the researchers evaluated 139 records according to their titles. The researchers eliminated 86 records that were thought to be unrelated or outside the purview of the studies. After a more throughout evaluation of the remaining 53 records during abstract screening, 18 records were designated as “not retrieved” because of availability concerns. 35 records remained for the last stage of inclusion, full-text screening.

In the full-text screening phase, 35 records underwent a through evaluation in accordance with particular inclusion and exclusion criteria. Out of 35, 18 studies were disqualified which consist of 1 record that was published in other language and 17 that did not fit the review’s emphasis on the post COVID-19 lockdown period. The final review comprised the remaining 17 research that met all eligibility requirements.

4.3 Systematic review table

Table 4.1 Systematic review table

Author(s) name and year published	**Article Title**	**Sociodemographic data: 1. Country 2. Maternal mean/ median age**	**Sample size**	**Design: 1.Study design 2.Number of group 3.Description of groups**	**Tool used to assess PPD**	**Prevalence of PPD and anxiety**	**Risk factors of postpartum depression and anxiety**
Amer, S. A., Zaitoun, N. A., Abdelsalam, H. A., Abbas, A., Mohamed Sh Ramadan, Ayal, H. M., Ba-Gais, A., Nawal Mahboob Basha, Abdulrahman Allahham, Emmanuael Boateng Agyenim, & Walid Amin Al-Shroby. (2024).	Exploring predictors and prevalence of postpartum depression among mothers: Multinational study	1. Egypt, Yemen, Iraq, India, Ghana, and Syria 2. Median age 27 years	674 participants	1. cross-sectional study 2. 1 group 3. Womens who give birth within previous 18 months	1.Edinburgh Postpartum Depression Scale (EPDS)	1. 26% of PPD mothers in Ghana 2. 21.7% of PPD mothers in India 3. 19.1% of PPD mothers in Egyptian 4. 8.5% of PPD mothers in Yemen 5. 7.7% of PPD mothers in Iraq 6. 2.3% of PPD mothers in Syria 7. Average 14.2 of participants have PPD	1. Having 1–2 live births (76.1%) 2. interpregnancy space for less than 2 years. (93.5%) 3. had postnatal problems (27.2%) 4. Mothers on contraceptive methods 5. Had history of dead children 6. Single status mothers 7. Unhealthy baby
Belay, A., Talie, A., Tamene, F., Getnet, A., Tefera, Z., & Geremew, T. (2024).	Evaluation of the prevalence and risk factors of perinatal depression among women living with HIV in the Amhara Region, Northwes	1. Amhara region, Northwest Ethiopia 2. Average age 29.23 years	394 participants	1. Cross-sectional study 2. 1 group 3. HIV-positive perinatal women	1. Edinburgh Postpartum Depression Scale (EPDS)	1. 34.3 % of HIV-positive women develop perinatal depression	1. intimate partner violence 2. internalized stigma 3. poor social support 4. poor adherence to antiretroviral therapy

	t Ethiopia						
Bhakta, M., Satapathy, D. M., Manisha Padhy, Sithal Dalai, Panda, J. N., Pramila Marandi, Swamy SVN, & Amita Pattnaik. (2024).	Assessing the Prevalence and Risk Factors of Postpartum Depression: A Cross-Sectional Study Conducted in the Urban Areas of Ankuli in Southern Odisha	1. Southern Odisha, india 2. Mean age 26.98 years	121 participants	1. Cross-sectional study 2. 1 group 3. Women who give birth within previous 42 days to 6 months	1. Edinburgh Postpartum Depression Scale (EPDS)	1. 8.26% scoring above the depression cutoff of 12 which have higher likelihood of postnatal depression	1. history of psychiatric illness 2. lack of family and partner support 3. adverse life events 4. lower segment cesarean section 5. maternal age 6. educational status
Firoj Al-Mamun, Most Sabiha Sultana, Marufa Akter Momo, Jyotie Malakar, Saad Bin Bahar, Uddin, I., Murshida Murshida, Mst. Morsheda Akter, Mst. Mohsina Begum, Tasmin Sayeed Nodi, Abdullah Al Habib, Kaggwa, M. M., Roy, N., & Mamun, M. A. (2024).	Exploring the burden of postpartum depression in urban Bangladesh: Prevalence and its associations with pregnancy-related factors from a cross-sectional study.	1. Urban Bangladesh (Dhaka city) 2. Mean age 26.66 years	259 participants	1. Cross-sectional study 2. 1 group 3. Women who give birth within previous 2 years	1. Edinburgh Postpartum Depression Scale (EPDS)	1. 60.6% of participants are experienced PPD	1. higher monthly family income 2. income dissatisfaction 3. lower frequency of gravidity 4. having pregnancy complications 5. higher frequency of antenatal care visits 6. higher expenditure during childbirth. 7. cesarean sections

Hababa, H., & Assarag, B. (2023a).	Measurement of maternal morbidity during postpartum with the WHO-WOICE tools in Morocco	1. Morocco 2. All women with age higher than 18 years (mean 30 years)	253 participants (156 in Urban and 97 in Rural)	1. cross-sectional study (convenience sampling method) 2. 1 group 3. Women s of 6 to 12 weeks postpartum	1. WHO-WOICE 2. General Anxiety Disorder 7-item test (GAD-7) 3. 9-item Patient Health Questionnaire (PHQ-9)	1. 29.24% in this group of women had anxiety symptoms 2. 17.78 with depressive symptoms	1. 37.15% were exposed to some type of violence. 2. 84.98% were experience sexual dissatisfaction.
Kapoor, B., Malik, N., Gupta, G., & Imran Ahmed Khan. (2024).	A Cross-Sectional Study Exploring Postpartum Depression at a Tertiary Care Center in Eastern Uttar Pradesh, India	1. India 2. Mean age 24.1 years	280 participants	1. cross-sectional study 2. 1 group 3. Women s who give birth within previous 1 month to 1 year	1.Edinburgh Postpartum Depression Scale (EPDS)	1. 12.14% of participants are experienced PPD	1. adverse life events 2. Domestic violence 3. Relationship issues 4. Female Newborns gender 5. Alcholic spouse 6. Poor in-law relations 7. Complited antenatal history 8. Complited intranatal history 9. Physiocal illness 10. Cesarean section 11. Postpartum cmplications

Majed Alshahrani, Alqarni, T., Sarah Saeed Aldughar, Shuruq Talea Asiri, & Ruba Ibrahim Alharbi. (2024).	The Prevalence and Risk Factors of Postpartum Depression among Mothers in Najran City, Saudi Arabia	1. Saudi Arabia 2. mothers aged 16–50 years, most of participants aged between 20 and 35 years (61.4%)	420 participants	1. Cross-sectional study 2. 1 group 3. Women who give birth within previous 2 weeks to 10 weeks	1. Edinburgh Postpartum Depression Scale (EPDS)	1. 66.7% of women had possible PPD	1. Unemployment 2. younger age 3. caesarean delivery 4. mental illness 5. lack of adequate family support 6. higher stress levels
Maryam Mubarak Alloghani, Baig, M. R., & Shareef, M. (2024).	Sociodemographic Correlates of Postpartum Depression: A Survey-Based Study	1. United Arab Emirates 2. Mean age 32.8 years	200 participants	1. Cross-sectional study 2. 1 group 3. Women who give birth within previous 6 months	1.Edinburgh Postpartum Depression Scale (EPDS)	1. 57% of participants are experienced PPD 2. median EDRS score amongst the study participants was found to be 11	1. age of the newborn 2. marital relationship 3.maternal educational level 4. adverse life events 5.history of depression
Míguez, M. C., & Vázquez, M. B. (2023).	Prevalence of postpartum major depression and depressive symptoms in Spanish women: A longitudinal study up to 1 year postpartum.	1. Spanish 2. Age range from 18 to 45 years (mean 32.80 years)	561 participants in Spanish	1. cross-sectional study (consecutive sampling method) 2. 3 groups 3. 2 months postpartum, 6 months postpartum and 1 years postpartum groups	1. Edinburgh postnatal depression scale (EPDS)	Prevalance of probable depression 1. 30.3% at 2 months postpartum 2. 26.0% at 6 months postpartum 3. 25.3% at 1 year postpartum 4. Average 27.2 of participants experience PPD	Prevalence of major depression 1. 10.3% at 2 months postpartum 2. 10.9% at 6 months postpartum 3. 14.8% at 1 year postpartum

Mladenovic, D., Kostic, S., Ivanovic, K., Jovanovic, I., Milos Petronijevic, Milica Petronijevic, & Petronijevic, S. V. (2024).	Depressive Symptoms during Pregnancy and the Postpartum Period: A Tertiary Hospital Experience	1. Belgrade, Serbia 2. Mean age 31 years	205 participants	1. prospective study 2. 3 groups 3. first at 37+ weeks of gestation, second within the first 2 weeks postpartum, and third at 2 months postpartum.	1.Edinburgh Postpartum Depression Scale (EPDS) 2.Depression, Anxiety, and Stress Scale-21 Items (DASS-21)	1. 26.3% at third trimester of pregnancy 2. 20% at 2 weeks postpartum 3.21.9% at 2 months postpartum 4. Average 20.95 of participants experienced PPD	1. prenatal depressive symptoms 2. low socioeconomic status 3.Personel experience of difficulty during childbirth 4. Prior miscarriages 5.Cesarean section 6.Poor Partner relationships and support level
Muhammed Atak, Mehmet Akif Sezerol, Mehmet Sait Değer, & Hamza Kurubal. (2023)	Factors Associated with the Prevalence of Postpartum Anxiety Disorder and Depression in Syrian Migrant Women Living in Turkey: A Cross-Sectional Study.	1. Turkey 2. Mean age 25.73 years	172 migrant postpartum women	1. cross-sectional study 2. 1 group 3. Women s of 6 weeks postpartum	1. Edinburgh Postpartum Depression Scale (EPDS) 2. Beck Anxiety Inventory	1. 2.9% of them got scores above the cut-off point value in EPDS 2. All participants had scores of 21 and below in BAI	1. 89.8% of participants who have income level below minimun wage have higher depression scores in EPDS 2. rate of depression was lower in those who did not get vaccinated in EPDS 3. Postpartum depression decrease as the number of people living together increase 4. Primary education (62.5%) and high school (25%) education levels have higher anxiety score in BAI

Roy, S. K., Majumdar, S., Singh, R., & Paul, A. (2024).	Prevalence and risk factors of depressive symptoms in the postpartum period: An experience from urban West Bengal, India	1. urban West Bengal, India 2. Majority of women were below 26 years of age(55%)	189 participants	1. Cross-sectional study 2. 1 group 3. Womens who give birth within previous 6 months to 1 year	1. Edinburgh Postpartum Depression Scale (EPDS)	1. 29% of women had probable PPD (EPDS >13) 2. 19% of women had possible PPD	1. Low newborn weight 2. Marital conflict 3. Lack of support at home 4. Postnatal complications 5. primipara women
Wasti, P., Panta, P. P., Gc, V. S., Ghimire, B., Sapkota, P., & Wasti, S. P. (2024).	Prevalence of Perinatal Depression and Its Associated Risk Factors among Nepalese Women in Kathmandu, Nepal	1. Kathmandu, Nepal 2. Mean age 25.5 years	300 participants (161 antenatal women, 139 postnatal women)	1. Cross-sectional study 2. 1 group 3. Womens who before and after delivery	1. Edinburgh Postpartum Depression Scale (EPDS)	1. 59% of postnatal participants are experienced PPD 2. 23.6% of antenatal participants are experienced PPD	1. Unsupportive family members 2. complications faced during delivery 3. history of intimate partner violence 4. first pregnancy at the age of ≤25 years
Wildali, D., Nazzal, S., Hamshari, S., & Belkebir, S. (2024).	Prevalence and risk factors of postpartum depression among women attending primary healthcare centers in northern of West Bank/ Palestine: a cross-sectional study, 2022	1. Palestine 2. Median age 27 years	380 participants	1. Cross-sectional study 2. 1 group 3. Womens who give birth within previous 7 to 12 weeks	1. Edinburgh Postpartum Depression Scale (EPDS)	1. 33.9% of participants are experienced PPD	1. lack of social support 2. husband's low education 3. stressful events during pregnancy 4. primiparity

Xayyaboua pha, A., Sychareun, V., Quyen, B. T. T., Thikeo, M., & Durham, J. (2022)	Prevalenc e and Risk Factors Associate d With Postpartu m Depressiv e Symptom s Among Women in Vientiane Capital, Lao PDR.	1. Lao PDR 2. Mean age 27.5 years	521 partici pants	1. cross-sectional design(mu ltistage sampling) 2. 1 group 3. Wome ns between 4 weeks and 24 weeks postpartu m	1.Edin burgh Postpar tum Depres sion Scale (EPDS)	21.3% of participants have postpartum depressive symptoms	1. having at least 2–3 living children 2. experiencing mental health problems during pregnancy 3. Having conflicts with family members 4. experience of intimate partner violence 5. receiving moderate social support
Zangmo, S., Boonchien g, W., Suvanayos, C., Gyeltshen, K., & Siewchaisa kul, P. (2024).	Prevalenc e and factors associated with postpartu m depressio n among Bhutanes e mothers: a cross-sectional study	1. Bhutan 2. mothers aged 17–48 years, most of participant s aged between 25 and 35 years (62.1%)	314 partici pants	1. Cross-sectional study 2. 1 group 3. Women s who give birth within previous 4 weeks to 8 weeks	1. Edin burgh Postpar tum Depres sion Scale (EPDS)	1. 14.97% of participants are experienced PPD	1. perceived change in body image 2. perceived heightened stress after delivery 3. poor relationship with in-laws 4. negative birth experience
Zhang, J., Wang, P., Fan, W., & Lin, C. (2024).	Comparin g the prevalenc e and influencin g factors of postpartu m depressio n in primiparo us and multiparo us women in China	1. China 2. Mean age 28.91 years	429 partici pants	1. cross-sectional study 2. 2 group 3. Primip arous women and multiparo us women	1.Edin burgh Postpar tum Depres sion Scale (EPDS)	1. 21.99% among primiparous women 2. 22.27% among multiparous women 3. Average 22.13% of participants have PPD	1.newborns health 2.women's expectation on newborns gender

4.4 JBI critical appraisal table

Table 4.2 JBI critical appraisal table

Study	Clear criteria for inclusion in the sample	Clear study subjects and the setting	Valid and reliable exposure	Standard criteria used for measurement	Confounding factors identified	Strategies to deal with confounding factors	Valid and reliable outcome measure	Appropriate statistical analysis	Total score
Amer et al. (2024)	1	1	1	1	1	1	1	1	8/8
Belay et al. (2024)	1	1	1	1	1	1	1	1	8/8
Bhakta et al. (2024)	1	1	1	1	1	1	1	1	8/8
Firoj Al-Mamun et al. (2024)	1	1	1	1	1	1	1	1	8/8
Hababa and Assarag (2023a)	1	1	1	1	0	0	1	1	6/8
Kapoor et al. (2024)	1	1	1	1	1	1	1	1	8/8
Majed Alshahrani et al. (2024)	1	1	1	1	1	1	1	1	8/8
Maryam Mubarak Alloghani et al. (2024)	1	1	1	1	1	1	1	1	8/8
Míguez and Vázquez (2023)	1	1	1	1	0	0	1	1	6/8
Mladenovic et al. (2024)	1	1	1	1	0	0	1	1	6/8
Muhammed Atak et al. (2023)	1	1	1	1	1	1	1	1	8/8
Roy et al. (2024)	1	1	1	1	1	1	1	1	8/8
Wasti et al. (2024)	1	1	1	1	1	1	1	1	8/8
Wildali et al. (2024)	1	1	1	1	1	1	1	1	8/8
Xayyaboua pha et al. (2022)	1	1	1	1	0	0	1	1	6/8

Zangmo et al. (2024)	1	1	1	1	1	1	1	1	8/8
Zhang et al. (2024)	1	1	1	1	1	1	1	1	8/8

After the last phase of article selection, 17 remaining research were being critically evaluate by employed the JBI critical evaluation checklist. The goals of this checklist according to Barker et al.(2023), is to ascertain whether particular steps have been made by the study to lessen the likelihood of bias or to address other concerns about the validity and quality of the research. In the critical appraisal phase in this research, 4 of the 17 studies were given a score of six out of eight, while the other studies were given full scores. The four studies primarily failed to address confounding factors, which are the variables that may skew the relationship between exposure and outcome. The studies that did not get full mark is because they did not clearly state the exclusion criteria of participants, such as prenatal psychological disorder that may affect the result. In particular, neither the confounding factors that were present in these four studies nor the methods they used to control or lessen them were explicitly identified. This is an important gap since the validity of study results may be compromised if confounders are not controlled for, which could have an impact on the systematic review's overall conclusions.

All 17 studies received perfect scores in the remaining 6 JBI checklist components, demonstrating their excellence in different areas of study design and reporting. Every study included explicit inclusion criteria, which reduced selection bias by guaranteeing that only pertinent participants were chosen based on precise eligibility requirements. Furthermore, every study provided adequate context and information to enable replication and a deeper comprehension of the sample

population, clearly describing the study subjects and settings.

The validity and reliability of the exposure measurements used in the research were also notable. They ensure that the variables of interest were measured consistently and precisely which increased the validity of result. Additionally, their method was made reliable by using standard criteria for measurement, which means they adhered to pre-established procedures to evaluate the exposure and outcomes. All studies' outcomes were also assessed using legitimate and trustworthy techniques, guaranteeing the accuracy and consistency of the data gathered on the outcomes. Finally, each study used adequate statistical analyses, which means that the data were examined using appropriate statistical techniques. This strengthens the interpretation of the findings and supports the validity of the conclusions drawn from them.

Overall, the studies showed excellent standards in other methodological areas, even though a subset of them failed to sufficiently address the confounding factors, which are crucial for comprehensive causal linkages. These studies were typically well-designed and satisfied a number of important quality standards, as seen by their high scores in inclusion criteria, exposure validity, measurement standards, outcome dependability, and statistical analysis. Therefore, this research decided to use all of the 17 studies as our data as they have a high score in the critical appraisal phase.

4.5 Mean prevalence of PPD

$$\text{Mean} = \frac{\text{Sum of all values}}{\text{Number of values}} = \frac{502.33}{17} \approx 29.55$$

A methodical procedure was used to determine the mean prevalence of postpartum depression across 17 research in order to ensure reliable data representation. The first step in determining the mean was to add up all of the prevalence rates that were documented in the research. 14.2, 34.3, 8.26, 60.6, 17.78, 12.14, 66.7, 57, 27.2, 20.95, 2.9, 29, 59, 33.9, 21.3, 14.97, 22.13 were the individual numbers from each study that must be added for the provided data. The sum of these values was 502.33, then divided it by the total number of studies which is 17. The mean prevalence after this division was around 29.55% . This value provided a generalized estimation of the prevalence of postpartum depression in the population under study by representing the average prevalence rate of the illness across all 17 research.

CHAPTER 5

DISCUSSION

5.1 Chapter Overview

This chapter will outline the discussion on significant findings from the results sections in accordance with the research objectives, which will follow with the limitation of study, as well as the conclusion of the research project.

5.2 Discussion

5.2.1 Prevalence of PPD in Different country

Table 5.1 Prevalence of PPD in different country

Countries	Prevalence of PPD (%)
Syria	2.3
Turkey	2.9
Iraq	7.7
India	8.26
Yemen	8.5
India	12.14
Bhutan	14.97
Morocco	17.78
Egypt	19.1
Serbia	20.95
Lao PDR	21.3
India	21.7

China	22.13
Ghana	26
Spanish	27.2
India	29
Palestine	33.9
Ethiopia	34.3
United Arab Emirates	57
Nepal	59
Bangladesh	60.6
Saudi Arabia	66.7

This systematic review included 17 research which conducted in different countries throughout the world after COVID-19 lockdown period. Every study has revealed varying rates of PPD prevalence worldwide. Based on the table which show the prevalence of PPD among different countries, it can conclude that Saudi Arabia has the most highest prevalence of PPD. Besides, the lowest prevalence of PPD was found in the Syria.

According to the first study which included in our systematic review, a cross-sectional study design with a single participant group was utilized in this study of PPD in women from Egypt, Yemen, Iraq, India, Ghana, and Syria (Amer et al., 2024). Six hundred and seventy four women, whose median age was 27, who had given birth within the last 8 months were included in the research. To ascertain the prevalence of PPD in each research group, the EPDS, a well-known and trustworthy instrument for evaluating postpartum depression, was utilized. The results showed that the prevalence of PPD varied significantly among the six nations. With 26% of participants reporting PPD, Ghana had the greatest prevalence, followed by India (21.7%) and Egypt

(19.1%). Prevalence rates were somewhat lower in Yemen, Iraq, and Syria, at 8.5%, 7.7% and 2.3% respectively. Despite these variations, the average for all participants showed that 14.2% of the women had PPD in this study.

Muhammed Atak et al. (2023) conducted a study to examine the mental health among 172 migrant postpartum women in Turkey. This population's prevalence of anxiety and depression symptoms was assessed using a cross-sectional research approach. Two validated instruments were used: the Beck Anxiety Inventory (BAI) to measure anxiety levels and the EPDS to measure PPD. Only 2.9% of individuals scored higher than the EPDS cutoff value. The results suggesting that PPD was not very common in this cohort. Every individual had a BAI score of 21 or lower, indicating little to no anxiety symptoms. These findings could be the consequence of particular protective characteristics in this demographic, such as migrant women's resilience, cultural views, or community support.

There are various studies conducted in India to analyze the prevalence of PPD among women in India. In the study that conducted in Southern Odisha, India, they determined the prevalence of PPD among women who had given birth within the previous 42 days to 6 months (Bhakta et al., 2024). A cross-sectional research approach was used with a single group of 121 participants, whose mean age was 26.98 years. The EPDS was used to screen for the PPD symptoms among the participants. The findings showed that 8.26% of the women scored above the EPDS cut-off score of 12, indicating a higher

likelihood of PPD.

In another study in India, the prevalence of PPD among women who had given birth during last month to a year was investigated (Kapoor et al., 2024). Two hundred and eighty women with an average age of 24.1 years were enrolled in the study, which used a cross-sectional study design with a single participant group. EPDS was used to evaluate the participants' PPD symptoms. The results showed that 12.14% of the participants had PPD, suggesting that postpartum women in the research group had a significant prevalence of depressed symptoms.

This study, which was carried out in Bhutan, looked at how common PPD was among the mothers between four and eight weeks after giving birth (Zangmo et al., 2024). 314 people between the ages of 17 and 48 participated in the cross-sectional survey, with the majority (62.1%) being between the ages of 25 and 35. The participants' mental health was evaluated using EPDS. PPD was found to affect 14.97% of the individuals, indicating a moderate frequency of PPD in this population.

According to the research (Hababa & Assarag, 2023), this Moroccan study examined the mental health of women who were 18 years of age or older and their mean age was 30 years. All participants were giving birth within previous six to twelve weeks. Using a convenience sample technique, the

cross-sectional study involved 253 individuals, 156 of them were from urban regions and 97 from rural areas. Three validated instruments were included in this study to evaluate postpartum anxiety and depression symptoms which included WHO-WOICE instrument, the General Anxiety Disorder 7-item test (GAD-7), and the 9-item Patient Health Questionnaire (PHD-9). The findings showed that 17.78% of the subjects had PPD and 29.24% had anxiety symptoms.

The prevalence of stress, anxiety and depression symptoms in pregnant and postpartum women was examined in this study which conducted in Belgrade, Serbia (Mladenovic et al., 2024). With 205 individuals and a mean age of 31, a prospective research design was used. During the third trimester of pregnancy, the first two week after give birth, and two months after give birth, the participants were evaluated. The incidence and severity of mental health symptoms throughout these time periods were assessed using two validated instruments: the EPDS and the Depression, Anxiety, and Stress Scale-21 Items (DASS-21). According to the findings, during the third trimester of pregnancy, 26.3% of women had symptoms suggestive of depression. Within the first two weeks after give birth, this incidence dropped to 20%, but by the two-month mark it had somewhat grown to 21.9%. It was determined that the average prevalence of depressed symptoms at each of the three time periods was 20.95%. With a significant percentage of women still experiencing psychological problem after giving birth, these findings highlight the dynamic character of mental health during the perinatal period.

Xayyabouapha et al. (2022) conducted a study to investigate the prevalence of PPD in women between 4 and 24 weeks postpartum in Lao PDR. This cross-sectional study used a multistage sampling technique and comprised 521 individuals with a mean age of 27.5 years. The individuals' mental health was assessed using the EPDS. The results showed a significant mental health burden among postpartum mothers in Lao PDR, with 21.3% of the participants reporting postpartum depression symptoms.

The study which conducted in China, examined the prevalence of PPD among primiparous and multiparous women (Zhang et al., 2024). It involved 429 participants with a mean age of 28.91 years, divided into two groups based on their parity: primiparous women and multiparous women. EPDS was used in this study to assess PPD. The findings showed that PPD was present in 21.99% of primiparous women and 22.27% of multiparous women, with an average prevalence of 22.13% across all participants.

Míguez and Vázquez (2023) examined the prevalence of PPD in women between the ages of 18 and 45 with the mean age of 32.8 years in Spain. In this cross-sectional study using a consecutive sampling method, which had 561 individuals, depression symptoms were measured at three different postpartum intervals which are two months, six months and one year. The incidence of depressive symptoms in these groups was assessed using the

EPDS. The findings showed that the prevalence of probable depression varied over the postpartum months. Depression symptoms were present in 30.3% of individuals at 2 months, falling to 26% at 6 months and 25.3% at 1 year. PPD was experienced by an average of 27.2% of participants, suggesting that a considerable percentage of mother encountered with mental health issues throughout the postpartum year. Although the steady rates highlight the need for ongoing care during the first year following childbirth, the progressive drop in frequency over time may indicate the elimination of some postpartum stresses.

Roy et al. (2024) conducted a study in urban West Bengal, India, examined the prevalence of PPD in women between six months and a year after giving birth. One hundred and eighty nine women participated in this cross-sectional study, the majority of them (55%) were under the age of 26. The incidence and severity of PPD in the individuals were evaluated using the EPDS. The findings showed that a considerable percentage of women experienced moderate to severe depression symptoms, with 29% of them having probable PPD as defined by an EPDS score higher than 13. Furthermore, it was determined that 19% of women may have PPD which would indicate moderate depression symptoms.

The prevalence of PPD among women who given birth during the last seven to twelve weeks was examined in this study, which was carried out in Palestine (Wildali et al., 2024). With 380 individuals and a median age of 27, a

cross-sectional research design was employed. EPDS are used to assessed PPD among the participants. Based on the scores above the EPDS criterion, the results showed that 33.9% of the individuals had PPD. This high incidence drawed attention to the serious mental health issues that Palestinian postpartum mothers experience.

The next study which from Belay et al. (2024) assessing the prevalence of perinatal depression among women with Human immunodeficiency virus. This study was carried out in the Amhara area of Northwest Ethiopia. The study included 394 HIV-positive perinatal women, whose average was 29.23 years and use a cross-sectional study design with a single participant group. The individuals' mental health was assessed using the EPDS. The results showed that perinatal depression affected 34.3% of the pregnant mothers with HIV.

This study looked at the prevalence of PPD among the women who had given birth within six months in the United Arab Emirates (Maryam Mubarak Alloghani et al., 2024). A total of 200 participants with an average age of 32.8 years were involved in this cross-sectional study. EPDS was used to measure depressive symptoms in this study. The findings showed a significant burden of depressed symptom in this study, with 57% of participants reporting have PPD. The significant incidence of depressed symptoms was further supported by the research participants' median EPDS score of 11.

In this study, the incidence of depression symptoms in women during the prenatal and postnatal periods was investigated in Kathmandu, Nepal (Wasti et al., 2024). The cross-sectional study comprised 300 individuals, including 139 postnatal women and 161 prenatal women. The participants' average age was 25.5 years. The depressive symptoms were measured both before and after delivery using EPDS, a recognized instrument for PPD screening. With 59% of postnatal participants reporting PPD, as indicated by EPDS scores over the threshold, the results showed an impressive prevalence of depression. On the other hand, depression during pregnancy was shown to affect 23.6% of prenatal participants. These findings underline the necessity of mental health interventions at various phases of the perinatal period by showing a greater burden of depression symptoms in the postpartum period as opposed to the prenatal period.

This study examined PPD in women who give birth during the preceding two years in Dhaka, an urban area of Bangladesh (Firoj Al-Mamun et al., 2024). The study included 259 women, whose mean age was 26.66 years, and used a cross-sectional study design with a single group of participants. The incidence and intensity of PPD among the participants were measured using EPDS. The results showed that 60.6% of the women had PPD, which is a remarkably high incidence.

The prevalence of PPD among the women aged 16 to 50 was investigated in this Saudi Arabia study (Majed Alshahrani et al., 2024). The majority of participants (61.4%) were in the 20-35 age range. This cross-sectional research, which focused on mother who had given birth within the last two to ten weeks, involved 420 women in total. To evaluate depression symptoms and identify women at risk for PPD, the EPDS was utilized. With 66.7% of individuals scoring above the EPDS threshold, the results showed an incredibly high prevalence indicating the potential for PPD.

5.2.2 Prevalence before and after COVID-19 lockdown period in same country

5.2.2.1 Prevalence of PPD that lower after COVID-19 lockdown period

Our study examined the prevalence of PPD after COVID-19 lockdown period by including the studies carried out in various nations. In each nations, we examined the prevalence of PPD before and after COVID-19 lockdown period. Based on our findings, certain studies indicated a decreased occurrence of PPD after COVID-19 lockdown period. This may due to the enhanced family engagement with home-based partners during COVID-19 lockdown period. Partners were frequently forced to work from home during lockdown, which allowed more time for them to help the mother and share childcare duties, perhaps lowering the mother's stress levels. Besides, postpartum mothers may have been unwilling to report symptoms or seek in-person treatment during lockdown because they were afraid of getting COVID-19 or had restricted access to medical facilities. This can cause the prevalence to

appear to decline. Below are the comparison of PPD prevalence before and after COVID-19 lockdown period, and seven of them exhibited a decline in PPD prevalence after COVID-19 lockdown period.

An Egypt research that was conducted before COVID-19 lockdown period which is between January 2019 and January 2020, the researchers included 257 women visited three primary healthcare clinics to get their infants vaccinated (Ahmed et al., 2021). The prevalence of PPD reported in this study is 33.5% of women may develop PPD. With compared to the Egypt research that is included in our research which conducted after COVID-19 lockdown period, 19.1% of participants are reported to have PPD (Amer et al., 2024).

In the Kurdistan Region of Iraq, researchers evaluated the perinatal mental health requirements of the women that living in internally displaced person camps (Seidi et al., 2022). 122 Yazidi women who were pregnant or had just given birth less than a year ago were included in this study. 53% of subjects are reported to have moderate to severe depression which EPDS score more than 12. Another study that conducted before COVID-19 lockdown period in Iraq have reported 48% of participants have PPD (Mishkin et al., 2021). In contrast to a study done in Iraq after COVID-19 lockdown period, 7.7% of participants reported having PPD (Amer et al., 2024).

From January to June 2019, Budh et al. (2021) carried out a cross-sectional research in Delhi, India to analyze the prevalence of PPD. Out of the 210 women, 29% of them had PPD. In another study, 203 women who had

taken vitamin B12 supplements during pregnancy and six weeks after giving birth and who had measures of depression symptoms in each trimester were the subjects of the placebo-controlled and randomized experiment (Thomas et al., 2020). 28.6% of the participants reported intermittent depression symptoms and 16.2% had persistent depression symptom. The prevalence of PPD after COVID-19 lockdown period is 21.7%, which is lower than the prevalence before COVID-19 lockdown period (Amer et al., 2024). In another Indian study which included in our research, 8.26% of participants scoring above the depression cut off of 12 which higher likelihood of postnatal depression (Bhakta et al., 2024). Kapoor et al. (2024) included 280 participants in their studies and 12.14% of participants are experienced PPD. Besides that, Roy et al. (2024) conducted a study in urban West Bengal, India and the results reported that 29% of women had probable PPD (EPDS >13).

This descriptive cross-sectional study was conducted in Damascus, Syria, from January to December 2017 which is before COVID-19 lockdown period (Roumieh et al., 2019). In this study, 28.2% of the 1105 women who took part got a EPDS score of 13 which is probable depression. In another study which conducted by Ahmed et al. (2017), twelve Syrian refugee women who relocated to Saskatoon, Canada, between 2015 and 2016 were included to analyze prevalence of PPD among the refugee women. Half of the women screened positive for possible anxiety subscale score and 58.33% of them screened positive for probable depression. Additionally, 365 women were gathered by Mohammad et al. (2018) from four medical facilities in the northern Jordan. On the EPDS, 49.6% of the Syrian refugee women received a score of >12. With compared to the Syrian study that included in our research,

the prevalence of PPD after COVID-19 lockdown period is 2.3% (Amer et al., 2024).

The prevalence of PPD in 323 pregnant and postpartum women in Arba Minch town, Southern Nations and Nationalities Peoples Region, Ethiopia was evaluated using a cross-sectional research design (Beketie et al., 2021). The study is conducted in 2018 which before COVID-19 pandemic. The results showed the prevalence of antenatal depression was 35.4% in severity. In contrast, the recent Ethiopian research which carried out by Belay et al. (2024), examined the prevalence of PPD among the mothers with HIV. PPD was observed to occur in 34.3% of women with HIV.

This prospective study set out to investigate the frequency, severity, and risk factors of PPD among Turkish teenage mothers (Topatan & Demirci, 2019). 84 mothers which ages between 15 and 19 were participated in this study. The findings show that the adolescent PPD risk was 22.6%. While compared to the research that conducted recently in Turkey, 2.9% of the participants received EPDS scores higher than the cut-off threshold (Muhammed Atak et al., 2023).

In a cross-sectional study, 864 women within 6 to 12 weeks after giving birth participated in an anonymous online survey from March to April 2020 to evaluate their PPD risk (Liang et al., 2020). The findings showed that 30% of participants are experienced PPD at 6 to 12 weeks postpartum. Other than that,

Liu et al. (2020) included 1204 women who lives in Shanghai, China in their cross-sectional study. Amont the large number of participants, 23.3% of them are experienced PPD. Zhang et al. (2024) compared the prevalence of PPD among 429 primiparous and multiparous women using a cross-sectional study. The findings have showed that PPD affects 22.13% of participants on average after COVID-19 lockdown period.

These seven studies in different exhibited a decline in PPD prevalence after COVID-19 lockdown period with compared to the prevalence before COVID-19 lockdown period. This may due to the underreporting of the PPD cases as the mothers were afraid of getting COVID-19 if seeking for treatment in healthcare center during COVID-19 lockdown period. In addition, the decline of PPD prevalence after COVID-19 lockdown period may due to the enhanced family engagement as most of the people may choose to work from home.

5.2.2.2 Prevalence of PPD that higher after COVID-19 lockdown period

According to several studies, the prevalence of PPD was greater after the COVID-19 lockdown period. This could be because the infectious pandemics make pregnant women anxious about a number of elements of delivery, such as disrupted expectations for prenatal and postnatal care (Brooks et al., 2020). Besides, there was less outdoor exposure and physical activity during COVID-19 lockdown period. Movement restrictions and lockdown may have limited the possibilities for the mothers to exercise and attend outdoor activities which are proven to help reduce depression. The postpartum mother may feel bored

and lonely as they can only stay in their home. The sedentary living may exacerbate their symptoms of mental illness, such as postpartum anxiety and depression. Additionally, mothers may have less social support systems and less acess to medical treatment as a result of social distance and quarantine regulations (Gluska et al., 2022). Therefore, mothers are more likely to have mental health issues as a result of this. Other than that, the postpartum mothers or the families may faced extra stress due to job losses and unstable finances throughout the COVID-19 pandemic. The financial stress may more exacerbate the feelings of depression and anxiety in new mothers as they need to worried about the extra spendings of their newborn babies. Six countries are included below that demonstrated a rise in PPD cases after COVID-19 lockdown period.

Alam et al. (2021) conducted a cross-sectional study in Dhaka City in Bangladesh to determine the prevalence of PPD among the facility-delivered mothers. Between January and May 2019, 291 mothers in the first 12 months after giving birth participated in this study. Among the 291 mothers, PPD symptomatology was present in 29.9% of cases. In another study, 497 postpartum women who visited a health center in Rajshahi City Corporation, Bangladesh, within the first six months after giving birth participated in a cross-sectional study (Tasnim et al., 2021). The study is conducted from October to December 2019 and the result showed that 34% of the sample had PPD. In comparison, 60.6% of participants in a recent study carried out in Dhaka, Bangladesh, reported having PPD (Firoj Al-Mamun et al., 2024).

Alsayed et al. (2021) conducted a study in Jeddah, western Saudi Arabia, to evaluate the prevalence of PPD in 2019. The research calculated that 20.9% of the 172 postpartum mothers had PPD. In another study, 174 mothers who undergoing treatment in several hospitals in Riyadh, Saudi Arabia, participated in this study by completing EPDS (Al Nasr et al., 2020). 38.5% of the 174 research participants reported having PPD. Of the 420 women in the current research that included in our systematic review, 66.7% of them have experienced PPD (Majed Alshahrani et al., 2024).

Five hundred and four women in Dubai, United Arab Emirates who were between one week and six months postpartum are included in this study (Alhammadi et al., 2017). A crude prevalence rate of 33% was obtained from 168 women who had an EPDS score of higher than 10. In contrast to the previous studies on PPD prevalence that included in our study, 57% of individuals reported having PPD, indicating that the prevalence of PPD has increased in United Arab Emirates following the COVID-19 lockdown period (Maryam Mubarak Alloghani et al., 2024).

The study's objective was to investigate the prevalence and risk factors for PPD in Spanish pregnant women, both native-born and immigrant (Marcos-Nájera et al., 2019). This research involved 1524 pregnant women in total. The results showed that the immigrant group have the prevalence of 25.8% while the prevalence of native group was 15.2%. Míguez and Vázquez (2023) recently carried out a study in Spain with 561 participants. According to the findings, 27.2% of individuals on average had PPD.

Dmitrovic et al. (2014) conducted a study in Serbia to screen 212 women for signs of depression throughout pregnancy and after giving birth. Overall, 11% of the women tested positive for PPD. In comparison with the recent studies that conducted by Mladenovic et al. (2024) in Belgrade, Serbia, average 20.95% of participants experienced PPD which indicates a rise of prevalence of PPD among Serbian women.

From July to August 2019, 415 randomly chosen postpartum mothers in the lowland area of southern Nepal participated in a hospital-based analytical cross-sectional study (Singh et al., 2021). 33.7% of participants are reported having PPD. Besides, another cross-sectional study also carry out to identify the prevalence of PPD among 348 postpartum mothers (Pradhananga et al., 2020). As a result, PPD was prevalent in 14.7% of the total number of mothers. In contrast to another recent cross-sectional study conducted in Kathmandu, Nepal during the COVID-19 lockdown period, 59% of 300 women reported having PPD (Wasti et al., 2024).

Six studies from different countries which included above demonstrated a rise in PPD cases after COVID-19 lockdown period. The rise of PPD prevalence after COVID-19 lockdown period is due to the less outdoor exposure and physical activity. Additionally, less social systems and less access to medical treatment also cause the rise of PPD prevalence after COVID-19 lockdown period.

5.2.3 Risk factors of PPD

5.2.3.1 Demographic factors

This chapter discusses the demographic factors that influence the likelihood of having PPD such as younger maternal aged, low educational level, low socioeconomic status, primiparity and multiparity. Firstly, the mother's lifestyle and personal factors may have an impact on PPD. The younger mother may have less support networks, less secure relationships and limited financial resources (Hymas & Girard, 2019). Majority of the younger mothers were primiparous, who lacked delivery experience and were not yet fully adapted to the role change (Chen et al., 2024). Therefore, younger mothers especially aged below 25 years old are more prone to PPD. According to research that examine the association between low educational level and PPD, PPD and its accompanying symptoms were more common in those with lower educational status (Matsumura et al., 2019). This is because women with lower educational level might not have enough knowledge about pregnancy, labor, and postpartum care, which could make them more anxious when handle new situations (Elrassas et al., 2022). Besides, they could not notice the early warning symptoms of PPD or seek care from healthcare profession due to limited awareness of mental health disorders. Unemployment, unstable finances, and lower-paying jobs are frequently associated with lower educational status. One of the known risk factors for PPD is income dissatisfaction or low socioeconomic status (Yoo et al., 2021). Financial difficulties will exacerbate the feelings of inadequacy of money and stress experienced by postpartum mothers. Low socioeconomic status may limit the

access to healthcare and resources (Zhu et al., 2024). Depressive symptoms may also result from mother's anxiety over providing for their infant's requirements. In addition, primiparity and multiparity are both stated as the risk factors of PPD. This is because primiparas may suffer increased anxiety as they lack confidence and experience in caring for a baby (Wildali et al., 2024). However, some of the study stated that the prevalence of PPD among multiparous mothers is higher than the prevalence of PPD among the primiparous women (Rodríguez-Muñoz et al., 2024). Mothers who have many children may also find it difficult to take care of many children. Multiparous mothers frequently have to take care of older children in addition to the newborn, which can leave them physically exhausted and increase risk of developing PPD.

5.2.3.2 Social and environment factors

This subsection discusses the environmental and social factors that influence the likelihood of having PPD, including low social support, strained relationships with partners and parents-in-law, and being a single mother. According to the previous research (Jones & Coast, 2013). PPD was linked to little social support and poor relationship with the partner and parents-in-law. Lack of social, financial, or emotional supports from friends, family or the community may increase the feelings of loneliness. The mothers will be very stress with caregiving duties if they do not receive help from others throughout the postpartum phase. Besides, the absence of a partner or issues in a marriage and family might result in a loss of both practical and emotional assistance. The degree of a husband's care for his wife was a major indicator of the quality

of their relationship, and postpartum women who were dissatisfied with their husbands' care were more likely to experience depression (Wang et al., 2021).Therefore, single status mother or mothers having conflicts with her families or partner may have higher risk on developing PPD as they will have many additional stress.

5.2.3.3 Psychological factors

This segment discusses the psychological variables that affect the risk of developing PPD, such as a history of prior psychological illness, a traumatic life event, and intimate partner abuse. Mother's psychological factors also a important risk factor for PPD. Pregnancy-related depression or history of previous psychological illness is a strong indicator of PPD. Lee et al. (2004) and Prabhu et al. (2019) stated that prenatal psychological condition and the development of PD are significantly correlated because majority of PPD were a continuation of prenatal emotional disorders and psychological issues. Additionally, excessive mood disorders during pregnancy can cause a number of psychological and pathological reactions, including changes in thyroid hormone and increased bleeding (Gold, 2021). Pregnant women may experience anxiety due to these changes, which may also increase their risk of developing PPD. Besides, adverse life event such as losing a loved one, ending a relationship or losing a job during pregnancy or postpartum can cause depressive episodes in mothers without a history of psychological disorders (Nurbaeti et al., 2019). Mental strength is of a postpartum mothers will diminish during the sensitive postpartum period when life pressures are

compounded. Additionally, the adverse life event such as intimate partner violence also an important risk factors that lead to PPD (Çankaya & Ataş, 2022). The mothers who being physically, emotionally, or sexually abused during pregnancy or postpartum are more likely to develop PPD (Rtbey et al., 2024). According to a recent study that examines the association between intimate partner violence, IPV was reported by 64.1% of PPD positive participants, with 54.6% experiencing controlling behavior, 30% emotional violence, 2.4% physical violence, and 3.5% sexual violence (Narayanan et al., 2024). These findings indicate that emotional, physical, sexual violence and hospitalization were all significantly linked to a higher incidence of PPD.

5.2.3.4 Obstetric and neonatal factors

This subsection discusses the obstetric and neonatal factors that influence the likelihood of developing PPD, such as emergency cesarean sections, postpartum difficulties, postpartum delivery experiences, preterm birth, and unhealthy babies. Obstetric factors such as emergency cesarean sections and postpartum complications will also increase the stress experienced by the postpartum mothers and increase risk of developing PPD. Benton et al. (2019) stated that numerous psychological outcomes, such as post-traumatic stress disorder, PPD, self-esteem, newborn feeding health related quality of life, and experiences were consistently and adversely linked to emergency cesarean section. According to a cohort study which included 10535 participants, women with emergency cesarean sections have a considerably higher risks than the women with an normal vaginal delivery (Yang et al., 2011). Furthermore, cross-sectional research in Iran also found that the

prevalence of PPD was 33.4% with women who had suffered emergency cesarean section (Sarah et al., 2017). Cesarean sections cause high risk of developing PPD is because the mother may experience more pain, discomfort and take longer to recover if the surgical delivery does not proceed as expected. Besides, the mother who have experienced postnatal complications such as infection, wound discomfort or limited movement are more likely to develop PPD. This is because the postnatal problems make it difficult for a woman to care for both her and her children, which can exacerbate depressed symptoms. Additionally, women's postpartum birth experiences were examined as another risk factor for PPD. A systematic review investigated at the connection between birth experience and PPD had concluded that a bad delivery experience might cause PPD (Bell & Andersson, 2016). Past children death and individual experiences with difficulty during childbirth will cause trauma and fear to the mothers when she gives birth on newborn babies. The depression symptoms may be exacerbated by guilt over the past experiences or fear of repetition.

Preterm birth is linked to a number of adverse effects for both the mothers and the children, including parental psychological distress and child's cognitive development (Carson et al., 2015). Compared to other mothers, mothers of preterm infants report higher postpartum psychological issues such as PPD (Gilles Ndjomo et al., 2024). Preterm birth may lead to a low-weight newborn and is more likely to cause PPD among the postpartum mothers. Malouf et al. (2024) stated that extremely low birth weight of baby was linked to a high incidence of postpartum anxiety, postpartum stress and PPD. This is because babies with low weights are frequently more susceptible to infections

or developmental delays. Chronic stress and emotional changes might results from constant worry about the baby's health and survival. The babies with other health issues will also increase the feelings of anxious and depression of postpartum mothers.

5.2.3.5 Cultural Factors

This subsection discusses the cultural elements, such as infant gender, that influence the likelihood of having PPD. In cultures where a certain gender is preferred, mothers who have a newborn whose gender does not fit the expectations may experience pressure from family or society. Priya et al. (2022) stated that having boys is preferred in some countries since it is assumed that they would support their families financially in the future. Additionally, male offspring can inherit the family business, provide financial security, take care if ageing parents and carry on the family lineage while the female offsprings will become part of the groom's family and unable to contribute financially to their origin families (Xie et al., 2007). Therefore, depression symptoms might be made worse by disappointment or a fear of being judged of giving birth a female newborn.

5.2.4 Tool used to assess PPD

In this systematic review, we included 17 studies, among these studies 16 of them used Edinburgh Postpartum Depression Scale (EPDS) and one of the studies used the Women's Outcome Instrument for Maternal Health Care (WOICE) to evaluate the prevalence of postpartum depression in the participants.

EPDS is a widespread and well respected screening instrument to detect postpartum depression in new mothers. The EPDS, a self-reported questionnaire with ten items was created in 1987 and it focusses on typical symptoms of postpartum depression, including anxiety, mood swing and feelings of despair or guilt (Cox et al., 1987). It evaluates emotional events throughout the previous seven days using ten items with a four-point rating system (Klein et al., 2024). Generally, it consists of 10 questions covering a wide range of depression symptoms, such as hope for future, low mood, guilt, anxiety, concern, sleep difficulties, and suicidal thoughts (Stefana et al., 2023). On a scale of 0 to 3, each item has a score, higher score suggests a higher probability of depressive symptoms. Typically, there are two cut-off points criteria which are 10 to 11 points which indicate slightly severe PPD symptoms, and 12 or more points indicate more severe PPD symptoms (Levis et al., 2020). Furthermore, the EPDS's dependability, which was initially created in English, has been validated in more than 60 languages (Cox, 2019). It is an invaluable instrument for clinical practice and research because of its capacity to support early diagnosis, simplicity and adaptation to various population.

World Health Organization have created the Maternal Morbidity Working Group (MMWG) to conduct the accurate and comprehensive assessment of maternal morbidity. In order to measure maternal morbidity, MMWG developed the Women's Outcome Instrument for Maternal Health Care (WOICE) which focus on a women's health and self-perception of well-being

(Barreix et al., 2018). This instrument are used to assist discover the factors linked to compromised clinical, social, and mental health concerns such as postpartum depression and anxiety. The WHO-WOICE questionnaire was created to get direct feedback from women regarding their views and experiences with pregnancy and any possible long-term effects (McKinney et al., 2018). By using standardized criteria, the WHO-WOICE provides a valid and reliable method for measuring postpartum depression, which helps healthcare providers identify women that may be at risk and ensure they receive the support and intervention they need.

In the current research, we have included one studies that using WHO-WOICE instrument as the tool of analysis postpartum depression among the participants. According to Hababa and Assarag (2023a), 9.09% of participants among 253 participants had a medical issue. About 17.78% of them have experienced postpartum depression and 29.24% of them are experienced postpartum anxiety. Additionally, 20.95% of respondents reported having been exposed to violence, 14.6% of birth were caesarean sectioned and 15.02% were preterm. These may become the risk factors of developing postpartum depression.

The WHO-WOICE questionnaire has been used in numerous prior research to determine the postpartum depression and anxiety. In 517 participants, postpartum anxiety was found in 19.8% cases, depression in 36.9% and reduced functioning in 4.4% of women (Lamus et al., 2021). For the risk factors of possible postpartum depression, 29.2% of participants had

experience preterm birth, 10.8% felt they were unsatisfied with their sex lives and 5.9% of them reported to have suffered violence. In a different study by Hababa and Assarag (2023b), almost one-third (39.69%) of the 257 participants had a medical problem. Overall, 43.57% of participants had postpartum depression and 83.65% of them had anxiety. The associated postpartum depression risk factors were shown to consist of 12.23% of exposure to violence and 28.2% of women who expressed sexual unhappiness.

5.3 Limitation of the study

Firstly, the time frame of the current research is limited to post-lockdown research. The researchers have short time frame for data collection and analysis as the COVID-19 lockdown period ended so recently. Therefore, there was not much time for researchers to carry out the in-depth study, evaluate data and publish their results. As a result, research released after the COVID-19 lockdown period might not be as comprehensive and in-depth. Furthermore, the researchers lack the time necessary to investigate the PPD's long-term effects and risk factors. Consequently, more existing research focusses on the COVID-19 lockdown period and before COVID-19 lockdown period. Additionally, the extensive follow-ups may need for examining the long terms effects of post-lockdown periods, which may not be finished or published yet. The next limitation is absence of clearly defined timeframes as some studies that were published after COVID-19 lockdown period do not state the period of data collection. The research that were published after COVID-19 lockdown period may include the data that gathered before or during the lockdown period. This uncertainty makes it difficult to evaluate the results and hard to draw a firm conclusion regarding the prevalence of PPD in the post-lockdown period.

5.4 Future recommendation

Future research on PPD in post-COVID-19 lockdown period should use strong methodology and clear reporting standard to overcome the limitations of timelines and data clarify. Researchers should ensure that research periods are well defined, making it clear if data was collected prior to, during, or after lockdown period. This transparency will make it easier to classify the results and enable precise comparisons between the various stages of pandemic. In order to examine the long-term impacts of the post COVID-19 lockdown phase on maternal mental health, longitudinal studies are also strongly advised. Besides, researchers should concentrate on defining certain factors that are specific to the post-lockdown period and might affect the maternal mental health, such as the role of re-established support networks or modifications in access to healthcare. Future research can offer a more comprehensive and clear understanding of PPD in the post COVID-19 lockdown period by addressing these factors.

5.5 Conclusion

This systematic review included 17 studies that carried out in various countries worldwide after covid-19 lockdown period. Out of the 17 studies, the mean prevalence of PPD is around 29.55%. Saudi Arabia has the most highest prevalence of PPD which is 66.7% while Syria has the lowest prevalence of PPD which is 2.3%. Based on our findings, PPD is more common in the high-developed nations than developing and least-developed countries. However, PPD is more common in developing countries than in least-developed countries. Besides, the majority of studies showed that PPD was less common after covid-19 lockdown period than it was during or before to lockdown. Risk

factors of PPD are also one of the primary objective of this research. Numerous categories, including demographic, social, environment, psychiatric, obstetric, neonatal and cultural aspects can be used to classify PPD risk factors. The most prevalent demographic risk factors among the 17 studies are younger maternal aged, low educational level, low socioeconomic status, and primiparity. The most common social and environment factors are lack of social support, poor relationships and single status mother. Furthermore, the most prevalent psychological causes are prenatal psychiatric disorders, adverse life events and intimate partner violence. PPD also affected by obstetric and neonatal factors such as caesarean sections, postpartum problems, difficult labor and unhealthy baby. The most common cultural risk factors that increase the risk of developing PPD is the female gender of newborn.

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APPENDIX A – ETHICAL APPROVAL FORM

UNIVERSITI TUNKU ABDUL RAHMAN
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Re: U/SERC/78-363/2024

23 September 2024

Mr Muhammad Noh Zulfikri bin Mohd Jamali
Head, Department of Physiotherapy
M. Kandiah Faculty of Medicine and Health Sciences
Universiti Tunku Abdul Rahman
Jalan Sungai Long
Bandar Sungai Long
43000 Kajang, Selangor

Dear Mr Muhammad Noh,

Ethical Approval For Research Project/Protocol

We refer to your application for ethical approval for your students' research project from Bachelor of Physiotherapy (Honours) programme enrolled in course UMFD3026. We are pleased to inform you that the application has been approved under Expedited Review.

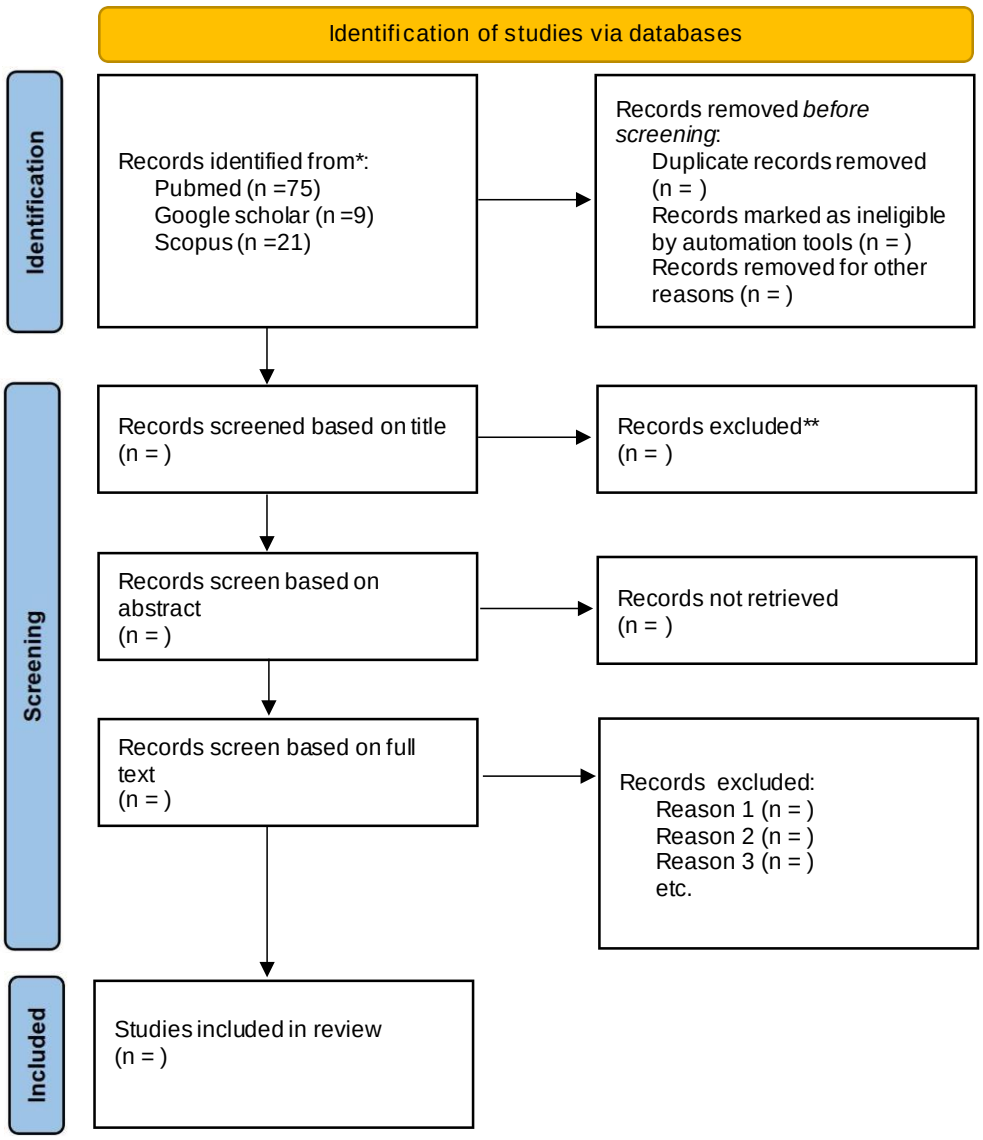
The details of the research projects are as follows:

No	Research Title	Student's Name	Supervisor's Name	Approval Validity
27.	Prevalence of Menstrual Migraine Among University Students and Its Impact on Quality of Life: A Cross Sectional Study	Jing Ni Wong	Ms Swapneela Jacob Co- supervisor Mr Tarun Amalnerkar	23 September 2024 – 22 September 2025
28.	Prevalence of Functional Constipation and Its Impact on Quality of Life Among Young Adults: A Cross Sectional Study	Ow Yong Jie Min		
29.	A Study to Anlayse the Correlation Between Migraine Symptoms, Motion Sensitivity and Balance Impairment: A Cross-sectional Study Among University Students	Stella Chen Sing Yi	Ms Kiruthika Selvakumar	
30.	A Study to Analyse the Impact of Headache on Level of Physical Activity and Dynamic Balance Among University Students	Lee Wan Fei		
31.	Comparison of the Attitudes and Awareness of Elderly Falls and Fall Prevention Across Diverse Age Groups: A Cross-sectional Study	Ng Sin Ru	Ms Mahadevi A/P Muthurethina Barathi	
32.	A Cross-sectional Study on the Knowledge of Knee Osteoarthritis and Attitude Towards Prevention of Knee Osteoarthritis in Young Adults	Lim Shi Qi		
33.	Challenges and Possible Risk Factors Associated with Using Wearable Devices for Assessing the Motor Symptoms of People with Parkinson's Disease: A Scoping Review	Lee Wen Ke	Pn Nur Aqliliriana Binti Zainuddin Co-supervisor: Mr Tarun Amalnekar	
34.	The Utilization and Barriers of Adoption of Wearable Devices for Rehabilitation Among Physiotherapists: A Cross-Sectional Study	Yap Wei Qi	Pn Nur Aqliliriana Binti Zainuddin	
35.	Knowledge and Awareness of Parkinson's Disease and Its Associated Factors Among General Population in Malaysia: A Cross-sectional Survey	Jolyn Cheah En		
36.	Association Between Breast Size and Upper Crossed Syndrome Among Perimenopausal Aged Women	Connie Chuo Yi Ching	Ms Meneka Naidu a/p Mohnaraju	
37.	Awareness of Cervical Cancer Among Premenopausal Women in Klang Valley, Malaysia: A Cross-sectional Study	Havilah Wong Sie Chii		
38.	Prevalence and Risk Factors of Postpartum Depression and Anxiety After COVID-19 Pandemic: A Systematic Review	Lee Shi En	Pn Nadia Safirah Binti Rusli	
39.	Post-natal Functional Abilities and Its Association with Depression Following Cesarean Section: A Cross-sectional Study	Seah Yi Shean		
40.	Prevalence and Associated Risk Factors of Musculoskeletal Disorders Among Food Delivery Riders in Klang Valley: A Cross-Sectional Study	Odelia Chew Yong Xin		
41.	Impact of Academic Stress on Executive Functions and Sleep Quality Among University Students: An Observational Study	Lai Yu Wei	Mr Nizar Abdul Majeed Kutty	
42.	Knowledge and Awareness of Re-Warm Up Programs on Physical Performance Among University Athletes. A Cross Sectional Study	Emmanuel James Loh Kuan Hung		

APPENDIX B – SYSTEMATIC REVIEW TABLE

Author (s) name and year published	Article Title	Sociodemographic data: **1.** Country **2.** Maternal mean age	Sample size	Design: **1.** Study design **2.** Number of groups **3.** Description of groups	Tool used to assess PPD	Prevalence of PPD and anxiety	Risk factors of postpartum depression and anxiety

APPENDIX C – PRISMA FLOWCHART



APPENDIX D – PRISMA STATEMENT

PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	
Certainty	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	

PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
assessment			
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	
Study characteristics	17	Cite each included study and present its characteristics.	
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	
	23b	Discuss any limitations of the evidence included in the review.	
	23c	Discuss any limitations of the review processes used.	
	23d	Discuss implications of the results for practice, policy, and future research.	
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	
Competing interests	26	Declare any competing interests of review authors.	
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi:

APPENDIX E – JBI CRITICAL APPRAISAL CHECKLIST

JBI Critical Appraisal Checklist

Reviewer ..... Date _____

Author_____ Year_____ Record Number_____

	Yes	No	Unclear	Not applicable
1. Were the criteria for inclusion in the sample clearly defined?	☐	☐	☐	☐
2. Were the study subjects and the setting described in detail?	☐	☐	☐	☐
3. Was the exposure measured in a valid and reliable way?	☐	☐	☐	☐
4. Were objective, standard criteria used for measurement of the condition?	☐	☐	☐	☐
5. Were confounding factors identified?	☐	☐	☐	☐
6. Were strategies to deal with confounding factors stated?	☐	☐	☐	☐
7. Were the outcomes measured in a valid and reliable way?	☐	☐	☐	☐
8. Was appropriate statistical analysis used?	☐	☐	☐	☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

_____

_____

_____

APPENDIX F – TURNITIN REPORT

Lee Shi En_21UMB03870_thesis.pdf

by Lee Shi En

Submission date: 20-Dec-2024 04:21AM (UTC+0800)
Submission ID: 2554466307
File name: Lee_Shi_En_21UMB03870_thesis_2_-15-82.pdf (436.44K)
Word count: 15686
Character count: 82142

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	Arabia: A Cross-Sectional Study", Open Journal of Obstetrics and Gynecology, 2020 Publication	
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11	Meysam Safi-Keykaleh, Fatemeh Aliakbari, Hamid Safarpour, Mehdi safari, Azadeh Tahernejad, Hojjat Sheikh Bardsiri, Ali Sahebi. "Prevalence of postpartum depression in women amid the COVID-19 pandemic: A systematic review and meta-analysis", International Journal of Gynecology & Obstetrics, 2022 Publication	<1%
12	Malgorzata Witkowska-Zimny, Anastasiia Zhyvotovska, Rustam Isakov, Dmytro Boiko, Barbara Nieradko-Iwanicka. "Maternal Sleeping Problems Before and After Childbirth - A Systematic Review", International Journal of Women's Health, 2024 Publication	<1%
13	Ali Sahebi, Maryam Kheiry, Kame Abdi, Mahla Qomi, Mohamad Golitaleb. "Postpartum depression during the COVID-19 pandemic: an umbrella review and meta-analyses", Frontiers in Psychiatry, 2024	<1%

	Publication	
14	pure.hud.ac.uk Internet Source	<1%
15	Mohammad Morshad Alam, Tahsin Haque, K M Roshed Uddin, Shakil Ahmed, Mohammad Muntasir Islam, Mohammad Delwer Hossain Hawlader. "The prevalence and determinants of postpartum depression (PPD) symptomatology among facility delivered mothers of Dhaka city", Asian Journal of Psychiatry, 2021 Publication	<1%
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20	clinical-practice-and-epidemiology-in-mental-health.com Internet Source	<1%
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22	Zekiye KARAÇAM, Pirozhan EKİN, Hilal BAL ŞARALDI. "Comparison of postpartum depression prevalence before and during the covid-19 pandemic in Turkey: a systematic review and meta-analysis", Springer Science and Business Media LLC, 2024 Publication	<1%
23	Chenxinzi Lin, Bin Chen, Youjing Yang, Qianmin Li, Qiuguo Wang, Minmin Wang, Shiying Guo, Shasha Tao. "Association between depressive symptoms in the postpartum period and COVID-19: A meta-analysis", Journal of Affective Disorders, 2023 Publication	<1%

24	L. Santhosh Kumar, Barnashree Khasnobis, Sreedevi Santhosh. "Revitalizing Health Through Humanities: Foregrounding Unheard Trends", Routledge, 2024 Publication	<1%
25	Devendra Raj Singh, Dev Ram Sunuwar, Shraddha Adhikari, Sunita Singh, Kshitij Karki. "Determining factors for the prevalence of depressive symptoms among postpartum mothers in lowland region in southern Nepal", PLOS ONE, 2021 Publication	<1%
26	Muhammed Atak, Mehmet Akif Sezerol, Mehmet Sait Değer, Hamza Kurubal. "Factors Associated with the Prevalence of Postpartum Anxiety Disorder and Depression in Syrian Migrant Women Living in Turkey: A Cross-Sectional Study", Healthcare, 2023 Publication	<1%
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Exclude quotes	Off	Exclude matches	Off
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APPENDIX G

TABLE ON CORRECTION AFTER EXAMINER'S FEEDBACK

Examiner's feedback	Amendment after correction	Page & Paragraph
Less extensive critical appraisal of the previous study	Add more points of critical appraisal of previous study in introduction part to highlight the gaps from previous study	Page 17, paragraph 2 Page 18, paragraph 1
Lack of evidence provided to highlight the problem and support the need of the study	Add more points and evidence in the problem statement part to support the need of the study	Page 18, paragraph 2 Page 19, paragraph 1
The problem statement part did not give an specific aim that aligned with the study objective	Modify the aim to better reflect the research objectives and highlight the ways in which this study aims to fill certain gaps.	Page 19, paragraph 1
Incorporating the post-COVID-19 lockdown timeline in the study's objective to strengthen the focus of the study and reinforce the significance in understanding trends before, during and after COVID-19	Including the post-COVID-19 lockdown timeline in the study's objective part	Page 20, paragraph 3
Incorporating the post-COVID-19 lockdown timeline in the study's rationale to strengthen the focus of the study	Including the post-COVID-19 lockdown timeline in the study's rationale	Page 22, paragraph 2
Lack of a clear thesis statement or leading summary summarizing the goal and focus of each paragraph at beginning of each subsection in literature review part	Add the thesis statement or leading summary to summarize the focus and purpose of each subsection in literature review part	Page 23, paragraph 2 Page 28, paragraph 2 Page 31, paragraph 3
Impact of cultural differences on PPD is not adequately reviewed in the literature review part	Add more points of the impact of cultural differences on the development of PPD in the literature review part	Page 24, paragraph 2 Page 25, paragraph 1
Less comparison of PPD prevalence before, during and after COVID-19 lockdown period in literature review part	Add more points of the PPD prevalence before, during and after COVID-19 lockdown period	Page 25, paragraph 2 Page 26, paragraph 1
Results should not be presented in present-tense	Modify the result part in past-tense	Page 51, paragraph 1

Lack of an overall comparison part between PPD prevalence of each country in discussion part	Included a table that showed prevalence of PPD in each country, and conclude both highest and lowest PPD prevalence countries	Page 53, paragraph 1
Discussion of PPD prevalence among high-developed, developing and least-developed countries is not necessary	Delete the discussion part of PPD prevalence among high-developed, developing and least-developed countries	-
Absence of clear thesis statement that summarize the focus of each paragraph at beginning of each PPD risk factors subsection in discussion part	Add the thesis statement to summarize the focus of each PPD risk factors subsection in discussion part	Page 69, paragraph 1 Page 70, paragraph 2 Page 71, paragraph 2 Page 72, paragraph 2 Page 74, paragraph 2
Limitation part does not adequately address key aspects of the research	Add some points and reframe the sentences to reflect the challenges faced du	Page 77, paragraph 2
Lack of an overall comparison between PPD prevalence of each countries in conclusion part	Summarize the highest and lowest PPD prevalence countries in conclusion part	Page 78, paragraph 2
Error in the title of the articles in referencing part	Modify all the letters of the articles' title to lowercase in referencing part	Page 80-98
Spelling of COVID-19 was not consistent throughout the manuscript	Modify all the spelling into COVID-19 throughout the thesis	-

Checked by supervisor,

Name: Puan Nadia Safirah Binti Rusli

Date: 1/1/2025