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## Suicidal ideation in the perinatal period: A systematic review

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## **Suicidal Ideation in the Perinatal Period: A Systematic Review**

### **Abstract**

**Objective:** To examine literature surrounding suicidal ideation and suicidality in the perinatal period

**Design:** Systematic Literature Review of published 15 research studies

**Findings:** There is a scarcity of prospective studies conducted in suicidal ideation during the perinatal period. More research is needed to ensure childbearing women at risk of suicidal ideation during pregnancy receive the appropriate care and maternity services required to support them throughout this period.

**Key conclusions:** Midwives play an important role in screening women for possible emotional distress and mood disorders during pregnancy. Therefore, midwives need to have knowledge of risk factors so vulnerable women are monitored and supportive maternity services can be implemented if indicated.

**Implications for practice:** Suicidal ideation can have serious consequences for the women and the product if left untreated. Screening for suicidal ideation, antenatal and postnatal depression is imperative. Women with a pre-existing mental health disorders are a particularly vulnerable population group and should be monitored closely for suicidal ideation. Women who experience intimate partner violence or are from low socioeconomic backgrounds also present a risk of suicidal ideation, all of which require complex mental-health care.

## **1.1 Introduction**

Suicide is one of the major contenders to the global mortality burden with approximately one million people dying annually from suicide (Turecki & Brent, 2016). Suicide represents a major public health problem, particularly during pregnancy and the postpartum period, where women are considered more vulnerable to mood disorders, suicidal ideation or the onset of a psychiatric illness (Orsolini et al., 2016). Contrary to the belief that pregnancy may be a protective factor against suicide, there is concern relating to the increased incidence of suicidal ideation in pregnant women (Gagliardi, Genovese, & Betos, 2014). Suicidal ideation is currently reported as a common complication of pregnancy (Gelaye, Kajeepeta, & Williams, 2016), and has been recognised as a predictor for suicidal attempts and completed suicide, informing the need for better understanding of this issue during pregnancy and the postpartum period.

Suicidal behaviour during the antepartum period can have long lasting adverse health outcomes that extend beyond the peripartum period, effecting both maternal and neonatal wellbeing. Serious injury during the antepartum period from failed suicide attempts can also have devastating implications for the woman and fetus (Gelaye et al., 2016). Untreated depression in pregnancy can also have adverse effects on fetal development including fetal hyperactivity; irregular heart rate, increased cortisol and norepinephrine levels and reduced tone, that may require neonatal admission to a special care nursery (Gentile, 2017). Women with untreated depression in pregnancy are at increased risk of vaginal bleeding, miscarriage, premature birth, fetal death in utero (FDIU) and preclampsia (Larsen et al., 2015). During the postnatal period women diagnosed with depression may experience difficulty bonding with the neonate or display reduced breastfeeding initiatives (Schmidt, Seehagen, Vocks, Schneider, & Teismann, 2016). It has been reported neonates of mothers diagnosed with depression are fussy, have poor maternal attachment and are observed to exhibit behavioural problems (Dennis & Dowswell, 2013). Recent literature provides evidence that children

are at increased risk of developing a conduct disorder if exposed to their mother's postnatal depression (Glasheen et al., 2013).

Suicidal ideation in pregnancy is associated with a range of risk factors that contribute to a later diagnosis of post partum depression (Gavin, Tabb, Melville, Guo, & Katon, 2011). A history of anxiety, depression or other mental disorders, stress, smoking or lack of paternal involvement can place a woman at increased risk of suicidal ideation (Alhusen, Frohman, & Purcell, 2015). Women also diagnosed with severe mental disorders (such as schizophrenia or bipolar disorder) are more likely to complete suicide during pregnancy (Khalifeh, Brauer, Toulmin, & Howard, 2015).

## **1.2 Aims**

The aims of this review are to explore suicidal ideation in the perinatal period and determine common risk factors and themes from the literature. Mental health in pregnancy is a phenomenon affecting both the woman and the fetus. Antenatal screening and early intervention is necessary to improve maternal and fetal wellbeing, and prevent adverse events occurring.

## **2.1 Methods**

A review of quantitative research was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Moher, Liberati, Tetziaff, & Altman, 2009). We refer below to the review questions, search strategy, screening process, data extraction and quality appraisal of literature in line with our protocol.

## **2.2 Review question development**

One question was developed to identify, evaluate and synthesise literature relevant to this topic. The review question along with inclusion and exclusion criteria was used to reduce bias (Aromataris & Pearson, 2014). The mnemonic PICOS (Population, Intervention, Comparison, Outcome measures and Study) for Quantitative studies was

used to refine the review questions, from which inclusion and exclusion criteria were set (Methley, Campbell, Chew-Graham, McNally, & Cheraghi-Sohi, 2014).

### 2.3 PICO statement

Table 1. The following PICOS elements were used for quantitative studies:

Population	Intervention	Comparator	Outcome
Pregnant and postpartum women	Suicidal ideation / self-harm/ suicide	Women with a psychiatric diagnosis/ mental health diagnosis	Risk factors/ Suicidal ideation in pregnancy/ Suicidal ideation postpartum/ Screening tools

### 2.4 Review questions

The following review questions were created to establish the aims and outcomes of the systematic review:

1. What are the risk factors for women experiencing suicidal ideation in the perinatal period?
2. What are the screening tools used to identify suicidal ideation in the perinatal period or pregnancy?

### 2.5 Inclusion and exclusion

The following inclusion and exclusion criterion were adhered to for this review:

*Inclusion Criteria:*

- Full text articles, peer reviewed and included the key words suicidal ideation, suicidality or self-harm
- Perinatal pregnancy, inclusive of the antenatal and postnatal periods
- Primary research articles
- Articles of English language.
- Quantitative articles
- Studies dated between 2013-2018

- Articles relating to females aged 18 years and older

*Exclusion criteria:*

- studies conducted in other than English
- Discussion papers and systematic reviews
- Studies discussing perinatal mental health issues
- Articles relating to females under the age of 18

### **3.1 Search strategy**

The search strategy was conducted in March 2018 and included observational and descriptive studies, cross-sectional, prospective cohort, retrospective cohort and case control studies. A search strategy derived from the key words as listed in the logic grid was created by including the use of controlled vocabulary terms as identified in Table 3. The search strategy was undertaken using the following databases; SCOPUS, PUBMED and CINAHL full text articles. Retrieved literature was scanned and screened for relevance and comparison against the selection criteria, with reference lists of all included studies searched for additional publications relevant to the review topic. The search strategy guided the retrieval of all relevant literature and using a methodological approach provided clear structure and authenticity of the search inquiry, to substantiate the rigor of this review and transferability of the process (Kable, Pich, & Maslin-Prothero, 2012).

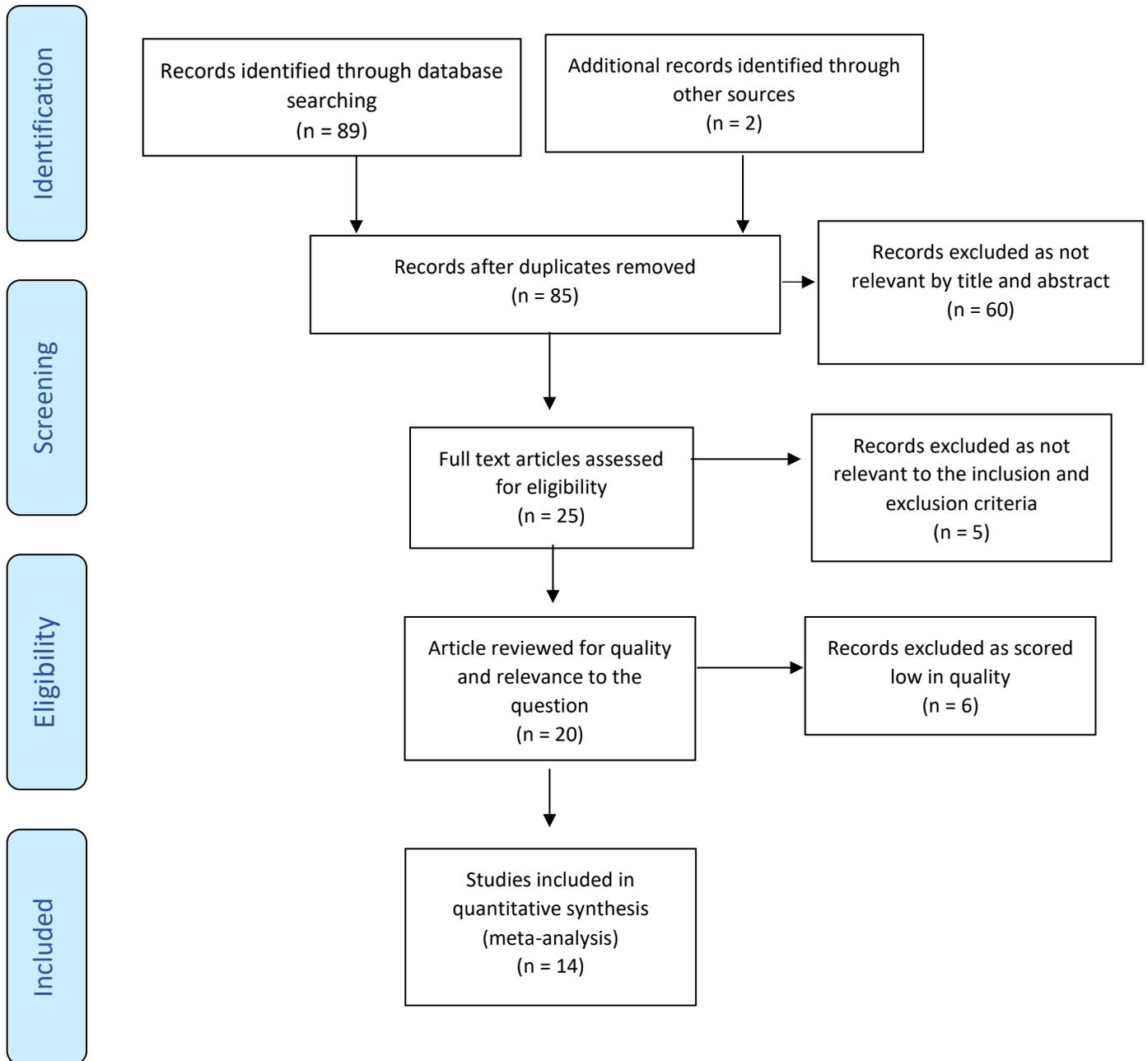
### 3.1.2 Table 3. logic grid

Population	Intervention	Comparison	Outcome measures
Pregnant women	Suicidal Ideation	Women with a mental health diagnosis	Suicidal ideation in pregnancy
Pregnancy	Self-Harm	Women without a mental health diagnosis	Suicidal ideation postpartum
Antepartum women	Suicide attempts	Women with a psychiatric diagnosis	Screening tools
Postpartum women		Women ceasing anti-depressant medication during pregnancy	Risk factors
		Intimate partner violence	
		Poverty	

## 3.2 Screening

The literature sourced was initially screened by abstract and title to determine suitability for inclusion in this review. Duplicates were manually removed by the reviewers. Studies were not included if suicidal ideation or suicidality were not measured during the perinatal period, or literature did not meet the selection criterion. The reviewers retrieved full texts of the remaining articles for further evaluation and screening. Any disagreements were resolved by discussion amongst the reviewers. The remaining articles were appraised for eligibility and inclusion in this review. A PRISMA flow diagram outlines the screening process presented in Figure 1.

3.2.1 Figure 1. PRISMA flow chart (Moher et al., 2009).



### **3.3 Data extraction and quality appraisal**

The reviewers extracted the following data for quantitative studies: author, journal, date, country, objective, theoretical model, design, setting, sampling, method, measurement instruments, reliability and validity, significant and non-significant findings. Each quantitative study was reviewed using a quality adapted tool (Estabrooks, Floyd, Scott-Findlay, O'Leary, & Gushta, 2003), as outlined in Table 2. The tool applied a series of questions to assess each article for quality, relevance and reliability from the literature. The tool is simple to use and comprised of four domains of assessment; design, sample, measurement, dependant variable and statistical analysis. Each question scores a point and results categorize the article as low, moderate or of high quality. The reviewers used only moderate and high-quality studies for this review.

### 3.3.1 Table 2: quality adapted tool for quantitative studies

	Yes / No
<b>Design</b>	
Is the study prospective?	
Is probability sampling used?	
<b>Sample</b>	
Is the sample size justified?	
Is the sample drawn from more than one site?	
Is participant anonymity protected?	
Is the response rate greater than 60%	
<b>Measurement - Independent variable</b>	
Is the independent variable measured reliably?	
Is the independent variable measured using a valid instrument?	
<b>Dependent variable</b>	
Is the outcome variable observed rather than self-reported?	
If the scale is used measuring an outcome is internal consistency > .70?	
Is a theoretical model/framework used to guide the study?	
<b>Statistical analysis</b>	
If multiple outcomes are studied are correlations analysed? Were outliers managed?	

Overall study quality:

0-4 low

5-9 moderate

10-13 high

Adapted from Estabrooks et al. (2003)

This is presented in Table 3.

### 3.3.2 Table 3

Author (year) Journal and country Study design	Theoretical model	Sample / sampling method/ setting	Measurements	Scoring	Reliability (Cronbach's alpha)	Validity	Analysis	Significant and non-significant findings	Impact factor
(Onah, Field, Bantjes, & Honikman, 2017) Arch Woman's Mental Health South Africa Cross sectional	Not mentioned	376 pregnant women recruited	Detailed questionnaire. Risk Factor Assessment tool (RFA). Multidimensional Scale of Perceived Social Support (MSPSS). Conflict Tactic scale (CTS). Household Food Security Survey Model (HFSSM). The Expanded Mini-International Neuropsychiatric Interview (MINI Plus).	6 items	0.89 0.85	Validated in different setting	Stata v 13.1 Wilcoxon sum of rank test. Fisher exact test. Two sample test Bivariate analyses Crude Logistics models.	Over half the sample were in the second trimester of pregnancy. 22 women had made suicidal plans in the past month, 9 women had progressed to a suicide attempt. Of those 9, 5 had an intention to die while 4 hoped to be rescued.	3.397

(Gressier et al., 2017)  Journal of Psychiatric Research  France  Retrospective	Not mentioned	1439 women and neonates admitted for 5 days to a MBU from 2010 -2010 from 16 MBU	Multi-centred database formed by the French Network of Mother-Baby units.	3 items	Not mentioned	Not mentioned	Statistical analysis using R software version 2.14.1.  Participants characterised in to 3 groups of occurrences of suicide attempt (SA), no SA, SA in pregnancy, SA in the post-partum period.	154 women attempted suicide in the perinatal period, 49 in pregnancy and 105 in the postpartum period. No woman attempted in both pregnancy and the postpartum period. 20 women had missing data.	4.465
(Gelaye et al., 2017)  Journal of affective disorders  Peru  A Cross-sectional study	Not mentioned	1298 pregnant women attending prenatal clinics were assessed.  The women were enrolled in the Screening, Treatment and Effective Management of Gestational Diabetes Mellitus study (Stem-GDM).	Patient health questionnaire (PHQ-9).  The Pittsburgh Sleep Quality Index (PSQI).	19 items  8 items	PHQ-9 previously used	PSQI construct validity	Wilcoxon Rank Sum test, Chi-square tests or Fisher exact tests.  Multivariable logistic regression models and confidence intervals	17% of women had poor sleep, 10.3% had antepartum depression, 8.5% had suicidal ideation	3.570

(Taylor, van Ravesteyn, van denBerg, Stewart, & Howard, 2016) Arch Woman's Mental Health United Kingdom Historical cohort study	Not mentioned	420 women pregnant from 2007 to 2011 with ICD-10 diagnosis of schizophrenia, bipolar or other affective disorders.	Free text search for records of suicidal ideation and self-harm during the first index pregnancy. The highest score of Health of the Nation Outcome Scale (HoNOS) in the 2 years before pregnancy.	12 items	Not mentioned	Not mentioned	Stata version 12, independent sample T tests and Mann-Witney and Pearson's chi-square. Multivariable logistic regression analysis.	For 103 (24.5%) had reported suicidal ideation in pregnancy, while 178 (42.4%) denied this. For 70 (16.7%) of women reported suicidal ideation but no attempt. 33 (7.9%) had a self-harm event during pregnancy.  Self-harm in pregnancy was associated with a younger age, a history of child abuse or domestic violence or current domestic abuse.	3.397
(Bodnar-Deren, Klipstein, Fersh, Shemesh, & Howell, 2016) Journal of Women's Health New York Two randomised controlled trials	Not mentioned	1,073 mothers who gave birth between 2009-2010	Telephone interviews at 3 weeks, 3 months and 6 months.  Edinburgh postnatal depression scale.  Generalize anxiety disorder scale and the Patient Health Questionnaire.	10 items 7 items	Not mentioned	Not mentioned	Chi-square, Fishers Exact and t-tests  Bivariate analysis.	2.2% of participants presented with suicidal ideation post-partum. Of the 2.2% screened positive for suicide ideation 8% had true suicidal intent and required emergency psychiatric care.	2.032

(Friedman et al., 2016)  Headache: The Journal of Head and Face pain  Peru  Cross- sectional study	Not mentioned	3327 pregnant women from a larger cohort study from the Pregnancy outcomes, maternal and infant study.	Patient health questionnaire -9 (PHQ-9).  Migraine classification using the International classification headache disorder.	9 items	Not mentioned	Not mentioned	Multivariable logistical regression analysis.  Chi-squared tests.	Suicidal ideation was more common in women with migraines (25.6%) compared to those with probable migraines (12.3%)	3.580
(Weng, Huang, Huang, Lee, & Chen, 2016)  BMC Public Health  Taiwan  Cross-sectional study based on self-reported data	Not mentioned	Between 2011 and 2014 across five hospitals in Taiwan, pregnant women and women one month postpartum were selected.  3867 women participated.	Self-reported questionnaire plus EDPS inquiring about pregnancy, sociodemographic information, smoking, second hand smoke exposure, suicidal ideation, depression and anxiety symptoms.	10 items	Not mentioned	Not mentioned	Logistic regression models were used for analysis.  Chi-squared tests	Suicidal ideation depression and anxiety increased in the postpartum period.  Women who were pre-pregnancy smokers were more likely to have suicidal ideation but not depression or anxiety. Second hand smoke is associated with depression.	2.265

(Supraja et al., 2016) Arch Women's Mental Health India Cross-sectional study nested within a prospective cohort study	Not mentioned	462 pregnant women between 5 and 20 weeks.	The Suicide Behaviours Questionnaire Revised – (SBQ-R). The Edinburgh Postnatal depression scale. Indian Council of Medical Research task force study on Domestic violence Maternity social support scale.	8 Items 10 Items 18 Items 8 Items	Not mentioned	Previously used validity	Descriptive statistics Shapiro-Wilk test. T test and ANOVA Fishers exact test. Pearson correlation coefficient and Spearman's correlation.	55 women reported having considered suicide at least once in their life. 35 women had frequent thoughts of suicide during pregnancy. 14 out of the 35 had a history of planned or attempted suicide. 11 women had made a suicide plan in the current pregnancy and 8 had attempted.	3.397
(Alhusen et al., 2015) Arch Women's Mental Health USA Cross sectional analysis	Not mentioned	A convenience sample of 166 pregnant women from a low income area.	The Edinburgh postnatal depression scale. The Abuse Assessment Screen.	10 Items 5 Items	0.91	Not mentioned	Stata 11 Chi-squared and t tests to test bivariate associations.	20% of women experienced abuse during their current pregnancies. 22.89% reported suicidal ideation during the current pregnancy.	3.397

(Kim et al., 2015)  Obstetrics and Gynecology  USA  Retrospective cohort study	Not mentioned	1517 pregnant women attending antenatal care from 2012 to 2013.	The Edinburgh Postnatal depression scale.  The patient health questionnaire-9.	10 Items  9 Items	Not mentioned	Previously used validity	Chi squared  t-test  ANOVA.	15.8% of women reported SI from the EDPS  8.8% reported SI from the PHQ-9	5.175
(Vikstrom, Sydsjo, Hammar, Bladh, & Josefsson, 2017) BJOG  Sweden  Case control study using data from national registers	Not mentioned	3535 primiparous who had given birth because of IVF were included in the study from 2003-2009. An aged matched controlled group of 8553 was randomly selected from the birth register.	The medical birth registers  The national patient registers  The IVF registers  The total population register and the population and housing census.	nil	Not mentioned	Not mentioned	Logistic regression analysis.  Binary logistic analysis.	Women in the controlled group were more likely to have a diagnosis of postnatal depression. No women in either group committed suicide.	5.051

(Zhong et al., 2015) Arch womans Mental Health Lima, Peru Cross- sectional study	Not mentioned	22,118 Edinburgh postnatal depression scale questionnaires.	The Edinburgh postnatal depression scale.	10 Items	Not mentioned	Previously used validity	SAS 9.2 Logistic regression Hosmer and Lemeshow test C-statistic	Suicidal ideation was indicated on 842 of the 22,118 EDPS questionnaires.	3.397
(Pope, Xie, Sharma, & Campbell, 2013) Arch Woman's mental health Canada Prospective study	Not mentioned	Convenience sample of women, participants were assessed at 24 weeks then at 1,2,3,6 and 12 postpartum 146 completed the Hamilton depression rating scale 131 completed the EDPS postpartum	Structured clinical interview for diagnosis using the DSM-IV Edinburgh postnatal depression scale (EDPS). Young Mania Rating scale (YMRS). Hamilton Depression Rating Scale (HDRS).	10 Items 3 Items	Not mentioned	Previously used validity	Fishers exact test t-test	None of the women in the sample attempted or completed suicide during the study. 147 women completed at least one postpartum interview. 22 of the women who completed the EDPS postpartum reported thoughts of self-harm. 9 women out of the 146 women who completed the HDS reported suicidal ideation	3.397

(Huang et al., 2012)	Not mentioned	Women from low-income areas attending antenatal care in chosen districts between May and September 200. 831 women participated in the study	Detailed structured questionnaires and common mental disorder (CMD) Self-reported Questionnaire-20 (SRQ-20)	10 Items	Not mentioned	Validated in primary care in Brazil	Logistic regression Statistical analysis was preformed using STATA version 11	6.3% of the sample experienced antenatal suicidal ideation	3.397
Arch Womens Mental Health									
Brazil									
Cross sectional analysis									

## **4.1 Results**

### **4.1.2 Search results**

The initial electronic database and manual search retrieved 91 articles relating to suicidal ideation in the perinatal period. Abstracts and titles were reviewed against the inclusion and exclusion criterion with duplicates removed. Twenty-five articles were retained for full text review. Of these, ten articles were excluded due to being low quality. Fifteen quantitative papers were appraised for suitability and relevance to the review questions.

Both antenatal and postnatal periods were included in this review as there is minimal literature to complete individual reviews on either antenatal or postnatal periods. Retrospectively if the established time frame was extended to ten years possibly more literature would have been generated from the search strategy. However, the authors of this review were interested specifically in current literature, so included papers only dating back five years.

### **4.1.3 Summary of quantitative quality review**

All fourteen quantitative articles were appraised using the quality adapted tool by Estabrook and colleagues (2003). Five articles out of the fifteen scored moderate (between five and nine), and ten articles scored low (0-4). The highest impact factor for an article was 5.175 and the lowest was 2.032. Outcomes of the quality appraisal established none of the articles were of high quality and all studies lacked a theoretical foundation to support validity of the research process. Three studies were identified as demonstrating reliability of the literature and only one article had a Cronbach' alpha coefficient above 0.70. Additionally, The Edinburgh Postnatal Depression Scale (EPDS) screening tool is validated only in the English language and not applied universally proving difficult to appraise its use when forming conclusive results for this review (Stapleton, Murphy, & Kildea, 2013).

## 5.1 Summary of findings

Literature sourced for this systematic review reflects the universal commonality of suicidal ideation and suicidality during the perinatal period, substantiating the need for further research and review of this phenomenon. A significant theme to emerge in terms of risk factors for suicidal ideation was socioeconomic status and the associated risk of suicidal ideation with low income or social status. Several studies demonstrated that lower educational opportunities and unemployment are associated with an increased risk of suicidal ideation (Alhusen et al., 2015; Huang et al., 2012; Supraja et al., 2016; Zhong et al., 2015). Interestingly, one study examined the association between passive smoking and suicidal ideation and reported women who smoked prior to pregnancy were at increased risk of suicidal ideation. Additionally, women exposed to second hand smoke were at greater risk of developing depression (Weng et al., 2016). Authors Gressier and team (2017) support these findings and further suggest that alcohol and tobacco consumption during pregnancy increases a woman's risk of attempting suicide.

The diagnosis of a comorbid psychiatric condition was identified as a risk factor for suicidal ideation, specifically a diagnosis of depression in the antenatal and postnatal period (Gressier et al., 2017; Weng et al., 2016). Women with a history of abuse and intimate partner violence are also groups at risk of suicidal ideation during pregnancy. This was reported in a study by Taylor et al. (2016) who found women with a history of child abuse or current domestic abuse being more likely to experience suicidal ideation.

The phenomenon of suicidal ideation and association with migraine headache was also explored in this review. A seminal study by Friedman et al. (2016) found participants with migraines were at greater risk of experiencing suicidal ideation compared to those diagnosed with probable migraines. Authors acknowledged further research into this subject is warranted, however it should be an important consideration for midwives

when caring for women who suffer from migraines during pregnancy or have a history of migraines.

Another study investigated the association between suicidal ideation and In Vitro Fertilization (IVF). It was hypothesised that women conceiving with IVF potentially have a higher risk of postnatal depression and suicide however, it was demonstrated that IVF does not increase rates of postnatal depression and suicide (Vikstrom et al., 2017). One theory hypothesized is that women undergoing IVF originate from higher socioeconomic backgrounds, and are more likely to be in supportive relationships compared to women that conceive naturally (Verhaak et al., 2007).

Screening tools frequently used to assess suicidal ideation in the perinatal period were predominantly the Edinburgh Postnatal Depression Scale (EDPS) and the Patient Health Questionnaire PHQ-9. There are concerns surrounding the sensitivity and specificity of the Edinburgh Postnatal Depression Scale. Women can screen positive for depression when not clinically depressed or have false positive results when the EPDS is conducted in the immediate postpartum period. This can be caused by women experiencing normal post partum 'blues' or 'baby blues' (Marnes & Hall, 2013), as opposed to clinical depression. Women may also report dishonestly when completing the questionnaire due to fear or shame and the stigma associated with mental illness. McLaughlin (2013) suggests it is not uncommon for women to score the EDPS inaccurately due to stigma. Likewise, the PHQ-9 screening tool should be used with caution as it is not predictive for diagnosis of "current Major depressive episode" within a psychiatric specialty centre (Inoue et al., 2012). However, as both tools have a high reliability and validity, Zhong and colleagues (2014) suggest that the simultaneous administration of both scales will improve identification of antepartum depressive episodes in the clinical setting

### **5.1.2 Implications for midwifery practice**

Midwives are often the first point of contact for women during pregnancy, and commonly use the EPDS as a screening tool to highlight emotional stress and mood disorders in the perinatal period. When a woman scores high or answers yes to question ten, a question specifically referring to suicidal ideation, an immediate referral to mental health services should be completed. Midwives need to be aware of women who are at increased risk of suicidal ideation, to provide the resources and collaborative care needed to support them through the perinatal period.

### **5.1.3 Implications for midwifery research**

It is evident that minimal research in suicidal ideation during the perinatal period has been published. Unquestionably further examination of qualitative research is needed to gain depth and understanding of why women experience suicidal ideation. Qualitative evidence would benefit midwives who practice women-centred care and are the first point of contact for many women during the perinatal period. Further research would facilitate the support, resources and collaborative care needed to link this at-risk population with appropriate mental health services and other networks, with midwives being key stakeholders in the process and outcome of women's health during the perinatal period.

## **6.1 Limitations**

The data collected for this systematic review was limited to the English language. There may have been studies missed in other languages which could have contributed to the literature in this systematic review. The five-year timeframe for literature retrieval may have also excluded other useful studies, and most of the studies were of low quality apart from five, which were moderate quality. Further exploration of qualitative data would be beneficial and provide a more comprehensive exploration of the topic to support the value of this systematic review.

## **7.1 Conclusion**

The results from this review have demonstrated a lack of high quality literature on the issue of suicidal ideation in the perinatal period. Most of the studies combined the antenatal and postnatal periods, however research exploring these two phases separately would identify the differences and commonalities between the two.

The risk factors for suicidal ideation are well documented in this systematic review. Women with a history of depression or a major mental illness, passive smoking or cigarette smoking, women experiencing intimate partner violence or from low socio-economic backgrounds, are all at higher risk of suicidal ideation in the perinatal period. Less is known about the link between migraine headaches and suicidal ideation, and more research is warranted. Knowledge of the outlined risks of suicidal ideation during the perinatal period is imperative for midwives. These women require specialised and complex care to be supported by midwives who are informed and skilled to provide sensitive midwifery services in collaboration with other appropriate health disciplines through referral and collaboration.

### **Details of ethics approval**

Ethical approval was applied for and granted by XXXX Ethics committee, number 20337.

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