SEAH YI SHEAN

POST-NATAL FUNCTIONAL ABILITIES AND ITS ASSOCIATION WITH DEPRESSION FOLLOWING CESAREAN SECTION: A CROSS-SECTIONAL STUDY

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SEAH YI SHEAN

BACHELOR OF PHYSIOTHERAPY (HONOURS)

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By

Seah Yi Shean

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POST-NATAL FUNCTIONAL ABILITIES AND ITS ASSOCIATION WITH DEPRESSION FOLLOWING CESAREAN SECTION: A CROSS-SECTIONAL STUDY

Seah Yi Shean[1]

Nadia Safirah Binti Rusli[2]

Author affiliation

1. Year 3 Bachelor of Physiotherapy (HONOURS) student, M. Kandiah Faculty of Medicine and Health Sciences, Department of Physiotherapy, Universiti Tunku Abdul Rahman, Malaysia.
2. Lecturer, M. Kandiah Faculty of Medicine and Health Sciences, Department of Physiotherapy, Universiti Tunku Abdul Rahman, Malaysia

ABSTRACT

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Background: Postpartum depression (PPD) is common among postnatal women. The prevalence of PPD is higher in cesarean section compared with vaginal delivery. Although PPD has various causes, there is insufficient research on how functional abilities after delivery and its association of the development of PPD following cesarean section. Most of the studies were conducted separately about the prevalence of postpartum depression and the prevalence of functional disabilities in postpartum women. Thus, it is crucial to explore the association between a woman's functional capabilities during this time and the prevalence of experiencing depression following cesarean section.

Objective: This study is aimed to investigate the association between woman's functional abilities after giving birth and the prevalence of experiencing postpartum depression following cesarean section.

Method: The sample size of 384 is calculated using openepi. The participants are required to fill up the Postpartum Functional Assessment Questionnaire for assessing functional ability and the Edinburgh Postnatal Depression Scale to screen the PPD. The demographic data is analysed using descriptive analysis whereas the association between postnatal functional abilities and prevalence of postpartum depression following caesarean section is analysed by Spearman’s Correlation.

Results:

339 participants were recruited in this study. The study found that the prevalence of PPD in the participants is 39.5%. Functional abilities are prevalent among postpartum women with the most challenging part is child care. A significant moderate positive correlation exists between postnatal functional ability and postpartum depression ($r=0.432$) ($p<0.05$). This indicates that the women who have more functional limitations tend to have higher EPDS scores.

Conclusion:

There is a moderate association between postnatal functional ability and postpartum depression following cesarean section. Incorporating physical rehabilitation and mental health assistance into postpartum care protocols may increase women well-being and recovery achievements.

Keywords:

Functional Abilities, Postpartum Depression, Postpartum Women, Cesarean Section

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APPROVAL SHEET

This Research project entitled "**POST-NATAL FUNCTIONAL ABILITIES AND ITS ASSOCIATION WITH DEPRESSION FOLLOWING CESAREAN SECTION: A CROSS-SECTIONAL STUDY**" was prepared by SEAH YI SHEAN and submitted as partial fulfilment of the requirements for the degree of Bachelor of Physiotherapy (HONOURS) at Universiti Tunku Abdul Rahman.

Approved by:

NSR

(Ms. Nadia Safirah Binti Rusli) Date: 4.1.2024

Supervisor

Department of Physiotherapy

M. Kandiah Faculty of Medicine and Health Sciences

Universiti Tunku Abdul Rahman

Approved by:

(Mr. Muhammad Noh Zulfikri bin Mohd Jamali) Date: 14/01/2025

Head of Department

Department of Physiotherapy

M. Kandiah Faculty of Medicine and Health Sciences

Universiti Tunku Abdul Rahman

M. KANDIAH FACULTY OF MEDICINE AND HEALTH SCIENCES

UNIVERSITI TUNKU ABDUL RAHMAN

Date: 20/12/2024

PERMISSION SHEET

It is hereby certified that **SEAH YI SHEAN** (ID No: **21UMB04515**) has completed this Research project entitled "POST-NATAL FUNCTIONAL ABILITIES AND ITS ASSOCIATION WITH DEPRESSION FOLLOWING CESAREAN SECTION: A CROSS-SECTIONAL STUDY" under the supervision of **Ms. Nadia Safirah binti Rusli** (Supervisor) from the Department of Physiotherapy, M. Kandiah Faculty of Medicine and Health sciences.

Yours truly,

Seah

(SEAH YI SHEAN)

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.

Name: SEAH YI SHEAN

Date: 20/12/2024

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LIST OF ABBREVIATIONS

UTAR	Universiti Tunku Abdul Rahman
BMI	Body Mass Index
PPD	Postpartum Depression
PND	Postnatal Depression
EPDS	Edinburgh Postnatal Depression Scale
SIGH-ADS	Structured Interview Guide for the Hamilton Depression Rating Scale with Atypical Depression Supplement
CES-D	Center for Epidemiologic Studies of Depression Instrument
HRSD	Hamilton Rating Scale for Depression
MMSP	Maternity-monitoring Scale by Parents
OAID	Over-adaption Index for Depression
BIMF	Barkin Index of Maternal Functioning
WHODAS-12	World Health Organization Disability Assessment Schedule
ICF	International Classification of Functioning, Disability and Health
QOL	Quality of Life
HRQOL	Health-Related Quality of Life
MAPP-QOL	Maternal Postpartum Quality of Life
IPAQ	International Physical Activity Questionnaire
TEAS	Transcutaneous Electrical Acupoint Stimulation
PFD	Pelvic Floor Dysfunction
WHO	World Health Organization
NICU	Neonatal Intensive Care Unit

CHAPTER 1

1.0 INTRODUCTION

1.1 CHAPTER OVERVIEW

The first part of this chapter is the background of the study. The content includes postpartum period, cesarean section, functional status, postpartum depression, postpartum symptoms and importance and relevance of study. The chapter was then continued with the research questions followed by the problem statements, research objectives, hypothesis, operational definition of terms, and structure of research project.

1.2 BACKGROUND OF THE STUDY

1.2.1 Postpartum Period

The postpartum period starts shortly after childbirth and typically lasts six to eight weeks, concluding when the mother's body has almost returned to its pre-pregnancy condition (Lopez-Gonzalez & Kopparapu, 2022). The postpartum period is widely acknowledged as a period of heightened susceptibility for the emergence of various mood disorders, such as postpartum depression (PPD). PPD is a major public health concern worldwide, especially in developing regions. It negatively affects the well-being of both the mother and the child's development. PPD has a significant impact on the welfare of mothers, partners, and family members, as well as on the growth and maturation of infants. Furthermore,

postpartum women may exhibit parenting behaviors that are antagonistic and disengaged. This can impair their ability to effectively care for their infants (Tolossa et al., 2020). The biomedical paradigm views the postpartum phase as the period from the elimination of the placenta to the restoration of the pre-pregnancy physiological state (Bulhões et al., 2021). However, from a biopsychosocial perspective, the postpartum phase is a sensitive and variable stage of life experienced by women. During this phase, women undergo numerous biological, psychological, and social changes due to motherhood (Bulhões et al., 2021).

1.2.2 Caesarean Section

The Caesarean section, also known as the lower uterine segment section, is one of the most common abdominal surgical operations performed nowadays (Zhou et al., 2018). There are two types of incision for cesarean section which are laparotomy (abdominal incision) and hysterotomy (uterus incision). Hysterotomy can be transverse of vertical (Sung et al., 2024). The conventional technique employed for the surgical incision is a transverse lower segment approach for cesarean delivery. The act of cesarean delivery, particularly for medical reasons, has the potential to secure the lives of both the mother and the infant (Bablad, 2021). A low transverse incision will have less bleeding, is easier to heal, and results in less adhesion. In circumstances when it is difficult to access the lower uterine region, such as premature labor, dense adhesion, or placenta previa/accrete, a vertical incision (Classical cesarean section) may be necessary. A quick and skilled procedure is required to reduce the possibility of hemorrhage and adhesion. The

most dangerous complication of vertical incision in the contractile corpus is uterine rupture during the ensuing pregnancy. Classical incisions are substantially larger and often heal in three layers (Kan, 2020). Following the cesarean section surgery, the functional status of the mother is crucial to undertake infant care and restore self-care, continuing household responsibilities, social and community engagements, as well as occupational duties after childbirth. Restoring the functional status predating conception requires a more extended duration than the physiological recuperation process (Şanlı & Öncel, 2014). When the recovery period exceeds six weeks, it necessitates a comprehensive approach towards postpartum care for women to adhere to more effectively (Şanlı & Öncel, 2014).

1.2.3 Functional Status

Functional status plays a crucial role in one's overall health and wellbeing, encompassing the capacity to carry out daily activities, including childcare, self-care, household management, and social and professional engagements, particularly in the postpartum period (Filipec et al., 2023). A limited number of recent studies have investigated a broader spectrum of health issues that women may encounter after giving birth, such as backaches, headaches, fatigue, and perineal or pelvic pain, indicating that these problems are prevalent and can have a lasting impact on the functional health and overall well-being of postpartum women (Webb et al., 2008). The most common adverse effect of cesarean section is acute postoperative pain (Demilew et al., 2024). Inappropriate postoperative pain treatment can lead to patient morbidity, delay in rehabilitation, and hinder return to

regular activities (Hussen et al., 2022). A study in Hawassa, Ethiopia stated that majority of mothers in this research experienced moderate to severe post-operative pain within 24 hours (Hussen et al., 2022). Acute postoperative pain after cesarean section results from tissue and uterine contractions. Untreated postoperative pain after cesarean section is associated with a variety of unpleasant side effects. It prevents early postoperative ambulation, which increases the risk of deep venous thrombosis, atelectasis, pneumonia, delayed wound healing, and wound infection (Demilew et al., 2024). Furthermore, it interferes with the mother's capacity to complete everyday tasks and impairs her ability to nurse and care for the infant. Untreated immediate postoperative pain is highly related to postpartum depression and persistent pain (Demilew et al., 2024). Another example of the adverse effect of cesarean section is meralgia paresthetica. A 29-year-old lady who had twins through artificial insemination reported numbness and paraesthesia in her anterolateral thigh after caesarean section. Test results revealed left lateral cutaneous nerve damage, and meralgia paresthetica was identified. This is because pregnancy and labor caused increased intra-abdominal pressure, while the lithotomy posture compressed the lateral femoral cutaneous nerve (Chung et al., 2010).

1.2.4 Postpartum Depression

Depression is characterized as a mood disorder that manifests through symptoms that impact cognitive processes, emotional states, and the execution of daily tasks. When depression manifests within the initial year following childbirth, it is denoted as PPD (Rosander et al., 2021). PPD is a major public health issue, with consequences ranging from social isolation and economic effects from reduced employment or leaving the job, and even to maternal suicide in the most severe cases (Makeen et al., 2022). Occasionally, the term maternal depression is employed to encompass depression that arises at a later stage in early motherhood (Rosander et al., 2021). Postpartum depression is linked to decreased rates of breastfeeding initiation, diminished maternal and infant bonding, and heightened probability of infants presenting developmental delays. Postpartum depression can have detrimental effects on the mother's well-being and may result in sleep, appetite, and behavioral disturbances in the infant if it is not treated (Tolossa et al., 2020). However, with effective treatment and management, both the mother and child experience positive outcomes (Tolossa et al., 2020). A systematic review discovered that the prevalence of Postnatal Depression (PND) ranged from 4.0 to 63.9%, with Japan and America having the lowest and highest rates of PND, respectively while in Malaysia, the prevalence of PND is ranged between 6.8 to 27.3% (Roshaidai Mohd Arifin et al., 2018). The presence of fatigue, headaches, and nausea may be considered as relatively nonspecific grievances that have the potential to signify both psychological and physical ailments (Webb et al., 2008). A case report by Văcăraş et al., 2017, exemplifies a serious mental health symptom

following labor. The 25-year-old demonstrated restlessness, erratic behavior, hallucinations, delusions, talking to herself, problems organizing her thoughts and voice, and violence. It was her first delivery and she was also a medical student. The reason that she had severe mental health syndrome is probably she had history of depression at age of 17 (Văcăraş et al., 2017).

The risk of getting postpartum depression is higher following cesarean section compared with natural vaginal delivery. This is due to the increased risk of bleeding during cesarean section (Ning et al., 2024a). Societal attitudes and cultural beliefs that associate vaginal delivery with normal delivery have also been shown to influence the psychological state of women having cesarean section, adding to an increased risk of PPD (Ning et al., 2024a). Cesarean section births afterward had more discomfort during mobility than vaginal delivery newborns. Woman who undergoes cesarean section will have severe abdominal pain and edema due to prolong hospitalization during the anesthesia recovery period. So, cesarean births had a larger functional restriction for some motions after birth than vaginal deliveries (Pereira et al., 2017). Therefore, the women who delivered newborns vaginally will have higher quality of live compared to the women who undergo cesarean section (Evans et al., 2022).

1.2.5 Postpartum symptoms

New mothers may experience a range of postpartum symptoms, such as fatigue, headaches, nausea, back pain, constipation, hemorrhoids, vaginal discomfort, pain or discharge, dyspareunia, and abdominal or pelvic pain. Additionally, some may encounter frequent urination or an urgent need to use the restroom, difficulty controlling bowel movements, and breast tenderness (Webb et al., 2008). Common indicators of depression include difficulty sleeping, feelings of guilt, disorientation, fluctuating emotions, discontentment, and thoughts of self-harm (Rosander et al., 2021). What distinguishes postpartum depression from depression experienced at other times in one's life is the presence of a newborn infant, which introduces the possibility of social and emotional challenges for the child's development. Maternal depression can have repercussions on various aspects of a child's growth, encompassing behavior, cognitive abilities, and physical well-being (Rosander et al., 2021). Both the mother and the infant are susceptible to suffer from postnatal depression (Mohamad Yusuff et al., 2015). The ramifications of PPD are a significant health concern due to their potential to diminish a mother's self-assurance and impede the growth, mental faculties, and physical progress of the infant. Consequently, it is imperative to examine factors that can be modified or controlled to mitigate the likelihood of experiencing depressive symptoms (Al Nasr et al., 2020).

1.2.6 Importance and Relevance of Study

From the previous study, Webb et al. (2008) and Gholizadeh Shamasbi et al. (2020) focus on the prevalence of functional issues and their relationship to physical health, but do not thoroughly investigate their mental health consequences. Traditionally, the focus during the postpartum period has been on the physical health of mothers and infants. However, there is a growing recognition of the importance of evaluating maternal functional abilities such as child care following cesarean delivery and their potential relationship with postpartum depression (PPD). Assessment of functioning may also help to identify women who are suffering in their mother roles in the absence of a depressive diagnosis (Barkin, Wisner, Bromberger, Beach, & Wisniewski, 2010). While PPD is multifactorial in origin, limited research exists regarding the impact of postpartum functional abilities on the onset and severity of PPD after cesarean section. Understanding this relationship is crucial for designing targeted interventions to mitigate the risk of PPD. Unlike past studies that either focus on the physical or psychological components of postpartum recovery, this study is unusual in that it evaluates both functional abilities and mental health outcomes in women recuperating from cesarean sections. It investigates the complex link between physical recovery and PPD using proven methods like the Postpartum Functional Assessment Questionnaire and EPDS. Therefore, this study aims to explore the potential association between functional abilities in the post-delivery period and the likelihood of developing PPD following cesarean delivery.

1.3 RESEARCH QUESTIONS

1. What are the functional abilities of postnatal women following cesarean section?
2. What is the prevalence postpartum depression among women following cesarean section?
3. Is there any association between postnatal woman's functional abilities and the prevalence of postpartum depression following cesarean section?

1.4 PROBLEM STATEMENT

Based on the review of existing literature, it is estimated that approximately one out of every seven women may experience postpartum depression (PPD) (Mughal et al., 2022). While women who experience baby blues generally recover quickly, PPD tends to persist for a longer duration and significantly impacts a woman's ability to resume normal functioning. The effects of PPD extend to the mother and her relationship with her baby (Mughal et al., 2022). Despite the increasing recognition of PPD as a significant mental health issue affecting new mothers, there is still a noticeable gap in our understanding of whether a woman's functional abilities following cesarean section are associated with the development and severity of PPD. The postpartum period is characterized by various physical and emotional challenges, making it crucial to explore the women's functional capabilities associated with postpartum depression following cesarean section so that it can help to shape comprehensive care methods that address both physical

and mental health requirements, ultimately boosting mother well-being and fostering improved postpartum recovery outcomes.

Despite indications that postpartum women with functional impairments may encounter major obstacles in recovery, there is no previous study has been done to investigate the association between woman's functional abilities and postpartum depression following cesarean section. Understanding this association is critical for creating focused therapies to promote physical and emotional health in postpartum women, particularly those recuperating from surgical deliveries. Thus, this study is aimed to determine the association between woman's functional abilities after giving birth and the prevalence of postpartum depression following cesarean section.

1.5 RESEARCH OBJECTIVES

1.5.1 Primary Objective

To determine the association between functional abilities of women and the prevalence of postpartum depression following cesarean section.

1.5.2 Secondary Objectives

1. To identify the functional abilities of postnatal women following cesarean section

2. To identify the prevalence of postpartum depression among women following cesarean section.

1.6 HYPOTHESIS

H0: There is no association between functional abilities level and the postpartum depression after giving birth following cesarean section.

H1: There is association between functional abilities level and the postpartum depression after giving birth following cesarean section.

1.7 OPERATIONAL DEFINITION

Postpartum depression:

Postpartum Depression (PPD) is a kind of depression that develops during pregnancy or within the first four weeks following birth. However, women continue to be at risk of developing depression for several months after giving birth. PPD is the most prevalent psychological problem associated with childbearing (Jeste et al., 2013).

Cesarean section:

The Caesarean section, also known as the lower uterine segment section, is one of the most common abdominal surgical operations performed nowadays during delivery (Zhou et al., 2018).

Postpartum mothers:

Postpartum can be used for every issue concerning the mother and the infant after delivery. Therefore, postnatal mother means that a women after giving birth (National Library of Medicine, 2010).

Postpartum period:

The postpartum period is acknowledged as a period with a higher likelihood of experiencing different mood disorders, such as postpartum blue, major depression, and postpartum psychosis (Tolossa et al., 2020b). The postpartum period starts shortly after childbirth and typically lasts six to eight weeks, concluding when the mother's body has almost returned to its pre-pregnancy condition (Lopez-Gonzalez & Kopparapu, 2022).

Functional status:

Functional status commonly pertains to one's capacity to engage in physical tasks such as taking care of oneself, moving around, and sustaining self-reliance both at home and within the community (Kalpakjian et al., 2009).

Baby Blues:

Baby blues typically occurs within 3 to 4 days post-delivery, reaching a peak on day 7, and resolving within 2 weeks, marked by symptoms such as mood swings, tearfulness, anxiety, insomnia, and irritability falling short of meeting depression criteria (Jeste et al., 2013).

1.8 STRUCTURE OF RESEARCH PROJECT

In this research paper, the background of the study comprises the research questions, research objectives, importance and relevance were introduced in Chapter 1. The literature review on pertinent topics from prior studies was then discussed in Chapter 2. The methodology for this study was included in Chapter 3, which also included the research design, sample design, research instrument, and data collecting process data analysis strategies. In Chapter 4, the findings from the data gathered after descriptive and inferential analysis as well as the hypothesis testing are presented. Last but not least, Chapter 5 covers the review of the study's findings, its limitations, and recommendations for further research.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 CHAPTER REVIEW

This chapter provides a survey of previous journals and literature on many issues, outlining the framework for this research project.

2.2 PREVALENCE OF DEPRESSION IN POSTPARTUM WOMEN

According to the World Health Organization, depression has become the top cause of illness burden for women of reproductive age (Mohamad Yusuff et al., 2015).

There are a few of studies that determined the prevalence of depression in postpartum women (Buist et al., 2008; Klainin & Arthur, 2009; Mohamad Yusuff et al., 2015; Rosander et al., 2021). The overall prevalence of maternal depression symptoms within the period of 0-21 months in Sweden was found to be 27.8% and for Edinburgh Postnatal Depression Scale (EPDS) scores of 12 or higher (Rosander et al., 2021).There was notable variation in the occurrence of depression among different states in Australia, with the highest proportion of women obtaining an EPDS score of 12 observed in Queensland and South Australia (both at 10.2%), while the lowest was found in Western Australia (5.6%) (Buist et al., 2008) In the context of Malaysia, the available findings indicate a varying range of percentages,

specifically between 3.9% and 22.8%. An average of 14.3% of postpartum mothers had experienced depression during the first six months after giving birth in Sabah, Malaysia. In Kelantan, the occurrence of postnatal depression was observed to be 22.8% and 20.7% at 1 and 4–6 weeks following childbirth, respectively (Mohamad Yusuff et al., 2015). In 2009, there is a study suggest that prevalence of PPD among Asian nations shows Malaysia was the lowest and Pakistan was the highest which in Malaysia is 3.5% and Pakistan is 63.3% (Klainin & Arthur, 2009).The prevalence of PPD is higher nowadays compare with 10 years ago. The increase rate is due to the covid-19 pandemic which increase the stress level of individuals (Liang et al., 2020).

Depression during the postpartum period has been documented to impact approximately 10-20% of women (Buist et al., 2008). The prevalence of postpartum depression may exhibit an elevated tendency among women in the public sector, potentially linked to lower incomes and educational attainment (Buist et al., 2008).

PPD was shown to be as prevalent as 30.0% in prior Chinese research employing the EPDS scale during COVID-19 pandemic. The cognitive dissonance and insecurity resulting from the uncertainty and unpredictability of COVID-19, along with the closure of schools and businesses and social-distancing regulations, contribute to a heightened sense of mental discomfort and compounded negative emotions in individuals (Liang et al., 2020).

Perinatal depression prevalence varies widely between Asian nations, with some being somewhat higher than the prevalence assessed in a comprehensive assessment of data from across areas, including Western countries. In numerous Asian countries, premarital pregnancy is widely considered as extremely unacceptable due to cultural differences, as being pregnant before marriage may suggest engagement in premarital sexual activities, which are considered disgraceful or forbidden in most Asian societies (Roomruangwong & Epperson, 2011). Married women in Chinese cultures are compelled to be agreeable towards their mother-in-law and older generation, accepting their recommendations on perinatal and baby care, which can lead to silent struggles with frustration and lack of decision-making power, as well as difficult in-law relationships and conflict, even to the point of attempted suicide (Roomruangwong & Epperson, 2011). The contemporary dynamic between daughter- and mother-in-law is influenced by both the traditional patriarchal culture and the increasing financial autonomy of younger generations. In certain Asian societies influenced by the principles of Confucianism, such as China, Taiwan, Korea, and Hong Kong, it is customary for families to anticipate that married couples will produce male offspring to preserve the family lineage (Roomruangwong & Epperson, 2011). During pregnancy, the expectant mother received preferential treatment due to her role in continuing the family lineage (Kim & Buist, 2005).

In a nutshell, the prevalence of postpartum depression is comparatively lesser among women originating from Europe, Australia, and the USA in comparison to women from Asia and South Africa. It has been approximated that the occurrence of PPD stands at approximately 10% in developed nations and nearly 20% in developing nations (Tolossa et al., 2020). Most of the studies show almost same of the percentage of the prevalence of depression in postpartum women.

2.3 THE FUNCTIONAL INABILITIES IN POSTPARTUM WOMEN

According to Webb et al. (2008), the research has focused on a broader variety of health issues experienced by postpartum women, such as backaches, headaches, exhaustion, and pelvic discomfort. Additionally, functional limitations of employment, childcare, and domestic responsibilities were consistently linked to physical health complications in the postpartum period. The severity of these physical health issues was found to be correlated with the existence of functional limitations. It is noteworthy that postpartum physical health problems, including those that are typically perceived as minor, can significantly impair women's functionality. Therefore, it is crucial to acknowledge and address these issues with heightened attention and concern (Webb et al., 2008).

This finding consistently demonstrates that reports of functional limitations, depressive symptomatology, and subpar emotional well-being are associated with physical health problems (Webb et al., 2008). This study found that higher levels of the postpartum morbidity burden scale are associated with a greater occurrence of one or more functional limitations, depressive symptomatology, and poor overall emotional health. This study determined that postpartum conditions mainly caused functional limitation with moderate or major severity. For instance, functional limitations were significantly more prevalent among individuals with high scores (43.5%) on the morbidity burden scale compared to those with low scores (9.3%) (Webb et al., 2008).

Another study illustrated that maternal function can be affected by physical or psychological complications (Gholizadeh Shamasbi et al., 2020). The Barkin Index of Maternal Functioning (BIMF) was used to obtain data on maternal functioning. Mothers in this research scored quite well regarding maternal functioning and mental health. The greatest mother functioning sub-domain score was for psychological well-being, while the lowest was for adjustment. The high score for maternal functioning indicates that women were content and adequately adapting to their maternal role. The findings of this study suggest that elevated maternal functioning is linked to a greater overall mental health score, a moderate income, and the receipt of assistance for infant care. Maternal functioning and its sub-domains have a direct and considerable impact on mental health (Gholizadeh Shamasbi et al., 2020).

The similarities between these two studies are that they both suggest that physical and psychological problems will affect maternal functioning. However, in the study done by Golizadeh Shamasbi et al. (2020), the result in maternal functioning increased rather than decreased. This manifestation might be due to the mothers have had received good care since they only recruit first time mothers and living in urban area, hence, less stressor.

According to Filipec et al. (2023), their research illustrates that the Postpartum Functional Assessment Questionnaire offers adequate psychometric properties and can be applied to evaluate functional capabilities following childbirth. This study said that pain and functional activities are closely related. Recovery following a cesarean section tends to involve greater pain and slower recovery compared to recovery following vaginal delivery, primarily due to the disruption of the abdominal wall. Additionally, both types of delivery result in reduced muscle strength, impaired trunk stability, and the presence of fatigue, all of which impact overall functional status (Filipec et al., 2023).

The study done by Cresswell et al. (2020) is different with the other studies. In this study, to assess functionality, the World Health Organisation Disability Assessment Schedule (WHODAS-12) was employed, however, it may not be the best method for this population which is the postpartum women. A significant proportion of women (N = 342; 46.2%) scored zero which indicates less than 50% of women have no functional limitation at all. This study discovered poorer functioning during pregnancy compared to the postpartum period. Women who had a clinically diagnosed health problem were more likely to have a lower degree of functioning than those who did not have a disease (Cresswell et al., 2020).

In the study done by Filipec et al. (2023), they used the Postpartum Functional Assessment Questionnaire which discovered the functional abilities of women after delivering child. However, Cresswell et al. (2020) used WHODAS-12 which discovered the functional abilities of women during pregnancy and after delivering child. Postpartum Functional Assessment Questionnaire is more suitable because it focus only on the functional abilities of women after delivering a child.

In conclusion, postpartum women have limitations that impact their physical recovery and quality of life, but few research have looked at how these limits may connect to mental health outcomes, specifically PPD.

2.4 CESAREAN AND FUNCTIONAL ABILITIES

There has been a notable surge in the rates of cesarean section deliveries in recent years. The physical health and functional capacity of women undergoing c-sections are significantly impacted by short- and long-term disabilities (Niyigena et al., 2023). Although clinical complications are typically evaluated, the postpartum functional outcomes remain inadequately understood from the patient's viewpoint and have not been thoroughly characterized in previous research. Within Rwanda, 11% of women in rural areas opt for cesarean section deliveries (Niyigena et al., 2023). The study identified a considerable prevalence of diminished physical functionality 30 days after c-section procedures in this particular Rwandan group. Factors such as extended duration of surgery (>30 min) and intra-operative complications were linked to decreased functionality. At the same time, a higher reported income level was associated with a reduced likelihood of functional impairment. It is imperative to integrate assessments, surveillance, and assistance for functional status into the postpartum care for women who have undergone c-section deliveries (Niyigena et al., 2023).

In concordance to the Rwandan study, China also had diminished functional ability. According to the World Health Organization, the cesarean section rate in China was reported at 46%, while globally it ranged from 5% to 20%. The overall annual rate of cesarean deliveries in China between 2008 and 2014 was documented at 34.9% (Zhou et al., 2018). Following a cesarean section, women experience a delayed restoration of gastrointestinal function, a condition known as postoperative

ileus (POI), which remains a prevalent and troublesome complication post-surgery. This subsequently leads to prolonged hospitalization, increased postoperative discomfort, abdominal bloating, and hindered ability to initiate breastfeeding, thereby resulting in a delayed recuperation period. The results derived from this study propose that Transcutaneous Electrical Acupoint Stimulation (TEAS) expedites the recovery of gastrointestinal function, diminishes the length of postoperative hospital stay, and enhances daily living activities after a cesarean section (Zhou et al., 2018).

Both studies subsequently complement the study in 1988 where the findings complement prior studies indicating that recovery of full functional capacity takes more than 6 weeks and that cesarean-delivered women require much more time than vaginally delivered women. Furthermore, despite not fully recovering their physical stamina, the women in the research resumed activities and cared for the child. This may explain anecdotal tales of chronic exhaustion after delivery. It also suggests that measuring the return on functional ability includes more than just task performance. The outcomes of this investigation showed that recovery following delivery is more than only the repairing of the reproductive organs (Tulman & Fawcett, 1988).

Pelvic Floor Dysfunction (PFD) is most common in women after delivery and is associated with damage to the pelvic floor muscles. The female pelvic floor comprises a group of muscles that provide vital support to pelvic organs which are essential to maintain proper body functions. These muscles play a crucial role in preventing conditions such as stress urinary incontinence, vaginal wall protrusion, and uterine prolapse (Xia, 2023). High prevalence of PFD may lead to uterine prolapse that may cause complications in toileting, prolonged standing or walking. During pregnancy and childbirth, the muscles in the pelvic cavity are stretched to variable degrees, and under the influence of hormones and the foetus, the pelvic floor muscles can cause injury, leading to a variety of pelvic floor dysfunctional disorders. Caesarean birth relaxes these muscles due to foetal pressure on the uterus. As pressure decreases after delivery, the vagina becomes exhausted, resulting in increased reactive muscle tone (Xia, 2023). This may explain why cesarean-delivered women frequently have stronger muscular tone than those who deliver vaginally. Although vaginal birth poses greater risk to the pelvic floor, opting for a cesarean section is not recommended due to potential intraoperative infections, inflammatory responses, postoperative complications, and associated medical harm to the pelvic floor (Xia, 2023).

In a research conducted in Hawassa, Ethiopia, a large majority of mothers experienced moderate to severe post-cesarean discomfort within 24 hours (Hussen et al., 2022). There are many factors that will lead to post operative pain after cesarean section. For example, this systematic review found that the

prevalence of pain in research conducted in Africa was higher than other countries. This can be attributed to sociodemographic and cultural disparities, setup discrepancies, and research design variations. Furthermore, investigations on women who underwent surgery with spinal anesthesia found a higher pooled incidence of pain when compared to a combination of regional analgesia and general anesthesia. This disparity might be explained by mothers who got spinal anesthesia being weakened long after the block has worn off. Preoperative anxiety was shown to be strongly related with acute postoperative pain in women who underwent cesarean section, with mothers who were nervous before the procedure being 1.73 times more likely to have postoperative pain. The use of intrathecal adjuvants lowers the likelihood of acute postoperative discomfort in mothers having cesarean section. This research found a high relationship between the length of the incision and the occurrence of postoperative discomfort. Mothers with incisions longer than 10 cm were more likely to experience moderate-to-severe postoperative pain compared to those with shorter incisions (Demilew et al., 2024).

In Malaysia, a study determined that pain is a significant issue that will affect functional abilities after cesarean section. The present study delineated numerous variables influencing the severity of pain during both rest and movement following surgical procedures. Elevated body mass index, prolonged duration of surgery, female gender, blood type O, and the use of general anesthesia were associated with heightened levels of pain intensity. These factors were established as autonomous indicators of pain severity (Jasim, 2017). This study found that BMI

is a major predictor of post-caesarean discomfort. This is due to inadequate doses of opioid supply to women with high BMI. Longer operations were associated with greater pain levels due to increased surgical complexity. Patients receiving general anesthesia had more pain compared to those with regional anesthesia. Regional anesthesia may reduce pain development in some people by blocking central impulse traffic more effectively. Single women reported greater pain levels than married women (Jasim, 2017). The higher the pain level the lower the functional ability of postpartum women (Jasim, 2017).

In conclusion, postpartum women who undergo cesarean section will have diminished functional abilities. Cesarean sections are linked with severe functional limits and longer recovery than vaginal births, highlighting the significance of evaluating their broader consequences for the mother health, including potential linkages to PPD. The main reason that will cause reduced functional limitations is postoperative pain. However, there are lack of studies discussing about the relationship of postpartum women experiencing cesarean section and PPD.

2.5 IMPACT OF FUNCTIONAL INABILITY AND DEPRESSION IN QUALITY OF LIFE (QOL)

According to Webb et al. (2008), postpartum physical health issues are prevalent, noticeable, and cumulative, severely impacting women's quality of life after childbirth. During the initial postnatal period, it is imperative to prioritize the care and support provided to women, as the pain experienced after childbirth can significantly impede their ability to engage in essential daily activities during the puerperium. Consequently, this can have a profound impact on their overall quality of life. The pain encountered in the postpartum phase restricts the individual's capacity to carry out routine tasks associated with movement, self-care, and infant care. Thus, it becomes crucial to thoroughly assess the mother's functional abilities and potential limitations early on, to prevent any adverse effects on her quality of life (Filipec et al., 2023).

A study by Bulguroglu et al., (2023) reveals that the levels of physical activity among women in the postpartum phase were notably low, consequently impacting their functional capabilities and quality of life adversely. The methodology employed in this study involved the utilization of MAPP-QOL and IPAQ as assessment tools. Furthermore, a positive yet weak association emerged between IPAQ and MAPP-QOL measures, indicating that postpartum women with elevated physical activity levels exhibited a higher mean quality of life score compared to those with lower levels. The limited number of participants may account for the observed low correlation. There are other literature contains studies

that align with the findings above. For instance, Bahadoran et al. (2014) noted in their research involving 91 pregnant women that enhanced physical activity levels contribute to the well-being of women. Another study highlighted the diminished quality of life experienced by women during the postpartum period, potentially leading to diverse challenges (Erçel & Kahyaoğlu Süt, 2020). Additionally, research findings indicated that women with inadequate physical activity levels demonstrated lower quality of life levels than those engaging in higher physical activity (Okyay & Ucar, 2018). It is hypothesized that augmenting physical activities in the postpartum period can enhance women's sense of vitality, strength, and fitness, positively influencing various aspects such as maternal roles and quality of life. Following childbirth, the level of functionality, denoting a mother's preparedness for self-care, social interactions, professional duties, and infant care, gradually diminishes (Bulguroglu et al., 2023).

The quality of life (QOL) experienced by women after giving birth is influenced by various factors including their social and demographic characteristics, the circumstances surrounding the birth, the type of delivery, and the level of social support they receive (Sadat et al., 2014). Postnatal depression has a significant impact on mothers, leading to a decrease in their quality of life and an inability to adequately care for themselves, their partners, and their infants. Furthermore, it has been found that women who experience depression after giving birth are more likely to continue experiencing depressive symptoms later in life (Sadat et al., 2014). A research study found a significant correlation between postnatal depression and

overall well-being (Zubaran et al., 2001; Dennis et al., 2004). Another study reported that the occurrence of postpartum depression was 15%, and mothers who experienced this condition had lower quality of life scores (Durukan et al., 2006). Other researchers have also observed that mothers with postpartum depression had significantly lower scores in all domains of the SF-36 QOL scale compared to mothers without depression. However, it should be noted that the severity of depression was not related to the extent of the mothers' physical health issues (Da Costa et al., 2006). This finding confirmed that women with postpartum depression experience a significant impairment in their quality of life (Sadat et al., 2014).

For example, there is a study in Enthopia stated that changes following delivery have a substantial influence on women's Health-related QOL (HRQOL) and general well-being. This study found that postpartum women with postpartum depression had poorer total HRQOL, lower Physical HRQOL, and lower Mental HRQOL than those without postpartum depression. The is because depression adversely impacts emotional wellness, and depression is known to impair women's ability to function well, have good relationships with their children, have positive relationships with others, have good routines for sleeping, and engage in social activities, lowering overall and mental HRQOL. This study also introduced other factors which will influence the QOL such as poor socioeconomic status and number of children (Gomora et al., 2024).

In conclusion, postpartum functional limitations and PPD have a substantial impact on postpartum women's quality of life, emphasizing the importance of integrated treatment methods that target both physical and mental health outcomes.

2.6 RISK FACTORS OF PPD

The study revealed that women who experienced unplanned pregnancies had 4.48 times higher odds of postpartum depression compared to those with planned pregnancies. Inadequate preparation for childbirth and insufficient coping mechanisms during pregnancy, childbirth, and the postpartum period may lead to this outcome (Tolossa et al., 2020). Unintended conception is an influential determinant linked to perinatal depressive symptoms in the nation of Ethiopia (Mersha et al., 2018a). The comprehensive synthesis of eight empirical investigations discovered that the occurrence of unintended pregnancy was considerably connected to the onset of perinatal depression, exhibiting a risk ratio of 2.73 (Mersha et al., 2018a). Women with unintended pregnancies are more likely to get delayed or ineffective prenatal treatment, even in European nations with strong healthcare systems. According to studies, these women are more likely to have greater stress levels and poorer mental health during pregnancy, including depression and other psychiatric disorders. They are also more prone to indulge in unhealthy habits such as smoking, drinking alcohol, and taking excessive caffeine when pregnant (Barbuscia et al., 2024).

This study indicated that women who have experienced domestic violence are 4.61 times more likely to develop postpartum depression compared to those who have not (Tolossa et al., 2020). Intimate partner violence has been linked to postpartum depression in Canadian women before, during, and after pregnancy. Even after adjusting for variables, the relationship between intimate partner violence and postpartum depression remained strong (Beydoun et al., 2010). According to Adamu & Adinew (2018), domestic violence is a significant risk factor for postpartum depression. Although different studies utilise different techniques and definitions of abuse, global research indicates a clear link between abuse and the likelihood of postpartum depression. In this study, the most prevalent kinds of abuse were physical assault and verbal insults. Among the participants, 113 women (18.8%) were dissatisfied with their marriages, and those with bad connections with their spouses were more likely to exhibit signs of postpartum depression. Domestic abuse is closely associated with postpartum depressive symptoms. As a result, maternity care should include counselling to address the mental health needs of mothers who have suffered violence (Adamu & Adinew, 2018).

A study in Sweden has found that teenagers are more likely to have PPD. Pregnancy during adolescence is generally acknowledged to present significant problems for new moms as they attempt to balance their personal development with the obligations of caring for a child (Silverman et al., 2017). The findings show that having diabetes raises the likelihood of PPD by 1.5 times in

women with a history of depression. We also observed that gestational diabetes greatly increases the incidence of PPD in all women, regardless of whether they had previously experienced depression (Silverman et al., 2017). Furthermore, having a baby early increases the chance of developing PPD (Silverman et al., 2017).

Tolossa et al., (2020) further revealed that women who have a history of depression are 4.52 times more likely to develop postpartum depression than their counterparts. A study also suggests that the most important risk factors for postnatal depression include a history of severe depression throughout one's life and depression during pregnancy, implying that sensitization processes increase the chance of postpartum depression (Roomruangwong & Epperson, 2011).

Additionally, women who lack social support have a 6.59 times higher risk of experiencing postpartum depression compared to women who have social support. Subsequently, women who have previously experienced the death of an infant are 3.74 times more likely to develop postpartum depression compared to their counterparts. Lastly, their findings discovered that women who have no marital satisfaction have 5.28 times higher odds of developing postpartum depression compared to their counterparts (Tolossa et al., 2020).

There are other factors contributing to PPD, such as low income, age under 24, unemployment due to pregnancy, history of miscarriage/stillbirth, being a first-time mother, and history of substance use are associated with postpartum depression. Furthermore, a lack of psychological and economic support from social sources was found to be a recurring risk factors for depression (Tolossa et al., 2020). The levels of depression symptoms are slightly elevated in younger mothers compared to other mothers (Rosander et al., 2021). However, might have been better understood if the study included even younger mothers, as adolescent mothers face more stressors that can exacerbate depression symptoms, such as increased risk of isolation from peers and low self-esteem (Rosander et al., 2021).

Identifying important risk factors for PPD, such as unexpected pregnancies, a lack of social support, and domestic abuse, lays the groundwork for understanding how functional limitations may interact with these variables to affect PPD.

2.7 LEVEL OF KNOWLEDGE/AWARENESS OF PPD

Limited knowledge regarding functional capabilities can potentially influence the occurrence of depression during the postnatal phase. Pregnant women were observed to possess a restricted comprehension of PPD and its terminology, despite exhibiting a heightened level of awareness regarding PPD (Logsdon et al., 2006).

Positive information, negative attitudes, and negative awareness of ~~PPD~~ are all prevalent in postnatal women's social support networks. This study shows that high level of understanding of PPD in postnatal women. However, beliefs had no meaningful influence on PPD awareness. Marital status, gender, and parity all had a substantial impact on PPD awareness. Ethnicity, gender, parity, and educational level were all substantially related to opinions about PPD. Furthermore, public awareness of PPD was found to be associated with both knowledge and attitudes towards the disease (Alsabi et al., 2022).

Sealy et al., (2009) highlighted that the lack of knowledge about PPD among primary health caregivers is a significant obstacle for postpartum women and their families to identify symptoms and seek early intervention. Therefore, the study highlights the need for a PPD curriculum to increase awareness, symptom recognition, and appropriate intervention among primary health caregivers and the community. Additionally, there is limited awareness among the general population

about PPD symptoms and available assistance due to a lack of community-based research on the subject.

According to Webb et al., (2008), this study indicate that obstetrical and other health professionals should be more aware of the possibility of severe emotional distress, such as depression, in postpartum women with multiple or severe physical complaints, particularly because women are less likely to discuss psychological problems compared to physical complaints, possibly due to practitioners' discomfort in addressing such issues.

2.8 GAP OF STUDIES

There are some studies discussed about postpartum depression and concluded; it is very common during postpartum period (Buist et al., 2008; Klainin & Arthur, 2009; Mohamad Yusuff et al., 2015; Rosander et al., 2021). Nonetheless, these studies does not discuss any other factors such as functional abilities which can be associated by depression, and it may also impact the mother's QoL in the long run (Buist et al., 2008; Klainin & Arthur, 2009; Mohamad Yusuff et al., 2015; Rosander et al., 2021).

According to some studies, they state that both physical and psychological problems will affect maternal functioning (Gholizadeh Shamasbi et al., 2020; Webb et al., 2008). Besides that, some study only stated that after delivering a child, functional abilities of the mother will be affected but did not mention about depression association (Bahadoran et al., 2014; Bulguroglu et al., 2023; Erçel & Kahyaoğlu Süt, 2020; Okyay & Ucar, 2018). According to Filipec et al, (2023), pain and functional activities are closely related. Recovery following a cesarean section tends to involve greater pain and slower recovery compared to recovery following vaginal delivery. Hence, to investigate how functional abilities may affect the mental health state, a further study is mandatory.

Some studies stated that cesarean section will affect functional abilities of women due to pain after the surgery (Jasim, 2017; Niyigena et al., 2023; TULMAN & FAWCETT, 1988; Xia, 2023; Zhou et al., 2018). To the best of the author knowledge, there are no evidence justifying that it may lead to postpartum depression.

The literature review spanned five years and exclusively relied on systematic reviews. Determining the Robson class for women was based solely on hospital care, potentially including low-risk populations with obstetric conditions justifying cesarean delivery (Degani & Sikich, 2015).

Further research is necessary to understand the causal relationships between physical conditions and functional impairment during the postpartum period following cesarean section. Similarly, there is a need to investigate the association between postpartum depression or emotional distress among new mothers and physical health.

Hence, this study will investigate the association between functional capacity after a month of postpartum and the possibility of postpartum depression following cesarean section.

CHAPTER 3

3.0 METHODS

3.0 CHAPTER OVERVIEW

This chapter discuss about the research methodology which are the study design, study setting and duration, study population, ethical approval, sampling method, sample size, inclusion criteria, exclusion criteria, outcome measure and instrument, procedure and data analysis.

3.1 STUDY DESIGN

The study design used is descriptive research which is a cross-sectional study. This study surveyed postpartum mothers in their initial two weeks up to three months after giving birth. To ensure a reliable evaluation, the first two weeks after childbirth were excluded from the analysis to reduce the potential influence of postpartum blues, also known as "baby blues," a mild form of mood disturbance experienced by most new mothers in the first few days after birth that usually resolves by the tenth day. Most women experience depression within the first 12 weeks following delivery (Rosander et al., 2021). Participants will be recruited from various demographic backgrounds to ensure a fair and accurate sample. The evaluation of functional abilities will be conducted by employing the Postpartum Functional Assessment Questionnaire. At the same time, the diagnosis of postpartum depression will be determined through the validated Edinburgh Postnatal Depression Scale.

3.3 STUDY SETTING AND DURATION

Social media for example, facebook, whatsapp or instagram. The questionnaire was sent out on 21/10/2024 via social media. The participants is recruited within 5 weeks.

3.4 STUDY POPULATION

The study populations are postnatal mothers within the initial two weeks up to three months and who give birth through cesarean section.

3.5 ETHICAL APPROVAL

Ethical approval has been granteed by the Scientific and Ethical Review Committee (SERC) of Universiti Tunku Abdul Rahman (UTAR). Every participant received information about the main purpose of the study, and it was emphasized that participation was voluntary, enabling individuals to withdraw from the study at any given point. This study was conducted with prior ethical approval from the Scientific and Ethical Review Committee (SERC) of Universiti Tunku Abdul Rahman (Refer to Appendix A).

3.6 SAMPLING METHOD

The sampling method used is convenience sampling because it is fast, inexpensive, easy and the subject are readily available.

3.7 SAMPLE SIZE

The sample size was calculated using the OpenEpi software (https://www.openepi.com/SampleSize/SSPropor.htm). The estimated population size of postnatal women in Malaysia is 141257 (n=141257) (Karalasingam et al., 2020). Based on the OpenEpi software, the sample size is 384 to reach 95% confidence level. Another 10% will be added to the final sample size to account for dropped participation. So, the total sample size is 425.

Sample Size for Frequency in a Population

Population size(for finite population correction factor or fpc)(*N*):	141257
Hypothesized % frequency of outcome factor in the population (*p*):	50%+/-5
Confidence limits as % of 100(absolute +/- %)(*d*):	5%
Design effect (for cluster surveys-*DEFF*):	1

Sample Size(*n*) for Various Confidence Levels

ConfidenceLevel(%)	Sample Size
95%	384
80%	165
90%	271
97%	470
99%	661
99.9%	1075
99.99%	1499

Equation

Sample size $n = [DEFF*Np(1-p)]/ [(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]$

Results from OpenEpi, Version 3, open source calculator--SSPropor
Print from the browser with ctrl-P
or select text to copy and paste to other programs.

Figure 3.1 Result of sample size

3.8 INCLUSION CRITERIA

1. Postnatal mothers who give birth at the initial 2 weeks to 3 months
2. Postnatal mothers who give birth by cesarean method
3. Women aged between 18-35 years old because pregnancies in women aged over 35 are considered high-risk (K, 2019). The legal marriage age for Muslim males is 18 and 16 for women, whereas non-Muslim men and women must be 18 (Jamaiudin, 2023).
4. Primigravida or multigravida
5. Having a live, healthy, and term infant.
6. Able to understand and read English

3.9 EXCLUSION CRITERIA

1. Women who have depression before childbirth
2. A chronic or recurring pain condition
3. Smoking and taking tranquilizers
4. Newborn abnormalities

3.10 OUTCOME MEASURE AND INSTRUMENT

The data of this study will be collected through self-report questionnaires. The questionnaire consists of demographic data, Postpartum Functional Assessment Questionnare and Edinburgh Postnatal Depression Scale (EPDS).

1. **Demographic Information**

   The demographic information include age, race, body weight, height, body mass index (BMI), education level, planned or unplanned pregnancy and domestic violence.

2. **Functional Ability Assessment**

   Functional Ability Assessment is assessed by using the Postpartum Functional Assessment Questionnaire. The Postpartum Functional Assessment Questionnaire evaluates functional capabilities in terms of mobility. The functional abilities include turning to the side, sitting, getting up, walking, personal care (self-care, body care and showering), fluid intake, food intake, sleep, oral care, going to the toilet and childcare (lifting and carrying a child). These abilities were measured on a Likert Scale which is the scale of 0 to 3, with 0 indicating no difficulty in performing activities, 1 indicating minimal difficulty, 2 indicating moderate difficulty, and 3 indicating the inability to perform activities without assistance. Each aspect of functional ability was assessed individually by summing the scores. Pain intensity and functional abilities were evaluated on the first and third day

after childbirth to compare the progress of postpartum recovery. The Postpartum Functional Assessment Questionnaire is proven valid and reliable for covering a broad variety of functional concerns pertinent to postpartum women (Filipec et al., 2023).

3. **Postpartum Screening**

The Edinburgh Postnatal Depression Scale (EPDS) will be used for PPD screening. This scale comprises of 10 brief statements. A mother selects one of four possible answers that best reflects how she has been feeling in the past week. The scale can be easily completed by most mothers in under five minutes. Scores of 0, 1, 2, and 3 are assigned based on the severity of each symptom. Items 3 and 5 to 10 are scored in reverse (i.e., 3, 2, 1, and 0). The total score is obtained by adding up the scores for all 10 items. Mothers who achieve a score higher than 12 may be experiencing symptoms of depression and should consider seeking medical assistance. EPDS is proven valid and reliable for showing strong sensitivity and specificity for detecting postnatal depression (Cox et al., 1987).

3.11 PROCEDURE

Recruitment Process

This study uses cross-sectional design which require 425 participants which is determine by the sample size calculation using OpenEpi software. Individual must be women who give birth after two weeks to 3 months. The participants are recruited through online platform which are Facebook, Whastsapp and Instagram.

The questionnaire will be sent through online as a Google Form. The questionnaire contains 4 parts.

I. Informed Consent Form After reading the information page, the participants who satisfy the inclusion requirements will proceed to give their consent (Refer to Appendix B)

II. Demographic Data

The demographic information include age, race, body weight, height, body mass index (BMI), education level, planned or unplanned pregnancy and domestic violence. The aim of this part is to check whether the participants had met the inclusion criteria and are able to participate in this study (Refer to Appendix C).

III. Functional Ability Assessment

This section is to assess the functional ability of the participants (Refer to Appendix D).

IV. Postpartum Screening

This section is to detect whether the participant is suffer from PPD (Refer to Appendix E).

Data Collection

The data was collected via online platforms such as Facebook, Instagram and WhatsApp. Each participant was contacted through online platform , informed about the study's aim, and requested to participate in the current research project. Individuals who were eligible and included submitted demographic and pertinent information, whereas non-eligible individuals were eliminated from this study. The survey was disseminated to the individuals who are fulfill the criteria. All the assessment are collected and recorded.

3.12 DATA ANALYSIS

Demographic data such as age, race, body mass index (BMI), education level, planned or unplanned pregnancy and domestic violence is under descriptive analysis. The data of BMI was analysed using Standard deviation (SD) and mean (M). Descriptive data were analyzed according to their frequencies and percentages within the categories. The normality of the data is tested by the Kolmogorov-Smirnov test since the sample size is more than 100 ($n>100$).

The Spearman correlation test is used to investigate the relationship between functional abilities post-delivery and the prevalence of postpartum depression following cesarean section. The statistical significance value was set at P-value of <0.05. The analysis of each test was detailed in Table 4.5 below according to the objectives tested.

In the studies, any confounding variables such as socio-demographic characteristics and medical history would be controlled. The values will be tabulated and analysed using the Microsoft Excel and IBM Statistical Package for Social Sciences (SPSS) software which is 26.0 version.

CHAPTER 4

4.0 RESULTS

4.1 CHAPTER OVERVIEW

This chapter discuss about the findings after the data collection process for the research project. A total of 343 responses were collected which were done by the postpartum women within 2-12 weeks. 4 participants were excluded because they disagreed with the consent form to protect their privacy.

Descriptive statistics were used to report the demographic data of the participants. After that, presenting the outcome measures, followed by the results from the correlation analysis and lastly hypothesis testing is elaborated. The results are presented in the sequence which starts from graphs or figures then followed by a description relating to the figure and lastly concluding by a table if necessary.

4.2 DEMOGRAPHIC DATA OF PARTICIPANTS

A total of 339 participants were included in this study through online platform. There is no missing data documented in each question of the questionnaire by the participants

Table 4.1 shows that the greatest age group among participants is 26-35 years, followed by 36-45 years, and the smallest is 18-25 years. The 18-25 age group has 27 participants, accounting for 8.0% of the total. The largest group, aged 26-35 years, has 247 participants and accounts for 72.9% of the total. Meanwhile, the 36-45 age group has 65 participants, accounting for 19.2% of the overall population.

The results indicate that 327 Chinese postpartum women participated in the study, representing the majority (96.5%) of the population (Table 4.1). In contrast, only 8 Malay postpartum women (2.4%), 3 Indian postpartum women (0.9%), and 1 Sino-Kadazan postpartum woman (0.3%) took part in the study.

Table 4.1 shows the BMI categories of the participants. The mean (M) BMI is 23.8, with a standard deviation (SD) of 4.44. The majority of participants are normal weight, with a frequency of 202, accounting for 59.6% of the whole population. A total of 79 postpartum women (23.3%) are classed as overweight, with 35 participants (10.3%) being classified as obese. The smallest

group is the underweight category, which has only 23 participants and represents 6.8% of the population.

Based on Table 4.1, the education levels of the participants. The majority, 204 participants (60.2%), have completed a university education. This is followed by 101 people (29.8%) with a secondary school education. A total of 17 individuals (5.0%) have completed primary schooling. 7 participants (2.1% each) hold master's or diploma-level qualifications. The smallest category consists of participants who have never attended school, with only three people (0.9%).

Table 4.1 shows that planned pregnancies are about 3 times more than unplanned pregnancies. 257 participants had planned their pregnancies (75.8%) while 82 participants did not plan their pregnancies (24.2%).

Based on Table 4.1, that the majority of participants had no experience with domestic violence. A total of 307 individuals (90.6%) reported having no history of domestic violence, whereas just 32 participants (9.4%) had experienced it.

Demographic Data	Frequency (%)	Mean ± SD
Age		
18-25	27 (8.0%)	
26-35	247 (72.9%)	
36-45	65 (19.2%)	
Race		
Chinese	327 (96.5%)	
Malay	8 (2.4%)	
Indian	3 (0.9%)	
Sino Kadazhan	1 (0.3%)	
BMI		23.8 ± 4.44
Underweight (<18.5kg/m^2)	23 (6.8%)	
Normal Weight (18.5-24.9 kg/m^2)	202 (59.6%)	
Overweight (25-29.9 kg/m^2)	79 (23.3%)	
Obese (>30.0 kg/m^2)	35 (10.3%)	
Education Level		
Never been to school	3 (0.9%)	
Primary level	17 (5.0%)	
Secondary level	101 (29.8%)	

University level	204 (60.2%)
Diploma level	7 (2.1%)
Master level	7 (2.1%)
Planned/Unplanned Pregnancies	
Planned	257 (75.8%)
Unplanned	82 (24.2%)
Domestic Violence	
Yes	32 (9.4%)
No	307 (90.6%)

Table 4.1 Demographic data of participants

4.3 POSTPARTUM FUNCTIONAL ASSESSMENT QUESTIONNAIRE

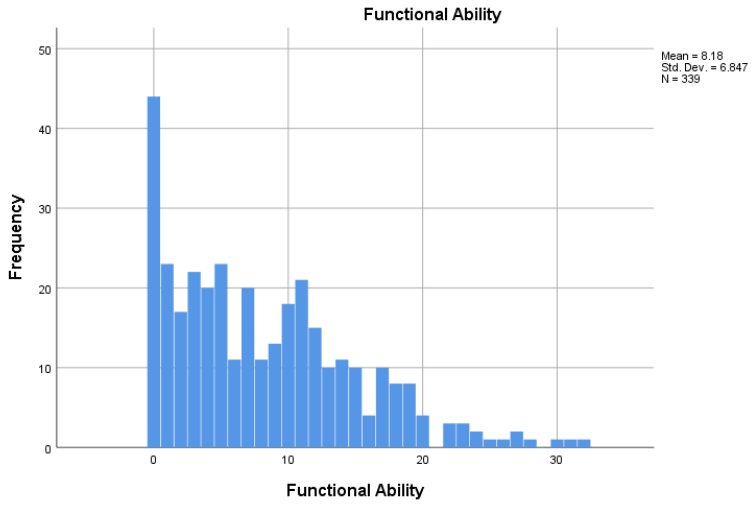

Figure 4.1 Sum of the score of functional ability of postpartum women

Figure 4.6 shows the functional ability score of the postpartum women within 2-12 weeks. The mean (M) is 8.16 and the standard deviation (SD) is 6.85 (Table 4.2). Since the data is non normally distributed, the median and interquartile range (IQR) are calculated which are 7 and 9 respectively. The highest score is 32 whereas the lowest score is 0. The mode is 0 and it indicates that most of the participants does not have functional difficulties within 2-12 weeks of postpartum. Figure 4.6 shows that the graph is positively skewed and not normally distributed. The skewness is 0.852.

Based on Table 4.3, the item with the highest mean is “child care”; the mean (M) is 8.16 ± 1.14. This indicates that the postpartum mother has the most difficulties in child care. The item with the lowest mean is “drinking water”; the mean (M) is 0.29 ± 0.671 which indicates that the postpartum mother has the least or even no difficulties drinking water.

4.4 EDINBURGH POSTNATAL DEPRESSION SCALE (EPDS)

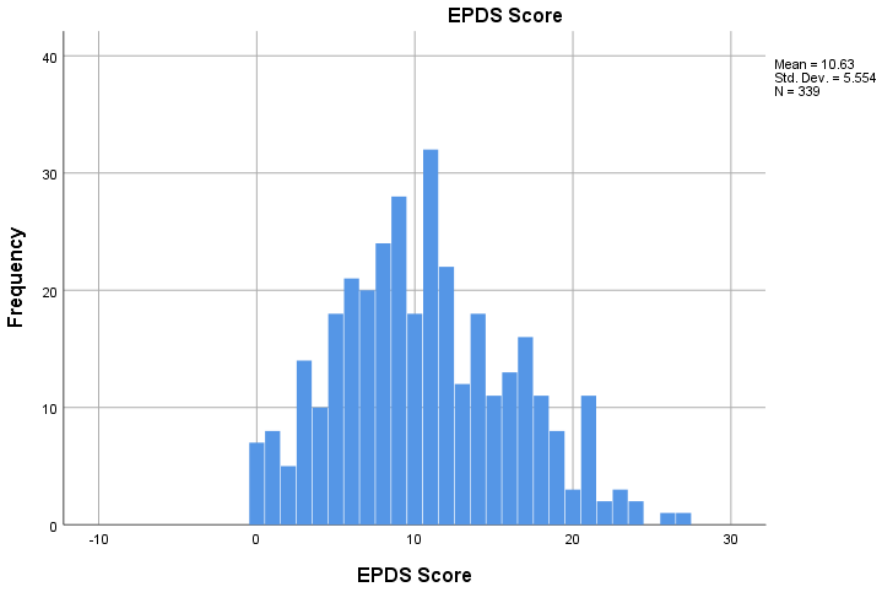

Figure 4.2 EPDS score of the participants

Figure 4.2 illustrate the EPDS score of the postpartum women within 2-12 weeks. The mean (M) is 10.63 and the standard deviation is 5.55 (Table 4.2). Since the data is non normally distributed, the median and interquartile range (IQR) are calculated which are 10 and 7 respectively. The highest score is 27 whereas the lowest score is 0. The EPDS score 0 indicates that the postpartum women did not

experience PPD. The EPDS score more than 12 indicates that the postpartum women are experiencing PPD. Based on figure 4.7, the skewness of the graph is 0.321 which is positively skewed and nor normally distributed.

Based on Table 4.2, the number of postpartum women experiencing PPD is 134 which is 39.5% of the total population. There are 205 participants does not experience PPD (60.5%).

Based on Table 4.3, for the first two items is asked in a positive way which 0 is very often,1 is sometimes, 2 is hardly ever and 3 is never. By comparing Q1 and Q2, the mean is 0.47 ± 0.747 and 0.53 ± 0.702 respectively. This reported that postpartum women often experience this. Whereas for Q3-Q10, the items are asked in a negative way which 0 is never,1 is hardly ever, 2 is sometimes, 3 is very often. The highest mean score is Q3 which mean (M) is 1.49 ± 0.844 while the lowest mean score is Q10 which mean (M) is 0.54 ± 0.832. This indicates that postpartum women mostly blamed themself unnecessarily when things went wrong while hardly have a thought of harming themselves.

Outcome Measure	Frequency (%)	Mean ± SD	Median	IQR
Postpartum Functional Assessment Questionnaire		8.18 ± 6.85	7	9
EPDS		10.63 ± 5.55	10	7
Presence of PPD	134 (39.5%)			
Absence of PPD	205 (60.5%)			

Table 4.2 Outcome measure of participants

Outcome Measure	Mean ± SD
Postpartum Functional Assessment Questionnaire	
Turning to the side	1.03 ± 0.948
Sitting	0.69 ± 0.804
Standing	0.78 ± 0.875
Walking	0.82 ± 0.874
Personal Care	0.78 ± 0.884
Drinking Water	0.29 ± 0.671
Eating	0.46 ± 0.792
Sleeping	0.96 ± 0.955
Oral Care	0.37 ± 0.664
Go To Toilet	0.86 ± 0.932
Child Care	1.14 ± 1.008
EPDS	
Q1. I have been able to laugh and see the funny side of things	0.47 ± 0.747
Q2. I have looked forwards with enjoyment to things	0.53 ± 0.702
Q3. I have blamed myself unnecessarily when things went wrong	1.49 ± 0.844

Q4. I have been anxious or worried for no good reason	1.47 ± 0.888
Q5. I have felt scared or panicky for no good reason	1.34 ± 0.887
Q6. Things have been getting to me	1.45 ± 0.765
Q7. I have been so unhappy that I had difficulty sleeping	1.19 ± 0.919
Q8. I have felt sad or miserable	1.11 ± 0.818
Q9. I have been so unhappy that I have been crying	1.04 ± 0.840
Q10. The thought of harming myself has to occurred to me	0.54 ± 0.832

Table 4.3 Mean and Standard Deviation of the outcome measure

4.5 CORRELATION ANALYSIS

4.5.1 Test of Normality

This study used the Kolmogorov-Smirnov method because the sample size is more than 100 (n=339) (Appendix F). According to appendix G, the functional ability score and EPDS score have a p value less than 0.05 which is 0.000. This indicates that the result obtained is not normally distributed.

4.5.2 Reliability test

The reliability test is to check the reliability of the data collected from this study population.

Postpartum Functional Assessment Questionnaire

According to table 4.3, the postpartum functional assessment questionnaire has a Cronbach's alpha of 0.908. This demonstrates strong internal consistency, as values greater than 0.9 are considered extremely good. The assessment consists of eleven components. The item "Child care" has the lowest Corrected Item-Total Correlation (0.552), which would raise Cronbach's Alpha to 0.907 if deleted. The overall scale is reliable, with no significant issues. The high alpha shows duplication in certain elements, as too many similar items can inflate the value (Appendix G).

Edinburgh Postnatal Depression Scale (EPDS)

According to table 4.3, the EPDS has a Cronbach's alpha of 0.865. This indicates a good internal consistency. The questionnaire consists of 10 items. The entire questionnaire is reliable, with no major concerns. The item "I have felt sad or miserable" has the greatest Corrected Item-whole Correlation (0.754), indicating that it is significantly connected to the whole score. The item "I have been able to laugh and see the funny side of things" has the lowest Corrected Item-Total Correlation (0.412), which has the least impact on the scale's dependability. Removing this item would slightly improve Cronbach's Alpha to 0.864, but the difference is low, indicating that the item still contributes to the scale's dependability (Appendix G).

Outcome Measure	**Cronbach's Alpha**	**N of items**
Functional Ability Assessment Questionnaire	0.908	11
EPDS	0.865	10

Table 4.4 Reliability test of the outcome measures

4.5.2 Spearman's Correlation test

Table 4.4 shows the result of Spearman's Correlation test on the association between post-natal functional abilities postpartum depression following cesarean section. The independent variable is the sum score of the postpartum functional assessment and the dependent variable is the sum of EPDS. The test revealed that Spearman's correlation coefficient between postpartum functional ability and EPDS is 0.432 (r=0.432). This indicates this is a positive correlation. The p-value (Sig. 2 tailed) is reported as 0.000 (p=0.000). This indicates that the correlation is statistically significant.

A significant moderate positive relationship exists between postpartum functional ability and postpartum depression. This indicates that the women who have higher scores in postpartum functional ability (higher marks indicate greater difficulties) tend to have higher EPDS scores (EPDS more than 12 indicates that a women developed PPD).

	EPDS
Functional Ability Assessment Questionnaire	
Correlation coefficient (r)	0.432
p-value (Sig. 2-tailed)	0.000 (<0.001)

r = sample correlation coefficient, p-values are set as <0.05. Data are presented as correlation coefficient and significant value

Table 4.5 Result of Spearman's Correlation test

4.6 Hypothesis testing

H0: There is no association between functional abilities level and the postpartum depression after giving birth following cesarean section.

H1: There is association between functional abilities level and the postpartum depression after giving birth following cesarean section.

The Spearman's Correlation test is used to determine the association between postpartum functional ability and postpartum depression following cesarean section. The test conducted results in significant level of 0.000 which p-value is lesser than 0.05. Therefore, there is a statistically significant correlation between these two variables. The null hypothesis (H0) is rejected.

CHAPTER 5

5.0 DISCUSSION

5.1 CHAPTER OVERVIEW

This chapter will discuss the discussion of the study which is interpret from result section (Chapter 4) and aligned with the research objectives followed by the limitation of the study and recommendations of the study.

This study investigated the associations between postnatal abilities and PPD after caesarean section, providing some important findings. It discovered that 39.5% of participants had signs of PPD, indicating a serious mental health issue. Functional limitations were common, with childcare rated as the most difficult activity. There was a moderate positive connection ($r = 0.432$, $p < 0.05$) between functional impairments and PPD, suggesting that women with more physical limitations were more likely to have depressive symptoms. Furthermore, unexpected pregnancies and domestic violence had an impact on the prevalence of both functional limits and PPD, highlighting the multidimensional nature of postpartum.

5.2 DISCUSSION

5.2.1 PREVALENCE OF PPD IN POSTPARTUM WOMEN FOLLOWING CESAREAN SECTION IN MALAYSIA

According to the literature review, PPD is a mood illness that occurs within a year of delivery (Carlson et al., 2024). In this study, the EPDS is used to measure PPD, a well-known screening instrument established especially to identify depressive symptoms in postpartum women. The EPDS assesses a variety of emotional and psychological characteristics to estimate the risk of PPD. The EPDS calculates the overall depression score by adding the responses of the 10 questions, each of which examines a different symptom of depression experienced during the postpartum period. A total score of more than 12 is considered a threshold, indicating that the individual is most likely suffering from PPD. Based on the study done by Sit et.al (2009), the ideal time to screen is 4-6 weeks following birth. Therefore, in our study the recruited participants are postpartum women who had given birth between 2 and 12 weeks. According to Cox et al. (1987), this study also found that postpartum women who scored higher than 12 or 13 on the EPDS were more likely to develop postpartum depression. There is another study discuss about the appropriate cut-point. A score of ≥13 on the EPDS is commonly used to identify women at risk of severe depression in clinical settings An EPDS score of ≥13 correlates with a Hamilton Rating Scale for Depression (HRSD) score of ≥20, suggesting a significant risk of a severe depressive episode. For prenatal screening, doctors should use a higher cut-off score of EPDS ≥15. This is warranted because increased scores during pregnancy may represent transient

stress rather than a depressive condition caused by pregnancy's regular obstacles (SIT & WISNER, 2009). In other study, postpartum depression is assessed not only by EPDS but also Maternity-monitoring Scale by Parents (MMSP) and Over-adaption Index for Depression (OAID). This study suspected that postpartum women who have EPDS more than 9 is experiencing PPD (Ohashi et al., 2024). Other PPD screening instrument include partner ratings, Center for Epidemiologic Studies of Depression Instrument (CES-D), Patient Health Questionnaire, Postpartum Depression Screening Scale is suggested by this study (SIT & WISNER, 2009).

Based on table 4.2, 39.5% of postpartum women following cesarean section developed PPD as evaluated by EPDS because the EPDS score is more than 12. The mean of the EPDS is 10.63 ± 5.55 which is lower than the threshold level, so the number of postpartum women who experience PPD is low in this study. However, the prevalence is still high compared to another study which the prevalence of PPD in Malaysia is 6.8%-27.3% (Roshaidai Mohd Arifin et al., 2018). However, according to Liang et. al (2020), the prevalence of PPD among postpartum women is 30% which is almost the same with this study. The differences between current study and Liang et. al is that their study was conducted during the COVID-10 pandemic. There is a previous study also suggested that the mean (SD) of EPDS is low which is 6.5 (4.7) because they have sufficient support fro m the hospital’s team (El-Hachem et al., 2014). Study globally reported that the prevalence of PPD has been reported to be around 10% in developed countries and

over 20% in developing countries (Tolossa et al., 2020). Postpartum depression is an important public health issue worldwide, with an adverse impact on mother's health and child development, particularly in poor country (Tolossa et al., 2020). The prevalence of PPD will also change in every different period. For example, during the COVID-19 pandemic, studies in China reported that the prevalence of PPD increase to 30% because the pandemic is considered as stressful period (Liang et al., 2020). The studies that reported a prevalence similar to our findings are those conducted in Saudi Arabia and Canada. The study in Saudi Arabia indicated that 31.68% of moms had postpartum depression whereas the study in Canada found that 40% of mothers experience maternal blues during the first month following delivery (Abdulqader Alrehaili & Albelowi, 2022; Higginbottom et al., 2013). In Western countries, the prevalence of PPD is lower which is 10-15%. The researchers explained that they relied on a wide range of claimed prevalences, which ranged from 0% to more than 60%. It is noteworthy that this inter-country variance does not fully account for within-country cross-cultural and socioeconomic differences, making the estimate difficult to assess. Secondly, most studies have employed the EPDS to assess PPD. The EPDS screening focusses on postpartum mood disorder and does not address anxiety, irritability, or other symptoms that have been proven to be recurring among women, particularly throughout reproductive seasons. As a result, this study claimed that EPDS may be ineffective in detecting a wide range of pre-and postpartum symptoms and illnesses (Abdollahi et al., 2011). The prevalence in Asia countries is ranged 3.5-63.3% because Asia is the largest and most populated continent in the world with four

billion people, is divided into six distinct areas. Different population will have different culture and living habits so the prevalence of PPD is ranged widely (Abdollahi et al., 2011).

The prevalence of PPD is higher in the current study due to the population. As suggested by Sylvania & Higgins (2024) cesarean section has higher PPD risk compared to vaginal delivery due to lower postpartum quality of life outcomes, both physical and emotional (Sylvania & Higgins, 2024). Many women may suffer negative emotions after cesarean section, such as poor self-esteem, thoughts of failure, loss of control, or frustration. The impact of wound care, delayed postpartum healing, and possible complications may all raise the risk of PPD. Furthermore, women having cesarean section may lack confidence owing to their failure to give birth naturally, even under the most favorable conditions, which might put pressure on them when raising children. Furthermore, physical discomfort and lifestyle changes during delivery might contribute to mental illnesses, which may eventually lead to PPD (Ning et al., 2024).

Other study suggested that the increase prevalence of PPD is most likely due to factors such as disorders and displacement during crises, cross-cultural differences, socioeconomic conditions, actual or perceived levels of social support, stressful life events, poverty, and societal attitudes towards pregnancy and motherhood. Furthermore, inadequate psychiatric treatment, caused by society's

inability to address mental health concerns in women during the postpartum time, appears to be another contributing factor (Abdulqader Alrehaili & Albelowi, 2022).

5.2.2 PREVALENCE OF FUNCTIONAL ABILITY IN POSTPARTUM WOMEN

In this study, Postpartum Functional Assessment Questionnaire is used to assess the functional ability of the postpartum women. There are 11 functional capacities for movement. Abilities were evaluated on a scale of 0 to 3, with 0 indicating no difficulty, 1 indicating minimal difficulty, 2 indicating moderate difficulty, and 3 indicating inability to perform independently. Each construct of functional ability was evaluated individually by adding scores. The mean (SD) of this study is 8.18 (6.85) and is considered low scores. This indicates that the mothers in this study had fewer functional limitations. The Postpartum Functional Assessment Questionnaire appears to be a reliable and required instrument for measuring functional capacities following delivery (Filipec et al., 2023a). Limited study suggests using Postpartum Functional Assessment Questionnaire because it is new. Most of the study uses Barkin Index of Maternal Functioning (BMIF). According to Gholizadeh et al (2020), the BIMF was used to collect information on maternal functioning. The postpartum mothers has a high score in BMIF which they had excellent functional ability. In another previous study, a postpartum functional assessment tool for women based on the International Classification of Functioning, Disability and Health (ICF) model was developed using the Delphi approach,

allowing for more complete medical supervision and life management for postpartum women (Zhao et al., 2024).

Postpartum Functional Assessment Questionnaire is specifically designed for postpartum women to assess their postpartum functional abilities emphasizing on daily activities, physical recovery and caregiving responsibility (Filipec et al., 2023). BMIF does not include the physical challenges of self-mobility such as turning to the side, standing and walking. This study is focus on postpartum women experiencing cesarean section so they have high risk to develop postoperative pain (Barkin, Wisner, Bromberger, Beach, Terry, et al., 2010). ICF model is complicated and time-consuming to use. Since this study is cross-sectional study so ICF is not suitable to use (Bulhões et al., 2021).

The Postpartum Functional Assessment Questionnaire has 11 functional capacities for movement. The highest mean (SD) of the item is child care followed by turning to the side whereas the lowest mean (SD) of the item is drinking water followed by oral care. Mothers frequently act as the primary care givers in childcare apart from other household, self-care, professional and social activities. Since the postpartum women are all give birth by cesarean section, they will experience postoperative pain, limited mobility, and a longer physical recovery, making chores like lifting, breastfeeding, and comforting the infant more difficult. Inappropriate treatment of postoperative pain can greatly contribute to surgical patient morbidity,

resulting in a prolongation in postpartum mothers' recovery and a failure to return to normal functioning activities for example turning to the side (Hussen et al., 2022). Becoming a first-time mother can be challenging, and some of them struggle with adapting. So, they claimed that child care is difficult because lack of experience (McLeish et al., 2021). Based on Filipec et al. (2023), their result shows that Postpartum women suffer more problems in tasks that require significant physical action, such as childcare and moving around, than in inactive or easy tasks like oral care.

This study focuses only on cesarean section, so the postpartum women showed greater functional limitation. This is supported by a previous study which stated that postpartum women give birth following cesarean section experienced more discomfort during movement compared to vaginal delivery (Pereira et al., 2017). Additionally, caesarean births had more functional limitations for certain motions than vaginal births (Pereira et al., 2017). According to Filipec et.al (2023), cesarean section are procedures that can cause microscopic or extensive tissue harm to the mother which are pain, fatigue and reduced mobility, limiting her ability to perform everyday tasks and increased risk of PPD (Filipec et al., 2023). Women recuperating from cesarean sections need more than six weeks to restore full functional ability, with continuous difficulties doing daily tasks. This long-term recuperation time can intensify emotions of frustration and powerlessness, raising the risk of PPD (TULMAN & FAWCETT, 1988). Pain during the postpartum period may limit everyday tasks such as movement, self-care, and infant care,

particularly while conducting movement and self-care tasks, such as sitting down, standing up, walking, lying down, and bathing. It is vital to note that those activities need movements of numerous body segments, particularly the trunk and hips, as well as movements that must fight gravity, which increases the muscular demand to perform the activity (Pereira et al., 2017).

Previous study done in poor nations, for example Ethiopia, they indicates that postoperative pain that is not handled properly can have a major adverse effect on surgical patient morbidity, delaying healing and returning to regular daily activities (Hussen et al., 2022). Same with the study done in Rwanda which is located at rural area discovered that there is an extensive amount of postpartum women who undergo poor physical capability after 30 days giving birth following cesarean section (Niyigena et al., 2023). While the current study compared the physical function of the women with low and high household income. Women who had lesser yearly household earnings experienced poorer physical functioning results at POD 30. This relationship might be explained in terms of poor health outcomes previously documented among disadvantaged postpartum mothers (Niyigena et al., 2023). On the other hand, women in advanced countries with better access to postpartum rehabilitation facilities report lesser functional impairments and a reduced incidence of PPD, emphasizing the need of accessible postpartum treatment (Cresswell et al., 2020).

5.2.3 ASSOCIATION BETWEEN POSTPARTUM FUNCTIONAL ABILITIES AND POSTPARTUM DEPRESSION

A Spearman's Correlation test was conducted to examine the association between postpartum functional ability and PPD in postpartum women following cesarean section. This study used two outcome measure which is Postpartum Functional Assessment Questionnaire and EPDS. Based on Table 4.5, the p-value is less than 0.05 and r=0.432, indicating a moderate positive correlation between postpartum functional ability and PPD in postpartum women following cesarean section. A postpartum woman with functional limitations was more likely associate with PPD.

There is a study in United State found that functional limitations, such as difficulty with mobility, self-care, and home chores, are strongly connected to depressed symptoms in postpartum women (Webb et al., 2008). This is consistent with the results of the current study, which found that functional restrictions, such as difficulties with tasks including turning, sitting, walking, and childcare, led to higher depression levels. Another study in Iran with similar findings further supports our study that postpartum functional limitation will be associated with PPD. They claimed that physical and psychological health have significant effects on maternal functioning, and functional limitations increase the prevalence of depressive symptoms. Functional recovery can assist in mental health issues (Gholizadeh Shamasbi et al., 2020). In a previous study, they discussed in another way that postpartum depression was associated with decreased personal, home, and

social functioning, but no changes were seen in baby care. Women with PPD were 12 times less likely to return to their pre-pregnancy levels of functioning than those who did not have depression. Postpartum women with depression have greater functional limitations than those with no depression (Posmontier, 2008). Functional limitation is not a direct cause for PPD but just a risk factor for PPD. This study in China revealed that over 50% of the postpartum women who encountered antepartum depression would later manifest postpartum depression (PPD). The presence of depressive symptoms and febrile episodes during gestation significantly elevates PPD scores, and these influences were partially mediated through diminished sleep quality in the postpartum phase (Yu et al., 2023). Most of the study globally had the same result as our study, which is functional ability of postpartum women is associated with PPD.

In this current study, the mean of the postpartum functional assessment questionnaire is 8.18 ± 6.85 and the mean of EPDS is 10.63 ± 5.55. That translate to the postpartum women following cesarean section had fewer functional limitation and the level PPD is low. A study done by Gholizadeh Shamasbi et al, (2020) found that the postpartum women had a very excellent physical function and mental health scores. The higher score for postpartum physical function indicates that women were happy with their role as mothers. This suggested that this is mainly due to the women had received support for infant care and social support (Gholizadeh Shamasbi et al., 2020). There is a study in midwestern United States also indicates that their postpartum mother who stay in Neonatal Intensive Care

Unit (NICU) had higher score for postpartum physical function with BIMF score is 96.1 and a lower EPDS score which is 7.7 lower than the threshold of 10 or 13. This is due to excellent communication with NICU medical personnel, favorable evaluations on their bedside manner, and interactions with other moms in the NICU (Williams et al., 2018). The almost similar result done in middle Georgia, the postpartum women had high score of BMIF and low score of EPDS. This study indicates that this is because marriage provides economic, social, and psychological support, leading to overall better health results (Barkin et al., 2017). On the other hand, a study found that the postpartum mother has lower score in BMIF and higher score in Ham-D-17 showed that the mothers had low functional ability are more likely to be associated with high PPD (Barkin et al., 2016). Another study discovered that postpartum women had a low BMIF score, and high levels of postpartum depression, as indicated by a SIGH-ADS indicating moderate severity of depression (Barkin et al., 2014).

According to the current study, postpartum women considered child care as the most difficult component of functional capacity. This study is supported by a previous study done in China. A mother giving birth for the first time may lack expertise with childcare and self-care. Some unpleasant feelings in women with PPD derive mainly from physical problems. Mothers who see themselves as failing in their caring tasks may experience increased worry and despair, which can aggravate their depressed mood (Xiao et al., 2023). Another study indicates in a different way which PPD will impact child care. Mothers with PPD may struggle

to recognize and respond effectively to their infant's demands, resulting in delays or inconsistencies in satisfying their baby's requirements for comfort, feeding, and engagement (Saharoy et al., 2023). The association between child care restrictions and PPD is bidirectional; not only can PPD hinder a mother's ability to care for her infant, but caring challenges can exacerbate symptoms of depression. Based on this study, sleeping is also a difficulty to postpartum women. One factor is due to sleep disturbance from the infant. Sleep difficulties are another prevalent behavioural result in newborns of moms with PPD. Sleep disturbances may worsen babies' and mothers' difficulties, resulting in increased exhaustion and a lower general well-being (Saharoy et al., 2023). According to a previous study, frequent sleep disruptions might increase anticipating worry about sleep, making it difficult to go back asleep or making sleep lighter or not enough of rest (Leistikow & Smith, 2024). Another study claims that women with poor sleep quality were 3 more likely to develop depression than those with good sleep quality (Iranpour et al., 2016). Hence, a lack of sleep and postpartum depression have a bidirectional link. Sleep difficulties can increase symptoms of PPD, but depression can also cause sleep issues.

Rather than maternal functional ability alone that is associated with PPD, others risk factors are discussed in other studies. For example, rapid hormonal fluctuations postpartum can disrupt mood regulation; experiencing PPD in previous pregnancies; insufficient support from family and friends can heighten feelings of isolation and stress; and financial difficulties, relationship issues, or major life

events all add to the challenges of motherhood (Saharoy et al., 2023). Acute postoperative pain will lead to functional limitations. Pain is due to long incision length and usage of general anesthesia. Hence, inhibits movement and daily tasks, causing feelings of dissatisfaction and unhappiness (Demilew et al., 2024). Furthermore, increased role overload was positively associated to both depression and disagreement. Mothers increased their workload because they need to take care of their infant 24 hours, working whole day nonstop will cause depression and confrontation in addition to role overload (Perry-Jenkins et al., 2007). Sufficient companionship from partners, family members, and friends is essential for postpartum women. The lack or insufficiency of assistance can exacerbate feelings of loneliness, stress, and anxiety in new mothers, increasing the chance of developing PPD. A reliable support system can give psychological assistance, physical support, and acknowledgement of the mother's experiences, helping to decrease depressed symptoms (Negron et al., 2013).

Physical concerns after childbirth are typically viewed as temporary or unimportant, but the study done by Webb et al found a definite correlation between restricted performance and postpartum depression in women. In conclusion, postpartum physical health issues are common, severe, and build over time, greatly affecting women's quality of life after giving birth (Webb et al., 2008). The current study concurs with the association between postpartum functional abilities and PPD, which is consistent with global research findings. The moderate correlation shows how even moderate functional deficits can have a substantial impact on mental

health. In conclusion, the study shows that there is a moderate association between postpartum functional abilities and PPD following cesarean section.

5.2.4 PLANNED/UNPLANNED PREGNANCIES WITH PPD

An unplanned pregnancy is a pregnancy occurs before than expected (mistimed) or when the couple does not wish to have children or more children at the time of conception (Ranatunga & Jayaratne, 2020). In this study, 75.8% of pregnancies were planned whereas 24.2% of pregnancies were unplanned. Unplanned pregnancies are linked to higher prevalence of PPD. According to Tolossa et al. (2020), they indicate that women with unplanned pregnancies are 4.48 times more likely to have PPD, mostly because of a shortage of readiness and psychological strain. There were some studies claimed that unplanned pregnancy will delay prenatal care and was a significant factor in postpartum depression among postpartum women (Azad et al., 2019; Mersha et al., 2018). In developed countries such as the Islamic Republic of Iran, Belgium, Kenya, the United Kingdom, the prevalence of unplanned pregnancies low which is between 2-18% (Beguy et al., 2014; Goossens et al., 2016; Roshanaei et al., 2015; Wellings et al., 2013). While in developing country such as Nepal, Pakistan and Bangladesh which are in South Asia, the prevalence of unplanned pregnancies were high which is within 30.3-41% (Habib et al., 2017; Ranatunga & Jayaratne, 2020). In Malaysia, the prevalence of unplanned pregnancies is 42.9% and is considered as high prevalence (Yusof et al., 2018).

According to Ranatunga & Jayaratne (2020), they discovered a significant correlation between unplanned pregnancies and insufficient maternal care. Women with unexpected pregnancies frequently delayed scheduling, went to fewer clinic appointments, missed prenatal classes, and consumed less folic acid throughout pregnancy. These inefficient treatment practices were associated with poor maternal health outcomes, such as PPD. There are some primary causes of unplanned pregnancies include unwanted births include abandonment or inadequate use of contraceptive procedures, and unsuccessful contraception. Women's needs have been overridden by social pressures and expectations, and they are not permitted to avoid pregnancy (Yazdkhasti et al., 2015). Social punishments and inequalities between men and women, husbands' rejection of contraceptive techniques, insufficient family planning, and a lack of meaningful consultation make suggestions incompatible with their situations that would cause them not to use contraception (Yazdkhasti et al., 2015).

5.2.5 PRESENCE OF DOMESTIC VIOLENCE WITH PPD

Domestic violence is defined as a pattern of abusive behaviours involving a wide spectrum of physical, sexual, and mental assault performed by one person in an intimate relationship against another to achieve unfair power or sustain that person's abuse of power, control, and authority (Rakovec-Felser, 2014). In the current study, 9.4% of postpartum women experience domestic violence while 90.6% of postpartum women do not experience domestic violence. Domestic violence is linked to higher prevalence of PPD. According to Tolossa et al (2020), domestic violence was shown to increase PPD risk by 4.61 times. Some previous study indicates that there is a strong association link between intimate partner violence and PPD. Domestic abuse during pregnancy or postpartum is underreported, yet studies show that it dramatically raises mental health consequences, including PPD (Adamu & Adinew, 2018b; Beydoun et al., 2010). In developing countries, for example, in India the prevalence is 29.4%. Husbands were the most prevalent offenders of domestic abuse (83.48%), followed by mother-in-law (44.35%). The leading reasons for violence included bad cooking (25.21%), failure to perform home tasks (24.34%), not bearing a male child (26.96%), dowry concerns (19.13%), and alcohol addiction (53.04%) (Christaki et al., 2023). In Malaysia, a total of 383 (14.5%) reported experiencing at least one sort of violence. However, the prevalence is not accurate due to some women may experience many types of assault. The violence includes 7.8% of women experiencing emotional abuse, 5% of women experiencing physical violence and 1.7% women experiencing of sexual abuse (Shuib et al., 2013).

Domestic violence, particularly intimate partner violence (IPV), is common in developing countries because of the acceptability of the culture, weak legal protections, and a lack of understanding of women's rights. There are 4 main causes of domestic violence in these countries which are a male-dominated culture, a lack of understanding of the rules, inadequate application of the current legal framework and bureaucracy surrounding domestic abuse accusations (Christaki et al., 2023). According to WHO, Lifetime intimate partner violence occurrence rates are not uniform, indicating 20% in the Western Pacific, 22% in wealthy nations and Europe, and 25% within the regions of the Americas 33% in the African region, 31% in the Eastern Mediterranean Region, and 33% in the South-East Asia region (WHO, 2024).

According to the in Sri Lanka, 17% of ever-married women experienced domestic abuse and a proportion of them was associated with a greater rate of unplanned births (Ranatunga & Jayaratne, 2020). A similar identification was found in research done in Auckland, New Zealand, where women who had experienced physical abuse were more likely to report an unintended pregnancy than those who had not. These data indicate a strong connection between domestic violence and unintended births in various circumstances (Hellerstedt et al., 2011).

5.3 STRENGTHS OF THE STUDY

There are some strengths in this study. Firstly, the study uses comprehensive and validated tools. The Postpartum Functional Assessment Questionnaire and the EPDS served as reliable and validated outcome measures of functional capacity and postpartum depression, assuring data collecting consistency and accuracy. These tools are generally acknowledged in research, which adds credibility to the work.

Secondly, the strength of the study is the participants are targeted in giving birth by cesarean section. This is because different birth modes will have different functional limitations affected by pain intensity. Besides that, by focusing primarily on mothers who had caesarean sections, the study filled a significant research gap, as the physical and psychological recovery of cesarean mothers is less frequently studied than vaginal births.

Lastly, this study consists of multifactorial analysis. The study investigated a variety of demographic and socioeconomic characteristics, including education level, BMI, planned/unplanned pregnancies and domestic violence. This comprehensive approach allows for an increased awareness of how many factors influence functional abilities and postpartum depression.

5.4 LIMITATIONS OF THE STUDY

This study has various limitations that may affect the generalizability and reliability of its findings. The major limitation is the insufficient sample size. The study failed to achieve the targeted sample size of 384 to attain a 95% of confidence level. There were a 12% of reduction in the sample size which the sample size is only 339. This will affect the statistical power and accuracy of the findings, thereby increasing the probability of type II error which is failing to identify a true association. In addition, the study's limited sample size restricts its capacity to generalize its findings to a wider population of post-cesarean women in Malaysia. The failure to achieve the sample size is because many of them is concerned about how their data will be used or shared. To protect their own privacy, they choose not to participate in this study.

Secondly, the limitation is the lack of ethnic and cultural diversity. The population of the sample size was mainly Chinese (96.5%), which is not representative of Malaysia's mixed ethnic traits. This lack of participation implies that cultural issues influencing postpartum recovery and depression among Malay, Indian, and Indigenous communities are not addressed. Cultural norms, traditional beliefs, and support collaborations can have a substantial impact on postpartum recovery and mental health outcomes. Some cultures will have traditions that will assist postpartum women to recovery faster after childbirth, for example Chinese women will experiencing postpartum care for a month which is call as “doing the month”. Considering my social media is mainly utilized by Chinese users, the

information I publish and the response I receive tend to represent Chinese cultural viewpoints and interests. Thereby limiting the findings' application to other ethnic groups.

Furthermore, the limitation of the study is sampling bias. The study used convenience sampling and online recruiting methods, which excluded those who don't have internet access, less technology competent, or lack access to social media. As a result, the findings may not completely reflect the experiences of postpartum women from low-income or rural regions with restricted access to internet platforms.

Lastly, the questionnaires are self-reported by the participants. The use of self-reported questionnaires to evaluate functional skills and depression raises the possibility of response bias. Participants may underreport or over-report symptoms owing to social desirability bias, memory recall problems, or anxiety addressing sensitive topics like depression and functional limitations.

5.5 RECOMMENDATION FOR FUTURE STUDY

Firstly, a longitudinal study can be conducted in future studies. The current cross-sectional design only offers a snapshot of the association between functional abilities and postpartum depression at a specific point in time. Longitudinal studies would allow researchers to examine the development of functional abilities and postpartum depression over a longer period, offering knowledge about the cause (Caruana et al., 2015). Such research would aid in identifying important intervention periods and long-term indicators of recovery or continued impairment, so enhancing the timing and style of postpartum care.

Besides that, to lessen the occurrence and severity of PPD, postpartum treatment should focus on restoring physical abilities and independence in daily life. Future research should investigate the effect of specific therapies, on increasing functional abilities and mental health outcomes. For example, pelvic floor strengthening exercises, yoga or physiotherapy programs for postpartum mothers. Studies could monitor outcomes such as pain reduction, increased mobility, and fluctuations in depression levels over time. Evidence-based physical activity guidelines for the postpartum period may encourage women to take part in participating in their recovery.

Furthermore, the current study is lack of ethnic and cultural diversity. This restricts its generalizability in multicultural Malaysia and other culturally varied environments. Ethnicity and culture can have a substantial impact on postpartum recovery because to variations in family support systems, traditional postpartum practices, and healthcare availability. Future study should intentionally include individuals from under-represented ethnic groups such Malays, Indians, and indigenous populations. This might include involvement in the community, partnership with hospitals and clinics in rural or distant regions, and surveys available in many languages.

Lastly, while this study concentrated solely at women experiencing cesarean sections, comparing results to women who had vaginal births might give useful information on how delivery mode effects recovery. Vaginal births frequently provide physical and psychological obstacles, including as pelvic floor injuries or quicker functional recovery. Comparative studies might evaluate functional capacities, intensity of pain, psychological outcomes, and overall quality of life in women using different delivery methods.

5.5 CONCLUSION

In conclusion, the null hypothesis (H0) is rejected therefore there is association between functional abilities level and the postpartum depression after giving birth following cesarean section. The prevalence of PPD in the women who participated in this study is 39.5% which is slightly higher due to the women are all giving birth through cesarean section. However, most of the participants had low functional abilities score and EPDS score. Key findings show that functional limitations have an important effect on the prevalence of postpartum depression, emphasizing the importance of early screening and management for better women health outcomes.

The study found that, while cesarean sections are medically required in many circumstances, they typically result in longer recovery times and functional restrictions, which may lead to increased incidence of PPD compared to vaginal births. The findings emphasize the need of including both physical rehabilitation and mental health assistance in postpartum care regimens, especially for caesarean women.

Finally, this study stated the issues that postpartum women encounter, particularly those who have undergone cesarean sections. By addressing functional limitations and their psychological consequences, healthcare practitioners can promote more thorough and effective postpartum care. The findings open the way

for further research into the complex relationships between physical rehabilitation and mental well-being, with the ultimate goal of improving postpartum women's quality of life throughout the world.

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APPENDIX A – ETHICAL APPROVAL LETTER

UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

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
1.	The Effect of Diaphragm Muscle Exercise on Dynamic Balance among Post-COVID-19 Older Adults in Klang Valley, Malaysi	Goh Le Yi	Ms Premala a/p Krishnan	
2.	Relationship Between Cognitive Domains, Dynamic Postural Stability and Fall Risk in Elderly Individuals with Mild Cognitive Impairment: A Pilot Study	Chaw Jade Wern		
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		

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research;

(2) Confidentiality of participants' personal data must be maintained; and

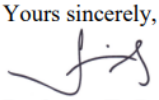
(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Should the students collect personal data of participants in their studies, please have the participants sign the attached Personal Data Protection Statement for records.

Thank you.

Yours sincerely,



Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, M. Kandiah Faculty of Medicine and Health Sciences
Director, Institute of Postgraduate Studies and Research

APPENDIX B – INFORMED CONSENT FORM & PERSONAL DATA PROTECTION STATEMENT

POST-NATAL FUNCTIONAL ABILITIES AND ITS ASSOCIATION WITH DEPRESSION FOLLOWING CESAREAN SECTION: A CROSS-SECTIONAL STUDY

Research Participant Information Sheet
Universiti Tunku Abdul Rahman
Faculty of Medicine and Health Sciences
Department of Physiotherapy
Bachelor of Physiotherapy (Honours)

Information Sheet to Participate in the Study
"POST-NATAL FUNCTIONAL ABILITIES AND ITS ASSOCIATION WITH DEPRESSION FOLLOWING CESAREAN SECTION: A CROSS-SECTIONAL STUDY"

Student Researcher: Seah Yi Shean
Department: Department of Physiotherapy
Course Name and Course Code: UMFD3026 Research Project
Year and Semester: Year 3 Semester 1
Course Coordinator: Ms. Nur Aqliliriana Binti Zainuddin

You are being asked to volunteer for this research study that is being conducted as part of the requirement to complete the above-mentioned course.
Please read this information sheet and contact me to ask any questions that you may have before agreeing to take part in this study.

Purpose of the Research Study
This study is aimed to determine the association between woman's functional abilities after giving birth and the prevalence of experiencing postpartum depression following cesarean section.
Approximately 425 postnatal mothers from the first two-weeks post-delivery up to 3 months.

Procedures
If you agree to be in this study, you will be asked to fill up a questionnaire regarding functional abilities and postpartum depression. This questionnaire will take 10-15 minutes to complete.

Length of Participation
One time participation only

Risks and Benefits
No risk will be involved throughout in the current study.

The benefits of this study include to determine whether the postpartum woman following cesarean section will experience postpartum depression because of the functional inabilities after giving birth. Besides that, this study can shape comprehensive care methods that address both physical and mental health requirements, ultimately boosting mother well-being and fostering improved postpartum recovery outcomes.

Confidentiality
No information that will make it possible to identify you, will be included in any reports to the University or in any publications.
Research records will be stored securely, and only approved researchers will have access to the records.

Voluntary Nature of the Study
Participation in this study is voluntary. If you withdraw or decline participation, you will not be penalized or lose benefits or services unrelated to the study. If you decide to participate, you may decline to answer any question and may choose to withdraw at any time.

Contacts and Questions
If you have any questions, clarifications, concerns, or complaints, about the research, the researcher conducting this study can be contacted at 012-4580116, or by email to ys2105414@1utar.my.

My Research Supervisor, Ms Nadia Safirah Binti Rusli, can be contacted by email with safirah@utar.edu.my.
If there are any inquiries, concerns or complaints about the research and there is a wish to talk to someone other than individuals on the research team.

Please keep this information sheet for your records.

Research Participant Consent Form

I have read the provided information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have, has been answered to my satisfaction. I understand that I will be given a copy of this form, and the researcher will keep another copy on file. I consent voluntarily to be a participant in this study.

Participant's nickname *

Your answer

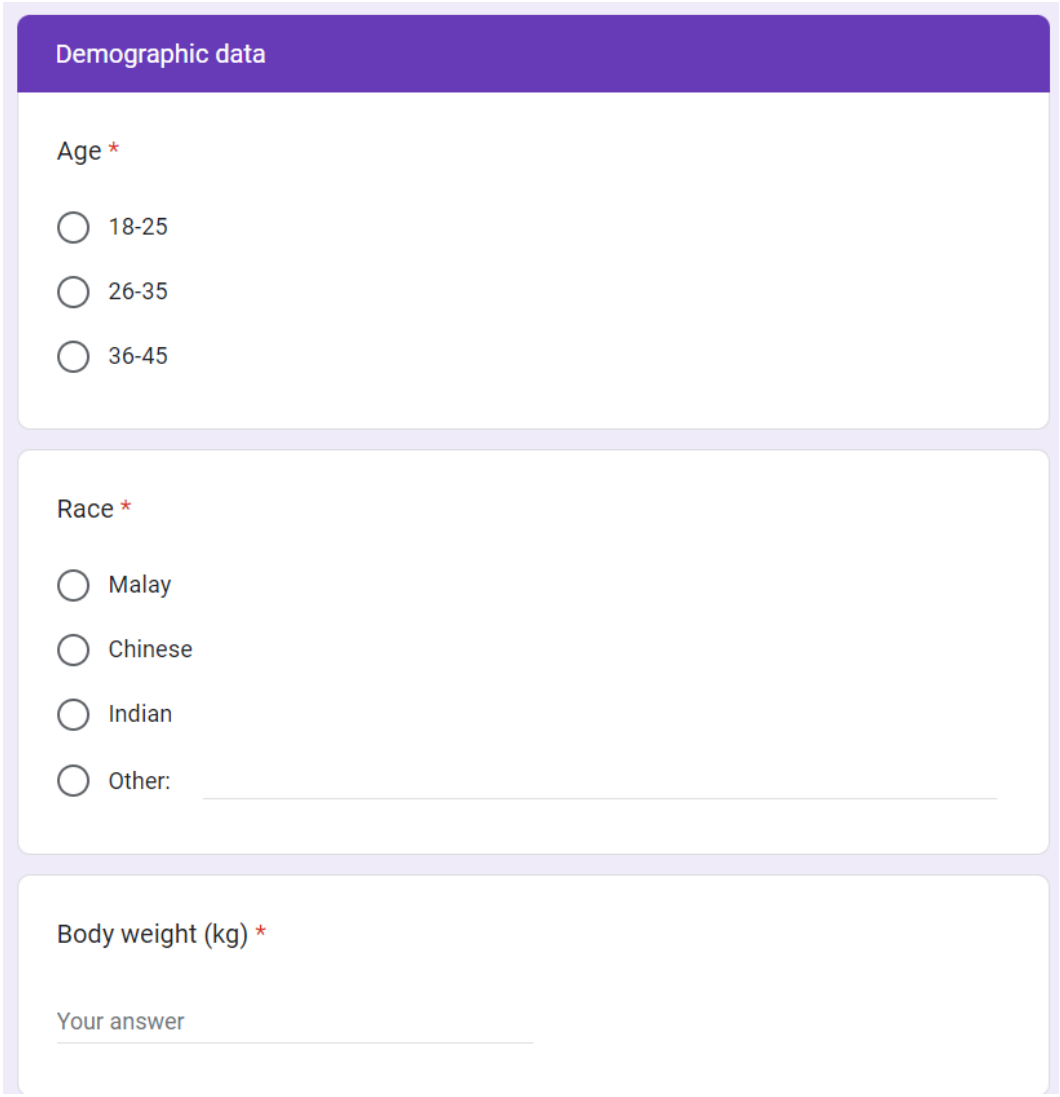
Personal email *

Your answer

I consent voluntarily to be a participant in this study. *

- ◯ Yes
- ◯ No

APPENDIX C – DEMOGRAPHIC DATA



Demographic data

Age *

- 18-25
- 26-35
- 36-45

Race *

- Malay
- Chinese
- Indian
- Other:

Body weight (kg) *

Your answer

Body height(cm) *

Your answer

Highest education level *

- ◯ Never been to school
- ◯ Primary level
- ◯ Secondary/ pre-university level
- ◯ University level
- ◯ Other: _____

Planned or unplanned pregnancy *

- ◯ Planned
- ◯ Unplanned

Have you experienced domestic violence prior/during pregnancy? *

- ◯ Yes
- ◯ No

APPENDIX D – FUNCTIONAL ABILITY ASSESSMENT

Postpartum Functional Assessment Questionnaire

This part of questionnaire is assessing your abilities in daily living.
Please rate from 0-3.
0 - the performance of activities without difficulty
1 - the performance of activities with minimal difficulty
2 - the performance of activities of moderate difficulty
3 - unable to perform independently activities/help is necessary

Turning to the side *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Sitting *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Standing *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Walking *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Personal care *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Drinking water *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Eating *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Sleeping *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Oral care *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Go to toilet *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

Child care *

	0	1	2	3	
Without difficulty	○	○	○	○	Inability to perform activities

APPENDIX E – EPDS

Edinburgh Postnatal Depression Scale

This scale is to assess your feelings after delivering your child.
Please rate your feelings.

I have been able to laugh and see the funny side of things *

- ◯ As much as I always could (0)
- ◯ Not quite so much now (1)
- ◯ Definitely not so much now (2)
- ◯ Not at all (3)

I have looked forward with enjoyment to things *

- ◯ As much as I ever did (0)
- ◯ Rather less than I used to (1)
- ◯ Definitely less than I used to (2)
- ◯ Hardly at all (3)

I have blamed myself unnecessarily when things went wrong *

- ◯ Yes, most of the time (3)
- ◯ Yes, some of the time (2)
- ◯ Not very often (1)
- ◯ No, never (0)

I have been anxious or worried for no good reason *

- ◯ No, not at all (0)
- ◯ Hardly ever (1)
- ◯ Yes, sometimes (2)
- ◯ Yes, very often (3)

I have felt scared or panicky for no good reason *

- ◯ Yes, quite a lot (3)
- ◯ Yes, sometimes (2)
- ◯ No, not much (1)
- ◯ No, not at all (0)

Things have been getting to me *

- ◯ Yes, most of the time I haven't been able to cope at all (3)
- ◯ Yes, sometimes I haven't been coping as well as usual (2)
- ◯ No, most of the time I have coped quite well (1)
- ◯ No, I have been coping as well as ever (0)

I have been so unhappy that I have had difficulty sleeping *

- ◯ Yes, most of the time (3)
- ◯ Yes, sometimes (2)
- ◯ No, not very often (1)
- ◯ No, not at all (0)

I have felt sad or miserable *

- ◯ Yes, most of the time (3)
- ◯ Yes, quite often (2)
- ◯ No, not very often (1)
- ◯ No, not at all (0)

I have been so unhappy that I have been crying *

- ◯ Yes, most of the time (3)
- ◯ Yes, quite often (2)
- ◯ Only occasionally (1)
- ◯ No, not at all (0)

The thought of harming myself has occurred to me *

- ◯ Yes, quite often (3)
- ◯ Sometimes (2)
- ◯ Hardly ever (1)
- ◯ Never (0)

APPENDIX F – NORMALITY TEST

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Functional Ability	.118	339	.000	.925	339	.000
EPDS Score	.078	339	.000	.984	339	.001

a. Lilliefors Significance Correction

APPENDIX G – RELIABILITY TEST

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Turning to the side	7.15	38.057	.677	.899
Sitting	7.49	39.191	.699	.898
Standing	7.40	38.094	.742	.895
Walking	7.36	38.308	.722	.896
Personal Care	7.40	37.649	.778	.893
Drinking Water	7.89	41.295	.595	.903
Eating	7.72	40.633	.556	.905
Sleeping	7.22	38.917	.591	.904
Oral Care	7.81	41.520	.575	.904
Go To Toilet	7.32	37.465	.748	.895
Child Care	7.04	38.925	.552	.907

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I have been able to laugh and see the funny side of things	10.16	27.091	.412	.864
I have looked forward with enjoyment to things	10.10	26.759	.496	.858
I have blamed myself unnecessarily when things went wrong	9.14	25.692	.520	.857
I have been anxious or worried for no good reason	9.16	25.446	.515	.858
I have felt scared or panicky for no good reason	9.29	24.284	.661	.845
Things have been getting to me	9.18	25.895	.561	.854
I have been so unhappy that I have had difficulty sleeping	9.45	24.526	.602	.850
I have felt sad or miserable	9.53	24.120	.754	.837
I have been so unhappy that I have been crying	9.59	24.356	.698	.842
The thought of harming myself has occurred to me	10.09	25.456	.560	.854

APPENDIX H – TURNITIN REPORT

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ORIGINALITY REPORT

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