

## Self-compassion and postpartum depression in mothers: A meta-analysis

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### Abstract

*Purpose:* The aim of this study was to provide evidence on a strong relationship between self-compassion and postpartum depression. In addition, it was also to synthesize evidence of the application of population, intervention, comparison, and outcome (PICO) procedures quantitatively. Previous researches demonstrated that low self-compassion was a significant factor in postpartum mothers experiencing psychological distress. This is due to a lack of understanding and appreciation on the positive aspects of oneself that leads to the onset of postpartum depression.

*Method:* This study used a meta-analysis with a statistical method that combined the results of several studies on a specific research question. A meta-analysis provides a comprehensive summary of all evidence related to the topic that employed to more accurate and reliable conclusions than only from a single study. The researchers conducted a comprehensive search for databases, include Scopus, Web of Science, Science Direct, and Proquest from February 2023 to July 2023.

*Result:* A total of nine articles were identified for inclusion in the review from 3320 articles. The analysis using the DerSinomian and Laird (DL) estimator model resulted an estimated effect size of 0.586 ( $p < 0.001$ ; 95% CI = -0.668 - -0.504). Although the meta-analysis results showed a strong negative correlation between the variables, heterogeneity and the risk of publication bias must be considered.

*Conclusion:* The meta-analysis of self-compassion and postpartum depression variables indicates a negative correlation with a moderate effect size category. It is in accordance with the findings of nine articles that also demonstrated a negative correlation.

**Keywords:** *self-compassion; postpartum depression; mother*

### INTRODUCTION

Postpartum depression (PPD), which refers to depressive episodes that are prevalent following childbirth, is a common and serious mental health problem that affects 8 % to 26 % of women worldwide and is a major public health problem (Shorey et al., 2018). Childbirth is a process of being a mother that involves a lot of new developmental tasks and responsibilities, include caring a baby along day, bonding with a baby, adapting to a relationship change with a partner, developing identity as a mother, finding and getting support, and balancing with other life activities (Nelson, 2003). Psychological changes affect negative emotional reactions due to excessive environmental demands in which mothers have limited resources. The inability to manage resources, tiredness, prolonged sadness, and inability to play a role as a mother, and other

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dysfunctional symptoms can trigger stress and anxiety that impacts on the mental health of mothers and infants (Lupien et al., 2009; Feeney, 2003; Britton, 2011). Although postpartum conditions increased life satisfaction, it is also decreased in the following months (Luhmann, 2012).

Other risk factors related to postpartum depression symptoms, include maternal pregnancy at a very young age, low education, poor marriage conditions, low family economic status, unpleasant things during life, lack of social support, and the onset of anxiety or depression during pregnancy (O'Hara & McCabe, 2013; Dagher & Shenassa, 2012; Norhayati et al., 2015). Postpartum depression was found 17.22% of 80 countries and 13.53% of 565 respondents in Asia (Wang et al., 2021). Depression can occur over a span of a year after childbirth and can be sustained for several years. Negative impacts on mothers and infants when experiencing postpartum depression, include the occurrence of postpartum mental disorders, infanticide, and even suicide, as well as the emergence of emotional and behavioral disorders in infants (Gavin et al., 2005; Clare & Yeh, 2012; Comtois et al., 2008; Goodman et al., 2011).

The results of the study conducted by Pedro et al. (2019) related to the relationship of self-criticism and negative automatic thoughts on postpartum depression symptoms moderated by self-compassion showed that there was the impact of self-criticism on postpartum depression with respondents 686 and 12 months after childbirth. The higher rate of self-criticism, thus the higher rate of postpartum depression that was moderated by the low rate of self-compassion. It was found that the dimension of self-compassion was able to avoid the occurrence of inner rumination that impacted the emergence of negative thoughts (Psychogiou et al., 2016). When women have more self-compassion, thus the negative impact of self-criticism on postpartum depression can be decreased, less negative thinking, a lower self-assessment tendency, and ability to accept the condition as part of the parenting experience as mothers (Cree, 2016).

Self-compassion is a mental process that occurs within oneself on being wise and kind to themselves with all the shortcomings (K. D. Neff, 2012). A study revealed that 172 respondents with depression showed lower self-compassion compared to 120 respondents without depression through the measurement of self-compassion by Neff (Krieger et al., 2013). A low self-compassion is a factor in the occurrence of a lack of readiness as a mother, inadequate knowledge on childcare, susceptibility to stress, considering the only one in the toughest phase after having children (Temel & Atalay, 2020). Additional explanations for respondents with depression are having a negative correlation with self-compassion dimensions, include self-kindness, common humanity, mindfulness, and also showing positive relationships with other self-compassion dimensions, include self-judgement, isolation, and overidentification. Other findings suggest a significant positive relationship between psychological flexibility, low self-judgement, and self-compassion in respondents focusing on acceptance processes (Saleh, 2020).

Neff (2003) defined self-compassion as the ability of oneself to be touched and opened to the suffering, rather than ignoring or distancing from it, thus it could increase their desires to eliminate the suffering and heal themselves with a good virtue. K. Neff (2003) also stated that self-compassion refers to an attitude to be able to involve the process of understanding oneself without raising criticism of the suffering, failure, or inability experienced by understanding that it is all part of life.

Neff (2003) classified self-compassion into three components: self-kindness vs self-judgement, common humanity vs isolation, and mindfulness vs overidentification. Self-kindness refers to the tendency to nurture and admit oneself rather than hard judge to oneself; common humanity admits that everyone has problems, makes mistakes and feels incapable in some way than feeling isolated; mindfulness involves attempting to realize the present experience in a clear and balanced way so that none is ignored to like oneself rather than excessive identification. These three components related to one another in creating self-compassion.

This study aims to find out how the relationship between self-compassion and postpartum depression in postpartum women. The novelty of this study is to assess the consistency of findings across multiple studies and identify sources of heterogeneity. In addition, it is also to detect significant effects with research results through meta-analysis related to low self-compassion that triggers postpartum depression. This study conducts a meta-analysis of the findings related to the relationship between self-compassion and postpartum depression. A meta-analysis is a review approach by systematically synthesizing data from different studies and calculated estimated effect size using statistical methods (Egger & Smith, 1997). The goal of this meta-analysis is to get estimate effect size from self-compassion and postpartum depression, thus it provides a more convincing evidence to the contribution of self-compassion on the mental health of postpartum women, especially in postpartum phases. A meta-analysis follows the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (Page et al., 2021).

## **METHOD**

### **Data Sources and Search Strategies**

The search for relevant articles was based on four databases: Scopus, Web of Science, Science Direct, and Proquest which is display in Table 1. This meta-analysis follows the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (Page et al., 2021). Researchers used participant, intervention, comparison, outcome (PICO) which is display in Table 2, as the basis for selection of criteria to determine research restrictions (Higgins et al., 2023).

**Table 1**  
*Search And Keywords*

No.	Database	Filter	Search Term	Results
1	Scopus	Research article	self-compassion AND postpartum OR postnatal OR maternal AND depressive OR depression	87
2	Science Direct	Research article	self-compassion AND postpartum OR postnatal OR maternal AND depressive OR depression	2973
3	Web of science	Research article	self-compassion AND (postpartum OR postnatal OR maternal) AND (depressive OR depression)	72
4	Proquest	Research article, theses	self-compassion AND postpartum OR postnatal OR maternal AND depressive OR depression	188
Total				3320

**Table 2**

*Criteria of PICO*

Participant	Intervention	Comparison	Outcome
Mothers of postpartum	self-compassion	-	posptartum depression

**Inclusion Criteria**

The analyzed articles were the articles that met the following criterias:

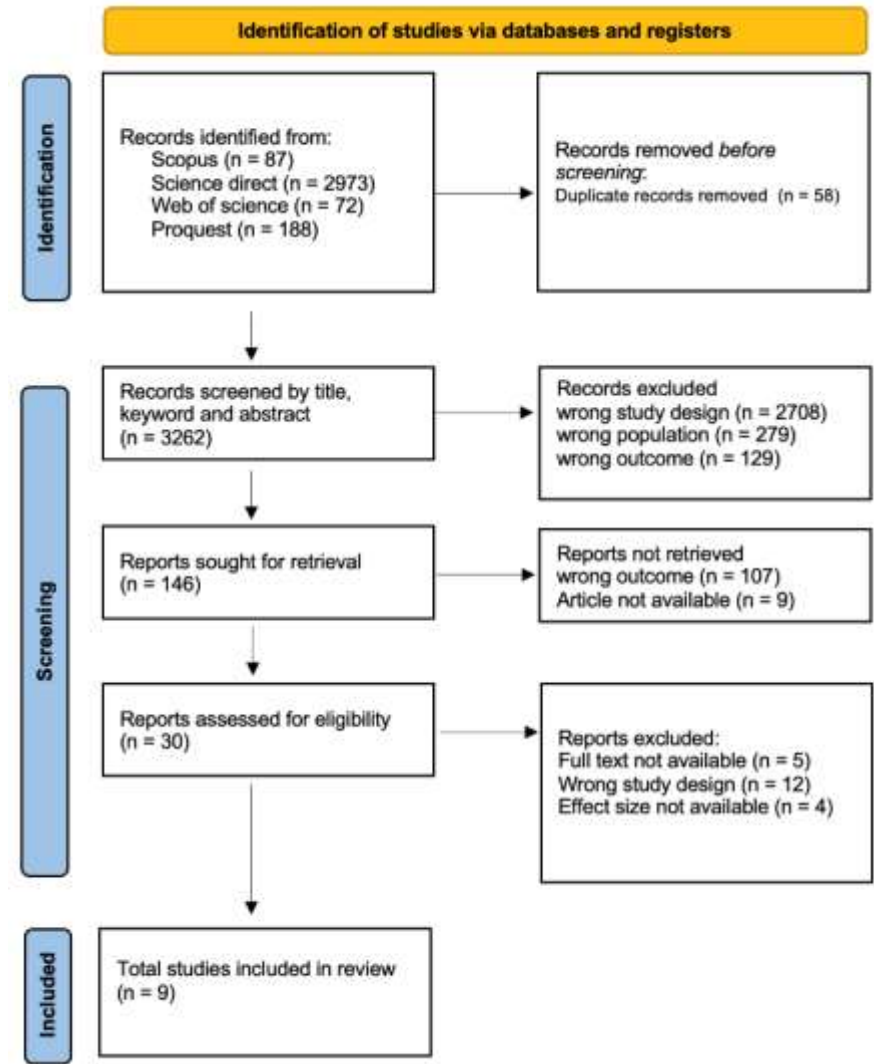
1. Empirical studies using quantitative approaches and published in peer-reviewed articles, proceedings, or thesis/disertation.
2. The participants of the study were postpartum mothers.
3. Measuring self-compassion and postpartum depression using valid measurement instruments.
4. Published in English or Indonesian.
5. Reporting effect size or calculable measurement data into effect size.
6. Full text article is accessible.

**Selection and extraction**

The potential articles that have been downloaded from the databases, then selected using the Rayyan app (Ouzzani et al., 2016). The initial step of the selection process is to identify the duplicated article. The next step is screening consisting of : 1) screening title and abstract and 2) screening full-text article. The steps and results were presented in Figure 1 using PRISMA.

Data extracted from qualified literature include: author's name, title of article, year of publication, type of article, participants' characteristics (sample number, age, gender), instrument or measurement parameters, data and statistical analysis results are mainly related to correlation values, average values and standard deviation for each variable. Specifically, if statistical data information did not provide data regarding correlation coefficient, the researchers seek for available statistical data to be processed or converted to correlation coefficient. If the statistical data available could not be processed or converted into correlation coefficient, the article were exclosed. Data extrasions were recorded using Microsoft Excel.

**Figure 1**  
*PRISMA*



**Quality Assessment**

All articles that met inclusion criteria were included in the quality assessment process, which is displayed in Table 3. Mixed Method Appraisal Tool (MMAT) version 2018 (Nha HONG et al., 2018), was used as a tool for quality assessment. MMAT had also been used as a quality assessment on the previous meta-analysis (Chen et al., 2021). In MMAT, there were five assessment criteria with each criteria rated 20%. If the article did not meet the whole criteria, it would be rated as 0 while if it met the criteria rated 100%. In this quality assessment, low quality article (rated 20% or lower) were not included in the meta-analysis process.

**Table 3**  
*Quality assessment*

No.	Referensi	3.1	3.2	3.3	3.4	3.5	Persentase
1	Fonseca A, & Maria Cristina C (2017)	Yes	Yes	Yes	No	Yes	80%
2	Andrei Am et al. (2023)	Yes	Yes	No	No	Yes	60%

No.	Referensi	3.1	3.2	3.3	3.4	3.5	Persentase
3	Carona et al. (2022)	Yes	Yes	Yes	No	Yes	80%
4	Daniela et al (2022)	Yes	Yes	No	Yes	Yes	80%
5	Monteiro F, et al (2019)	Yes	Yes	No	No	Yes	80%
6	Whittingham K, Amy E. Mitchell (2023)	Yes	Yes	No	No	Yes	60%
7	Pedroa L, et al (2019)	Yes	Yes	No	No	Yes	60%
8	Oh Hee-ju, Kim Seok-seon (2022)	Yes	Yes	No	No	Yes	60%
9	Úna et al (2022)	Yes	Yes	Yes	No	Yes	80%

3.1. Are the participants representative of the target population? 3.2. Are measurements appropriate regarding both the outcome and intervention? 3.3. Are there complete outcome data? 3.4. Are the confounders accounted for in the design and analysis? 3.5. During the study period, is the intervention administered as intended?

## RESULT

### Characteristics of the Study

The summary of information about articles were presented in Table 4. The results of the study were published in 2017 to 2023. Research has been conducted in several countries, include Portugal, Australia, Seoul, United Kingdom. The total of nine articles was 4356 participants (mean=484; Md=387; SD=341.69) with the smallest number of 141 participants (Oh & Kim, 2022) and the largest number of 1053 participants (Carona et al., 2022). Participant criteria was postpartum women who had babies up to 12 months old. Eight studies involved postpartum women as participants and one study involved parents who had infants under 1 year old with premature conditions.

**Table 4**  
*Summary of Research Information in the Meta-Analysis*

No	Reference	Title of article	Research Design	Participant characteristics		Raw r	Self-compassion Instrument	Postpartum Depression Instrument
				N	Participant type			
1.	Fonseca A, & Maria Cristina C (2017)	Exploring the paths between dysfunctional attitudes towards motherhood and postpartum depressive symptoms: The moderating role of self-compassion	Multiple regression	387	Mothers of postpartum	-0,58	SCS (Neff, 2003b)	EPDS
2.	Andrei Am et al. (2023)	Self-Criticism and Self-Compassion as Mediators of the Relationship between Alexithymia and Postpartum Depressive Symptoms	Cross Sectional Design	307	Mothers of postpartum with baby's age of 4 weeks until 1 year	-0.54	na	na

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No	Reference	Title of article	Research Design	Participant characteristics		Raw r	Self-compassion Instrument	Postpartum Depression Instrument
				N	Participant type			
3.	Carona et al. (2022)	Self-compassion and complete perinatal mental health in women at high risk for postpartum depression: The mediating role of emotion regulation difficulties	Cross-Sectional, Correlational Study	1053	Mothers who have high risk postpartum depression	-0.57	na	na
4.	Fernandes DV, et al (2022)	Self-compassion and mindful parenting among postpartum mothers during the COVID-19 pandemic: The role of depressive and anxious symptoms	A Cross-Sectional Design	977	Mothers of postpartum with baby's age until 6 months	-0.60	Self-Compassion Scale (SCS-SF;Castilho et al., 2015; Raes et al., 2011)	EPDS (Cox et al., 1987; Figueiredo, 1997)
5.	Monteiro F, et al (2019)	What protects at-risk postpartum women from developing depressive and anxiety symptoms? The role of acceptance-focused processes and self-compassion	The Cross-Sectional Design	185	Mothers of postpartum	-0.59	The Self-Compassion Scale–Short Form (SCS-SF; Raes et al., 2011; PV: Castilho et al., 2015)	EPDS (Cox et al., 1987; PV: Areias et al., 1996)
6.	Whittingham K, Amy E. Mitchell (2023)	Postnatal traumatic symptoms and shame: A cross-sectional study examining the role of birth, breastfeeding, psychological flexibility and self-compassion	A Cross-Sectional Design	405	Mothers of postpartum within 3 months - 23 months, have age $\geq 18$ years old, and lived in Australia	-0.31	Self-Compassion Scale–Short Form (Raes, Pommier, Neff, & Van Gucht, 2011)	na
7.	Pedroa L, et al (2019)	Self-criticism, negative automatic thoughts and postpartum depressive symptoms: the buffering effect of self-compassion	A Cross-Sectional Online Survey	686	Mothers of postpartum within 12 months.	-0.52	Self-compassion scale (SCS; Castilho, Pinto-Gouveia, & Duarte, 2015; Neff, 2003b)	EPDS (Areias, Kumar, Barros, & Figueiredo, 1996; Cox, Holden, & Sagovsky, 1987)

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No	Reference	Title of article	Research Design	Participant characteristics		Raw r	Self-compassion Instrument	Postpartum Depression Instrument
				N	Participant type			
8.	Oh Hee-ju1, Kim Seok-seon (2022)	Effects of maternal parenting stress, sleep quality, self-compassion, and family relationships on postpartum depression	Multiple regression	141	Mothers of postpartum within 6 months	-0.60	the Self-Compassion Passion Scale (SCS) developed by Neff	(Korean version Edinburgh Postpartum Depression Scale, K-EPDS)
9.	Úna O'Boyle-Finnegan, et al (2022)	Exploring the contribution of psychological flexibility processes and self-compassion to depression, anxiety and adjustment in parents of preterm infants	Multiple Regression	215	Parents with premature baby	-0.38	Self-compassion Scale-Short Form (Raes et al., 2011).	Parenting Stress Scale

**Heterogeneity Test**

The results of the analysis of heterogeneity test using the DerSimonian-Laird method showed that the nine effect size of the analyzed study were classified as heterogeneous ( $Q = 54.761$ ;  $I^2 = 85.39\%$ ,  $p < 0,001$ ). For this reason, the researchers used random effect models assuming varied size as well as estimated the average effect and significance of nine studies. The results of the analysis also indicated that self-compassion affected high-low postpartum depression in postpartum women. Heterogeneity test result were displayed in Table 5.

**Table 5**  
*Heterogeneity Test Result*

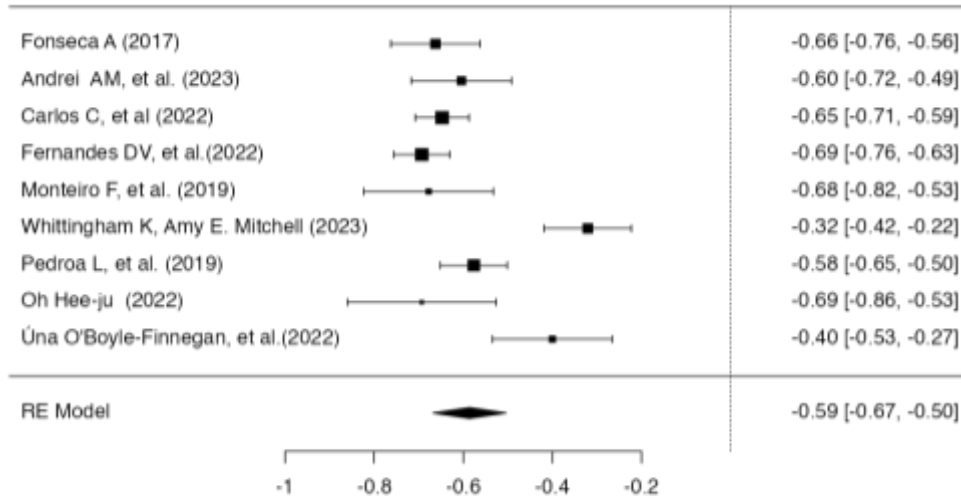
Tau	Tau <sup>2</sup>	I <sup>2</sup>	H <sup>2</sup>	R <sup>2</sup>	df	Q	p
0.114	0.0129 (SE= 0.0086 )	85.39%	6.845	.	8.000	54.761	< .001

**Forest Plot**

From the images of forest plot were displayed in figure 2, it can be observed that all analyzed studies had varied effect size from -0.38 to -0.69 and all of them had negative correlations. In addition, the rate of pooled effect size is -0.59, but it did not caused by the high heterogeneity value as of 85.39%. It was occurred because of the used measurement method, the varied research design, and the low quality of the research design. Therefore, it was necessary to consider the cause of heterogeneity by performing a meta-regression. The most closely related research with effect size rate was Pedro et al. (2019).



**Figure 2**  
Forest Plot



**Summary Effect**

The result of a meta-analysis with random effect model method was to find out the effect size self-compassion with postpartum depression in postpartum women that is stated in the following table 6. The effect size estimated of -0.586 ( $p < 0.001$ ; 95% CI = -0.668 – -0.504), thus there was a strong evidence that self-compassion and postpartum depression had a negative correlation. It was relevant to all results of the findings that showed a negative correlation or  $r < 0$ . According to Cohen (1992), the estimation of effect size in this meta-analysis include in the medium category ( $r = -0.586$ ). The results of the study from Pedro et al. (2019) were the closest to the estimated effect size ( $r = -0.58$ ,  $p < 0.001$ , 95% CI: -0.65 - -0.50).

**Table 6**

*Random-Effects Model (k = 9)*

	Estimate	se	Z	p	CI Lower Bound	CI Upper Bound
Intercept	-0.586	0.0420	-13.9	< .001	-0.668	-0.504

Note. Tau<sup>2</sup> Estimator: DerSimonian-Laird

**Evaluation of Publication Bias**

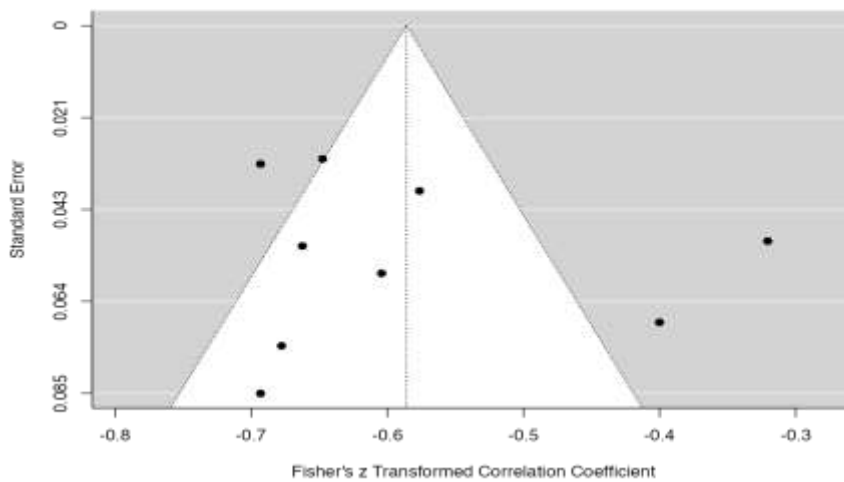
The evaluation results of the publication bias were shown through the funnel plot using The Jamovi Project (2022) were displayed in figure 3. Egger’s regression, Fail-safe N analysis, Begg & Mazumdar Rank Correlation were needed to find out if Funnel plots showed asymmetrical or symmetrical forms and showed whether publication bias occurred in the study. The results of Egger’s regression indicated value 0.208 and  $p > 0.05$  i.e.  $p = 0.835$  were displayed in table 7, meaning that high p-value indicated insufficient evidence to conclude the existence of publication bias based on Egger’s regression. While if it was analyzed with Fail-Safe N rate, 4523.000 with  $p < 0.001$ , meaning that the minimum number of studies were undetected and needed to change the conclusion of the effect size of a meta-analysis of 4523.000 articles. Fail-Safe N rate also meant that the results of the analysis were strong enough and not significantly affected by publication bias.

**Table 7**  
*Publication Bias Assessment*

Test Name	value	p
Fail-Safe N	4523.000	< .001
Begg and Mazumdar Rank Correlation	0.167	0.612
Egger's Regression	0.208	0.835
Trim and Fill Number of Studies	0.000	.

Note. Fail-safe N Calculation Using the Rosenthal Approach

**Figure 3**  
*Funnel Plot*



**DISCUSSION**

Based on the correlation coefficient on all results of the study stated that self-compassion and postpartum depression had a negative correlation. The results of this meta-analysis confirmed that self-compassion and postpartum depression had a negative correlation with the effect size in the medium category. A meta-analysis was supported by scoping review by Tavares et al. (2023) that revealed self-compassion was a predictor or indicator of mental health in adults. Research on self-compassion on the mental health of women in the postpartum phase was increased and one study revealed that self-compassion was an emotional regulation strategy in the phase (Pedro et al., 2019). Other studies by Monteiro et al. (2019) and Felder et al. (2016) showed that self-compassion had negative correlation with postpartum depression and impacted to childcare, emotional neglect, and low self-compassion. It can be said that self-compassion is one of the important determinants in women who are in the postpartum phase.

Regarding to the visualization of forest plot, Oh & Kim (2022) had the widest CI range. The study had different characteristics compared to other studies, include the number of small participants (n = 141) compared to other studies and involved other variables in its measurements except self-compassion, namely the effects of childcare stress, sleep quality, and family relationship. In addition, Monteiro et al. (2019) also had a wide range of CI and effect size that was far above pooled effect size. It was because the characteristics of participants had been assessed at risk of

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postpartum depression or a history of anxiety and depression. Furthermore, the study also measured the role of acceptance-focused processes except self-compassion.

Based on the explanation, there was a possibility of differences on relationship between self-compassion and postpartum depression in special population. Since there was only a few research on self-compassion and postpartum depression in normal postpartum women population after childbirth, thus further research and re-examination with characteristics of more specific participants were needed. The diverse characteristics of participants affected to the magnitude of effect size as the population of postpartum women also varied, such as infant conditions, whether normal or with special problems, mother conditions, whether normal or diagnosed with a history of anxiety or depression, with a Comorbid disease or not, or other characteristics on minority.

From the results of quality assessment, it was observed that most studies were assessed to have adequate outdoor data. Andrei et al. (2023), Whittingham & Mitchell (2023), Pedro et al. (2019) and Oh & Kim (2022) had a response rate in the 60% group as the data results were incomplete and less identifiable confounder affecting the relationship between variables. Incomplete data triggered bias and affected the validity and reliability of research conclusions. In O'Boyle-Finnegan et al. (2022) characteristics of participants were different from others, i.e. parents of premature infants. Although there was different characteristics of participants from others, the quality of the assessment showed a rate as of 80% which is a good category. From the study, it was found that self-compassion was needed to understand the role as parents. Although there was no significant relationship between self-compassion and depression, self-compassion was an attempt of oneself to heal in order to decrease unnecessary stress. The researches included in a meta-analysis were from four databases only. It was noted that the researchers did not use the PsycInfo database known as a database containing many results of research in psychology. The researchers also did not perform any obsessive search in grey literature databases, such as Google Scholar. Therefore, there was a possibility of articles that was out of a meta-analysis process.

Another difference found in this meta-analysis is the measurement of self-compassion that varied in nine articles. Some articles used self-compassion scale by Neff consisting of 26 items, i.e. Fonseca & Canavarro (2018), Pedro et al. (2019) and Oh & Kim (2022) However, some articles used self-compassion scale-short form, i.e. Fernandes et al. (2023), Monteiro et al. (2019), Whittingham & Mitchell (2023), O'Boyle-Finnegan et al. (2022). The differences between the use of those measuring device were vulnerable to information bias because there was no information on the measured variables. In addition, it could also produce differences in effect size and difference in interpretation, thus the synthesis of finding became more complex. The role of self-compassion as a moderator between dysfunctional attitudes towards motherhood and postpartum depressive symptoms showed that women with clinical symptoms of depression had dysfunctional behavior in performing the role of a mother triggering negative thoughts to themselves and the surrounding environment (Fonseca & Canavarro, 2018). Unhealthy beliefs about views or judgments from other people towards the role of a mother interpreted by respondents are closely related to the higher rates of depression symptoms and it was affected through both general and special thoughts after childbirth related to metacognitive assessment of the content of the personal mind. It was supported by the results of research that it could be happened if women had low or moderate levels of self-compassion. It is in accordance with Monteiro et al. (2019) that self-compassion showed positive relationship to high psychological flexibility and nonjudgmental appraisal of thought, thus symptoms of depression and anxiety could also be at low levels. The findings of the study emphasized that postpartum women with

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more self-conscious emotions could suppress and control unwanted thoughts or emotions. In this study, the measurement of self-compassion was completed by the measurement of acceptance-focused processes as protective variables in overcoming anxiety and depression. From those studies, it was assumed that the role of self-compassion could suppress the occurrence of postpartum depression if it had positive relationship with acceptance-focused process, psychological flexibility, nonjudgmental appraisal of thought. In addition, high self-compassion had negative correlation with nonjudgmental appraisal of thought, thus it emphasized low levels of anxiety and postpartum depression.

Based on this discussion, the researchers stated some weaknesses that must be considered by future researchers. Firstly, there is a limited number of previous studies related to self-compassion and postpartum depression, thus the obtained data is limited and impacted the lack of descriptions related to the relationship between them. Secondly, the data are heterogeneous, thus it is necessary to carefully generalize it. The variety of measuring tools and varied criteria of respondents as well as control in subsequent research, thus it can specifically describe the contribution of self-compassion on postpartum depression with participants of postpartum women.

## CONCLUSION

Based on a meta-analysis performed on self-compassion and postpartum depression variables, it shows a negative correlation in effect size of the medium category. It is in accordance with nine articles showing a negative correlation. The measurement of MAJOR – Meta-Analysis in JAMOVI software shows heterogeneity value  $I^2 = 85.39\%$  meaning that this study has a high heterogeneity, thus this study is suggested to continue with systematic literature review methods. Self-compassion of every postpartum woman will be different from each other along with the involvement of other psychological variables. Thus, it affects the occurrence or absence of postpartum women depression.

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