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Women's Mental Health: Suicide Risks in Women with Premenstrual Dysphoric Disorder

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Abstract

Premenstrual Dysphoric Disorder (PMDD) is a severe mood disorder, considered the most debilitating form of Premenstrual Syndrome (PMS), affecting 1 in 20 women globally. Women with PMDD experience intense psychological symptoms in the latter half of their menstrual cycle, with over 70% experiencing suicidal ideation and 1 in 3 attempting suicide. Despite the severity of the condition, there are limited support services available. This study aimed to synthesise the evidence on suicidality in women with PMDD. Using a systematic review approach, the study analysed published papers from four databases: EBSCOhost, Web of Science, Medline, and Science Direct. Articles included were published in English over the past 15 years, focusing on suicidality in women with PMDD. These studies were either qualitative or quantitative and cross-sectional in design and were evaluated using a narrative synthesis approach. Seven articles were included in the review, revealing a strong association between PMDD and suicidality. The analysis showed that women with PMDD have a significantly higher risk of suicidality and other mental health conditions, such as severe depression, compared to women without PMDD. The study identified three categories of suicidality: suicidal ideation, plans, and attempts. Women with PMDD were found to be seven times more likely to experience suicidality than those without the disorder. Additionally, the findings emphasised that early diagnosis and education can help mitigate the adverse effects of PMDD. These findings underscore the need for more research on PMDD and suicidality and the development of more effective management strategies for women affected by PMDD.

Keywords

Premenstrual Dysphoric Disorder (PMDD), PMDD, Suicidality, Women's

Mental Health, Narrative Synthesis, Depression, Hormone-Related Mood Disorders, Qualitative Research, Public Health, Gender Disparities, Systematic Review

1. Introduction

According to the Department of Health and Social Care [1] and the World Health Organisation (WHO), [2] Suicide is a global public health crisis affecting both men and women across regions and races, with approximately 800,000 deaths annually, which translates to at least one person taking their own life every 40 seconds.

Suicidality is a critical issue for women's health, as it has a direct impact on both individual well-being and society. Studies indicate that women are more prone to mental health disorders, including suicidality, than men [1] [3]. Gender plays a significant role in determining health outcomes, with women facing unique challenges that contribute to higher rates of mental health issues and suicidality [2] [4].

Women worldwide are more susceptible to depression, a leading cause of suicidality, with reports showing that women are twice as likely to experience depression compared to men [5]. The World Health Organisation [2] emphasises that suicidality among women is not confined to any specific demographic or geographic group but is evenly distributed across regions, cultures, and ethnicities. Social and cultural factors, often beyond women's control, significantly influence their mental health, with many studies highlighting the role of factors such as domestic violence, sexual abuse, and socioeconomic stressors in increasing the risk of depression and, in severe cases, suicidality [4] [6].

One critical mental health condition that contributes to suicidality in women is Premenstrual Dysphoric Disorder (PMDD), a severe form of Premenstrual Syndrome (PMS). PMDD affects 3% - 10% of women globally, with symptoms most pronounced during the luteal phase of the menstrual cycle, often due to hormonal fluctuations in oestrogen and progesterone [7] [8]. PMDD is a significant contributor to mental health problems among women and can severely impact their emotional, psychological, and physical wellbeing [9] [10]. Although the exact cause of PMDD remains unclear, studies indicate that risk factors such as a history of PMS, sexual abuse, domestic violence, mood disorders, and a family history of PMS or PMDD can increase the likelihood of developing the disorder [11] [12].

PMDD has been categorised as a depressive disorder by both the American Psychiatric Association [13] and the World Health Organisation [14]. The disorder is marked by severe emotional, behavioural, and physical symptoms that impact daily life. These include mood swings, suicidal ideation, anxiety, irritability, and hopelessness, as well as physical symptoms like breast tenderness, headaches, and muscle pain [11] [15]. The impact of PMDD on women's quality of life can be

devastating, leading to difficulties in maintaining relationships and a general decline in well-being [16].

Research shows that women with PMDD are two to three times more likely to experience suicidality, including suicidal ideation, plans, and attempts, compared to women without PMDD [17] [18]. There is a notable relationship between PMDD symptoms and suicidality, with studies revealing that women in the luteal phase of their menstrual cycle, when PMDD symptoms are most severe, are at higher risk of suicidal thoughts [16] [19]. However, some studies have found no direct link between menstruation and suicidality in women with PMDD [10] [18].

While the exact cause of PMDD remains undetermined, treatments are available to alleviate some of its symptoms. The first-line treatment for PMDD is Selective Serotonin Reuptake Inhibitors (SSRIs), which help manage depression and anxiety associated with the disorder by increasing serotonin levels in the brain [14]. However, there is no conclusive scientific evidence to suggest that serotonin plays a direct role in causing PMDD or suicidality. Other treatments include hormonal birth control, dietary changes, stress management, and regular exercise, though the effectiveness of these interventions varies from woman to woman [8] [16]. Despite the availability of these treatments, there is a lack of research evaluating their effectiveness in specifically reducing suicidality in women with PMDD.

This study aims to synthesise existing evidence on suicidality in women with PMDD. Given the limited attention and resources devoted to PMDD compared to other mental health disorders, further research is needed to better understand the link between PMDD and suicidality and to develop more effective strategies for managing this debilitating condition. Early diagnosis, education, and proper treatment are crucial in mitigating the adverse effects of PMDD, reducing the risks of suicidality, and improving the overall quality of life for affected women.

The objective of this study is to answer the following research questions:

- How many women with PMDD experience suicidal thoughts, carry out suicidal actions, or die by suicide?
- What are the characteristics (e.g., sociodemographic, personality traits) of women with PMDD who attempt suicide?
- What causal mechanisms lead women with PMDD to experience suicidal thoughts and actions?
- What strategies are used to manage women with PMDD who experience suicidality?

This study will use a systematic approach to analyse the evidence on suicidality due to PMDD. It aims to answer the research questions and gain in-depth knowledge on suicidality associated with PMDD. This study aims to address the gap in the literature by incorporating the various studies included in this research.

2. Methods

2.1. Research Design

This study employs a systematic review design method, a secondary research ap-

proach that synthesises existing literature to answer research questions about suicidality in women with Premenstrual Dysphoric Disorder (PMDD). The study adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure effective reporting, with validation from previous studies [20] [21]. The systematic review process consists of eight key steps:

- Preliminary checks for existing reviews;
- Identification of relevant databases;
- Definition of inclusion and exclusion criteria;
- Systematic literature search;
- Screening and selection of studies;
- Data extraction;
- Quality evaluation;
- Presentation of results using a narrative synthesis approach.

This systematic review design is deemed the most suitable method for this research as it enables the comprehensive evaluation of individual studies regarding suicidality risks in women with PMDD. The method enhances the study's accuracy, reproducibility, and potential for future updates [21] [22]. The structured approach makes the study reliable and valuable for future research and clinical practice.

2.2. Search Strategy

The first step in the systematic review is to perform preliminary checks to ensure the relevance of the research topic. Existing studies will be identified and assessed based on their ability to answer the research questions.

This study will only consider articles published between January 2008 and April 2023, ensuring that the research reflects the latest studies, with a focus on the period following the inclusion of PMDD in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) in 2013.

As shown in **Table 1**, Keywords such as "Premenstrual Dysphoric Disorder" (PMDD) and "suicidality" will be searched in study titles and abstracts. Boolean operators ("AND" and "OR") will be used to combine keywords, such as ("Premenstrual Dysphoric Disorder" OR "PMDD") AND "Suic*". In databases that do not recognise truncated words, terms like "suicide," "suicidal," or "suicidality" will be used.

Table 1. Search terms used in the research.

Category	Search Terms.
Sample/Phenomenon of Interest.	"Premenstrual Dysphoric disorder" OR "PMDD".
Evaluation.	"Suic*" OR "suicide" OR "suicidal" OR "suicidality".

2.3. Inclusion and Exclusion Criteria

The SPIDER framework (Sample, Phenomenon of Interest, Design, Evaluation, Research type) will guide the creation of these criteria [23] [24]. The SPIDER

framework ensures that the selected studies are relevant and focused on the research elements most pertinent to the study.

The Inclusion criteria for this study are:

1) Sample: studies that have included women of childbearing age across the globe.

2) Phenomenon of interest: studies that include data on women who experience PMDD.

3) Design: Various quantitative study designs will be included.

4) Evaluation: Studies which provide data on the prevalence or incidence of suicidality in PMDD, describe the experiences of suicidality in women with PMDD, or provide insight into the mechanism of suicidality in women with PMDD.

5) Research type: Qualitative, quantitative, or mixed methods and cross-sectional studies.

Exclusion Criteria:

1) Systematic reviews, commentaries, and meta-analyses;

2) Studies published before 2008;

3) Non-English publications;

4) Studies not reporting on suicidality as a primary or secondary outcome;

5) Trials lacking DSM/clinical diagnosis of PMDD.

2.4. Systematic Literature Search

A systematic literature search will be conducted once the inclusion and exclusion criteria are defined. The search will include databases focused on health-related issues, particularly those with titles pertinent to PMDD and suicidality.

2.5. Study Selection

All search results will be retrieved and managed using a reference management software to de-duplicate studies. Studies that meet the inclusion criteria will be selected for further analysis, ensuring that only relevant studies are included and thereby refining the research to answer the research questions effectively.

2.6. Data Extraction and Quality Appraisal

Data extraction will be done using systematic review software, ensuring that relevant information from the selected studies is accurately collected. This step is critical to synthesising the findings from individual studies and contributing to a comprehensive review of the topic.

The quality appraisal of selected studies will be conducted using the Critical Appraisal Skills Programme (CASP) tool, which helps assess the validity and trustworthiness of qualitative research. The CASP tool includes ten questions to evaluate the study's validity, results, and relevance. The tool will guide the selection of studies with acceptable relevance (7 out of 10), ensuring that only high-quality studies are included in the final review [25].

The quality and relevance of the selected studies will be evaluated and appraised using the Critical Appraisal Skills Programme (CASP) tool, which is widely used for evaluating qualitative research [25]. CASP includes ten questions assessing each study's validity, results, and local applicability.

2.7. Presentation of Results

The study will employ a narrative synthesis approach to present the findings. A narrative synthesis allows for the grouping, summarising, and interpreting of data from qualitative and quantitative studies [26] [27]. The narrative synthesis will provide detailed insights into the experiences of women with PMDD, focusing on the association with suicidality. The approach will also highlight research gaps and limitations within the reviewed studies.

2.8. Data Analysis

Given the heterogeneous nature of this study, which includes both qualitative and quantitative research, a narrative synthesis approach will be employed. This approach suits diverse study outcomes and allows grouping, summarising, and interpreting the findings [26] [27]. A narrative synthesis has been used successfully in previous systematic reviews on PMDD [28]. The narrative synthesis will provide detailed reports that contribute to understanding women's experiences with PMDD and suicidality.

A meta-analysis will not be conducted due to the heterogeneous nature of the studies included in the review. This diversity in study outcomes renders it unsuitable for statistical pooling; therefore, the narrative synthesis approach will focus on qualitative and descriptive reporting.

3. Results

3.1. Search Results

A systematic search using key terms yielded 52 studies from several selected databases, including Web of Science (n = 23), Medline (n = 17), ScienceDirect (n = 10), and EBSCOhost (n = 2). After removing 22 duplicates, 30 studies remained for the title and abstract screening, excluding 10 articles due to irrelevance. Applying the inclusion and exclusion criteria, 13 other studies were excluded, including systematic reviews, meta-analyses, non-English articles, older studies, and trial-based studies. This left seven studies included in this review, published between 2011 and 2022, focusing on the relationship between PMDD and suicidality.

The selection process of studies included in this review is illustrated in **Figure 1**.

The studies were conducted in various countries, including the United States, Nigeria, Brazil, France, Iran, South Korea, and South Korea. The methodologies included cross-sectional studies [9] [17] [29], a randomised demographic study [12], and cohort and control studies [10] [11] [18]. The studies included participants from different age ranges (13 - 64 years), ethnic backgrounds, and varied

sample sizes ranging from 120 to 3965. All seven studies found a strong association between PMDD and suicidality, revealing that women with PMDD face a significantly higher risk of suicide compared to women without PMDD.

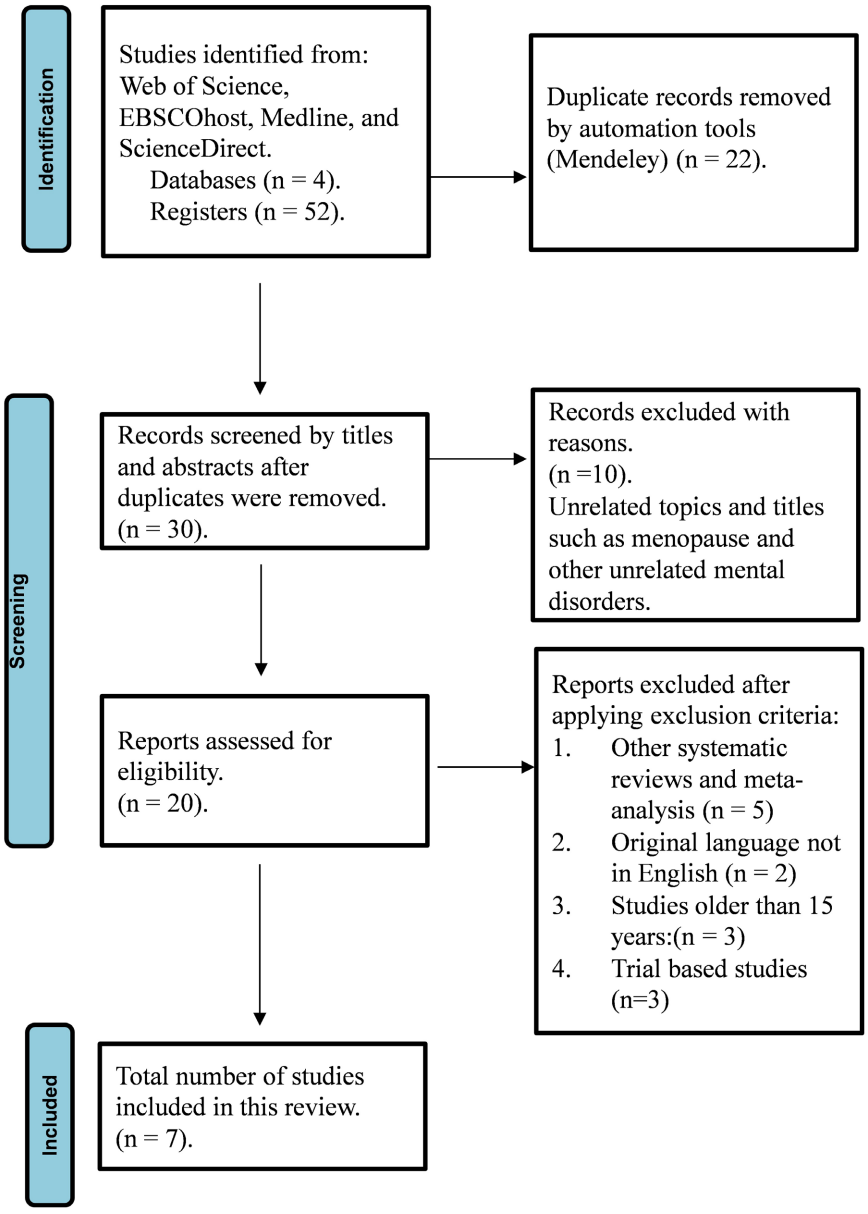

Figure 1. Prisma flowchart od study selection.

3.2. Characteristics of Included Studies

Table 2 summarises the characteristics of the seven studies included in this review.

As seen in Table 2, Publication dates from the seven included studies ranged from 2011 to 2022; this indicates that the studies are up to date and in line with the inclusion criteria, which require studies to be less than 15 years old. Two studies were conducted in the United States of America [11] [29]. One of the two studies also recruited participants from Nigeria (N = 11). One of the studies was con-

ducted online, using randomised online sources [12]. And one each in the following countries: Brazil [9], France [18], Iran [10], and South Korea [17].

Table 2. Table of characteristics for included study.

Author/Year	Study location	Sample	Aim of the study	Design of the study	Data analysis	The outcome of the study	Quality rating
De Carvalho *et al.* (2018).	Southern Brazil	N = 727. Women between 21 - 32 years.	To evaluate the prevalence of suicidality in PMDD and factors associated with PMDD.	Cross-sectional population-based study	The chi-square test and Poisson regression.	Evidence showed PMDD was higher amongst older women, and suicidality was linked with PMDD.	64.1%
Ducasse *et al.* (2016).	France	N = 232 women. Between ages 18 and 53.	Access the prevalence of suicide in women with PMDD.	A cohort study of women admitted to the hospital due to suicide attempts.	Researchers used Odds ratios and 95 CI were used to calculate associations.	No significant association between suicide attempts and PMDD. However, a high prevalence of PMDD (23%) in women who attempted suicide.	59%
Eisenlohr-Moul *et al.* (2022).	Online survey	N = 2698	Suicide risks amongst women with PMDD.	A randomised demographic study.	Mean comparison techniques.	23% reported a diagnosis of PMDD. They observed 72%high rates of suicide ideation and 34% suicide attempts.	85%
Hong *et al.* (2012).	South Korea	N = 2499. Ages between 18 - 64 years.	The prevalence of suicidal risks amongst Korean women with PMDD.	A cross-sectional population-based study.	The odds ratio and 95 CI were used to compare PMDD and non-PMDD PMDD cases.	2.4% were concluded to have PMDD. 12 monthsh and lifetime suicide risks were significantly associated with PMDD.	80.4%
Ogebe *et al.* (2011).	USA and Nigeria	N = 537. Between 13 and 21 years.	Determine the suicide risk in PMDD.	A cohort study of young females.	Pearson Chi-square tests to compare the distribution of categorical variables.	4.1% were identified to have PMDD. 18% experience suicide ideation compared with 10.9% with no PMDD.	70%
Pilver *et al.* (2013).	USA	N = 3965. With an average age of 29 years.	Prevalence of PMDD and suicide risks.	A cross-sectional population-based study.	Logistic regression models were used to assess the magnitude and direction of the association between PMDD and suicidal risks.	Prevalence of PMDD amongst Korean women. Serious suicide attempts in women with PMDD (16.2%).	82.5%
Shams-Alizadeh *et al.* (2018).	Iran	N = 120. Between 13 and 40 years. And 120 matched controls.	Access the association between PMDD and suicidal attempts.	Control study of women admitted to the hospital due to suicide attempts.	Pearson's Chi-square test to assess the relationship between the independent variables and those attempting suicide.	Higher frequency of PMDD in women who had attempted suicide (30.8%) compared with the control group (5%).	67.5%

Three out of seven of these studies were cross-sectional [9] [17] [29]. One of the

studies was a randomised demographic study [12]. The other three studies were cohort and control studies [10] [11] [18]. All seven studies were a combination of both qualitative and quantitative research methods. The main objectives of each study were to identify the relationship between PMDD and suicidality. All seven studies assessed the association between suicidality and PMDD. And all seven studies revealed a close association between suicidality and PMDD.

These seven studies included participants from various age groups, ranging from 13 to 64 years, and women from different racial backgrounds, including Black women, White women, and Hispanic women. The sample sizes ranged from 120 participants to 3965 participants.

The outcomes of all seven studies were similar; they all revealed a significant positive relationship between suicidality and PMDD. There is a higher suicide risk in women with PMDD when compared with women without PMDD. Some studies also showed a close link between PMDD and other psychiatric mood disorders. All seven studies were appraised using the CASP tool, and the quality of the studies ranged from very good to excellent.

3.3. Summary of Findings

The studies collectively suggest that PMDD is significantly associated with suicidality, with several studies investigating different factors such as age, race, and economic background. Ogebe *et al.* [11] found that adolescents experiencing PMDD were more likely to have suicidal ideation, with a cultural element affecting the prevalence of PMDD and suicidality. The study, conducted in Nigeria and the United States, revealed that adolescents were more susceptible to PMDD than older women.

Similarly, Hong *et al.* [17] reported that the highest prevalence of PMDD occurred in young women aged 18 - 29 years. Their study, conducted in South Korea, also found that women with PMDD were significantly more likely to experience suicidal ideation compared to those without PMDD. However, Hong *et al.* [17] found no association between suicidality and factors such as financial status, occupation, or education.

In Brazil, De Carvalho *et al.* [9] found that PMDD was more common among older women (17.6%). This study also confirmed that women with PMDD were at higher risk for suicidality, especially those from lower socioeconomic backgrounds. These findings align with those of Ogebe *et al.* [11], which also showed that lower socioeconomic status contributed to higher risks of suicidality in women with PMDD.

Shams-Alizadeh *et al.* [10] focused on women who had attempted suicide, comparing them to a control group of women without suicidality. The study revealed a significant association between PMDD and suicide attempts. However, it did not find a link between economic status and suicidality, differing from the findings of Ogebe *et al.* [11] and de Carvalho *et al.* [9].

In a randomised demographic study, Eisenlohr-Moul *et al.* [12] surveyed 2698

online participants from organisations focusing on PMDD. The study found that women with PMDD, especially those with low incomes, had higher rates of suicidal ideation and suicide attempts. The study also highlighted that older women with PMDD faced increased risks due to a lack of early diagnosis and treatment.

Ducasse *et al.* [18] found that women with PMDD were more likely to experience mood instability, anger, and hostility, traits often associated with suicidality. The study, conducted in France, reported that 23% of women who attempted suicide were diagnosed with PMDD. It emphasised the importance of addressing other psychiatric conditions that might co-occur with PMDD.

Pilver *et al.* [29], conducted in the United States with 3965 participants, also revealed a significant relationship between PMDD and suicidality. Women with PMDD were found to have higher rates of suicidal ideation, plans, and attempts compared to those without PMDD. The study also noted that race and ethnicity played a significant role in suicidality in PMDD, a finding similar to that of Ogebe *et al.* [11].

3.3.1. Result on PMDD and Other Psychiatric Diagnoses

All seven studies assessed PMDD alongside other psychiatric conditions, often using structured clinical interviews based on DSM-IV criteria. For example, Ogebe *et al.* [11] and de Carvalho *et al.* [9] utilised the MINI (Mini International Neuropsychiatric Interview) for psychiatric diagnosis. In contrast, Hong *et al.* [17] employed the WHO Composite International Diagnostic Interview. Other studies, such as Ducasse *et al.* [18] and Pilver *et al.* [29], utilised the World Mental Health Composite International Diagnostic Interview for PMDD diagnosis. These studies consistently found that PMDD often co-occurs with other psychiatric disorders, which may exacerbate the risk of suicidality.

3.3.2. Results on the Relationship between Suicidality and PMDD

The seven studies consistently found a significant association between PMDD and suicidality. Suicidality was categorised into suicidal ideation, plans, and attempts, and the studies investigated these aspects using structured clinical psychiatric interviews, hospitalisation data, and standardised questionnaires. Four studies [10] [17] [18] [29] focused on suicide attempts, while three studies [9] [10] [12] examined suicidal ideation and plans. All studies indicated that women with PMDD were at a higher risk of suicidality.

3.3.3. Results on the Relationship between the Menstrual Cycle and PMDD and Suicidality in PMDD

Three studies explored the relationship between the menstrual cycle and suicidality in women with PMDD. While Ducasse *et al.* [18] and Shams-Alizadeh *et al.* [10] found no clear link, Ogebe *et al.* [11] reported that suicidality risk was heightened during the menstrual cycle for women with PMDD. This finding suggests that the timing of PMDD symptoms may influence the severity of suicidality in some women.

3.3.4. Result on the Prevalence of PMDD

All seven studies investigated the prevalence of PMDD, with varying results based on factors such as age and socioeconomic status. Studies by Ogebe *et al.* [11], Hong *et al.* [17], de Carvalho *et al.* [9], and Eisenlohr-Moul *et al.* [12] found that PMDD was prevalent across different age groups, with some studies indicating higher rates in younger women [17], while others reported higher prevalence in older women [9] [12]. Social and economic factors also played a role in the prevalence and severity of PMDD, with lower-income women at higher risk for both PMDD and suicidality.

3.3.5. Results on the Characteristics of Women with PMDD

All seven studies analysed and examined the characteristics of women with PMDD. Findings from all studies revealed severe depression as one of the significant characteristics of women with PMDD. Results from the survey by Ducasse *et al.* [18] showed anger as a substantial characteristic of women with PMDD. Other characteristics of women with PMDD revealed in the studies include mood instability [11]. The different studies highlighted other factors such as hopelessness, irritability, paranoia, loss of interest in activities and eating disorders.

Table 3. Combined findings of included studies.

Included studies	Summary of Studies	Relationship between PMDD and suicidality
Studies on suicide attempts leading to hospitalization		
Ducasse *et al.* (2016).	A cohort study of 132 women hospitalized due to suicide attempts.	Both studies reported a high prevalence of PMDD among women admitted to the hospital following a suicide attempt. PMDD was significantly associated with suicide attempts.
Shams-Alizadeh *et al.* (2018).	Control group study method of 120 women admitted to the hospital because of suicide attempts	
Studies on the history of suicide attempts		These studies reported that most women with PMDD had reported previous suicide attempts. Women with PMDD were more prevalent to suicide attempts when compared with women without PMDD.
Hong *et al.* (2012).	A cohort study of 2499 Korean women.	
Pilver *et al.* (2013).	A cohort study of 3965 women	
Studies on Suicidal Ideations		
Ogebe *et al.* (2011).	A cohort study of 537 young women.	Women with PMDD reported having more suicidal ideations when compared with women without PMDD. Suicidal ideations were more prevalent in women with PMDD.
De Carvalho *et al.* (2018).	A cross-sectional population-based study of 727 women.	
Eisenlohr-Moul *et al.* (2022).	A randomised demographic study of 2698 women.	

In conclusion, all seven studies affirmed a strong link between PMDD and suicidality, with variations in findings related to age, race, socioeconomic status, and other psychiatric conditions. Women with PMDD were found to have a signifi-

cantly higher risk of suicidal thoughts, plans, and attempts, highlighting the importance of early diagnosis and appropriate interventions for this population.

The combined findings of all included studies are found in Table 3.

Table 3 combined findings of included studies show the relationship between PMDD and Categories of Suicidality.

4. Discussion

This study aims to synthesise current global evidence on suicidality among women diagnosed with PMDD, a severe form of premenstrual syndrome. PMDD is characterised by marked mood swings, irritability, and physical discomfort that recur cyclically and can significantly impair social, occupational, and emotional functioning. These symptoms are not merely distressing; they are linked to profound mental health outcomes, including suicidality. Despite its recognition in the DSM-5, PMDD remains underdiagnosed and poorly understood, in part due to inconsistent diagnostic practices, cultural variation in symptom interpretation, and methodological heterogeneity across studies.

PMDD is widely acknowledged as a chronic condition that emerges in adolescence and often continues throughout a woman's reproductive life [9]-[11] [29]. Women suffering from PMDD commonly report debilitating symptoms severe enough to disrupt interpersonal relationships, academic performance, and workplace participation. These functional impairments are frequently accompanied by comorbid psychiatric symptoms, most notably depression and anxiety, which further compound the individual's risk of suicidality. [9] [10]

Multiple studies underscore the association between PMDD and suicidal ideation. For example, Prasad *et al.* [30] found that women with PMDD were three times more likely to engage in suicidal behaviours compared to those without the disorder. Similarly, Hashim *et al.* [31] observed heightened suicidal ideation among women meeting criteria for PMDD. However, a key limitation in these findings is the inconsistent application of diagnostic frameworks. In Prasad *et al.*'s [30] study, DSM-5 criteria were not used, raising concerns about the diagnostic validity. This reflects a broader issue across the literature: many studies rely on retrospective self-reports rather than prospective, clinician-administered assessments, leading to inaccuracies in symptom identification and prevalence estimates.

The challenge of diagnosing PMDD remains a barrier to effective treatment and research. As Hong *et al.* [17] note, diagnoses are often based on patients' recall of symptoms across 12 months, rather than prospective charting over two menstrual cycles as recommended. This not only hinders clinical reliability but also obscures accurate assessment of PMDD's actual impact. To address this, we propose increasing the use of digital symptom-tracking tools and providing training for general practitioners in menstrual health screening to facilitate earlier and more accurate diagnoses.

The unique impact of PMDD on suicidality compared to other mood disorders

lies in its cyclical, hormonally triggered symptom pattern. While depression and anxiety also elevate suicide risk, PMDD's temporal link to the luteal phase of the menstrual cycle creates a distinct vulnerability that is often under-recognised. Several studies [15] [32] specifically distinguish PMDD by its temporal recurrence and its resistance to typical antidepressant regimens outside the luteal phase, suggesting a hormonal sensitivity that compounds emotional dysregulation. Importantly, even when comorbidities such as major depressive disorder are accounted for, the presence of PMDD remains a significant, independent risk factor for suicidality.

Lifestyle and environmental factors have also been identified as potential mediators in the relationship between PMDD and suicidality. Smoking, obesity, sedentary behaviour, and high levels of psychosocial stress have been associated with greater PMDD severity [11]. These factors may amplify hormonal reactivity or disrupt neurotransmitter regulation, thereby increasing emotional instability during the luteal phase. Stressors related to work, school, or home life have similarly been implicated in symptom exacerbation. However, further longitudinal research is needed to determine the causal pathways and mechanisms through which these lifestyle factors influence suicidal outcomes in PMDD populations.

Current treatment options for PMDD typically include Selective Serotonin Reuptake Inhibitors (SSRIs) and hormonal contraceptives. SSRIs are considered the first-line treatment for PMDD symptoms, particularly mood disturbances [33]. However, their effects on suicidality are inconsistent, and they do not always alleviate physical or cognitive symptoms. Hormonal contraceptives, which regulate ovulation, have shown mixed outcomes—some studies suggest they improve PMDD symptoms, while others report increased depression and suicidal ideation among users [34]. These divergent responses indicate the need for individualised treatment approaches, with careful consideration of patient history and symptom profile.

Non-pharmacological treatments such as Cognitive Behavioural Therapy (CBT), stress management, physical exercise, and dietary interventions have gained attention for their potential to reduce PMDD symptoms and associated suicidality. CBT, in particular, has shown promise in helping women manage cyclical mood changes and reduce functional impairment. Although not all studies included suicidality as a primary endpoint, many reported reductions in depressive symptoms and suicidal thoughts following CBT. Nonetheless, data on the long-term efficacy of these approaches remain limited, necessitating more rigorous follow-up studies to evaluate outcomes over time.

Dietary factors and nutritional interventions remain underexplored in the management of PMDD. Some studies suggest potential benefits of nutrient supplementation or dietary adjustments [35] but robust clinical trials are lacking. Healthy eating habits may support overall well-being and resilience; however, specific nutritional prescriptions for PMDD require further investigation.

The social determinants of health—particularly socioeconomic status, race, and

cultural beliefs—play a critical role in how PMDD is experienced, diagnosed, and treated. Studies indicate that women from lower-income backgrounds face a greater burden of severe PMDD symptoms and reduced access to care [12] [35]. Cultural stigma around menstruation can also delay diagnosis or prevent disclosure of symptoms. For example, Pilver *et al.* [29] found significant racial and ethnic disparities in suicide attempts among women with PMDD, although a predominantly white sample limited their findings. Similarly, Ogebe *et al.* [11], who examined populations in both Nigeria and the United States, found that cultural context influences the presentation and reporting of PMDD symptoms. However, their conclusions were hampered by small and unbalanced samples.

To address potential cultural and regional variations in the perception and treatment of PMDD, this review includes studies from both high- and low-income countries, highlighting differences in diagnostic practices, treatment availability, and societal attitudes. The synthesis advocates for a culturally responsive approach to diagnosis and treatment, with recommendations for clinician training, inclusive research design, and patient education that consider local health beliefs and resource constraints.

Handling conflicting findings posed a methodological challenge during this review. While most studies demonstrated a significant relationship between PMDD and suicidality, a few did not. These studies were not excluded but were critically appraised based on their sample size, diagnostic criteria, and outcome measures. Discrepancies were primarily attributed to inconsistencies in the application of PMDD criteria and underpowered sample sizes. Including such studies in the review adds transparency and reflects the complexity of research in this field.

Across the studies reviewed, a few common intervention patterns emerged. SSRIs, hormonal regulation, and CBT were the most frequently reported treatments associated with symptom reduction. However, even these varied in their effectiveness, underscoring the importance of ongoing research into personalised care strategies. Future studies should aim for standardised diagnostic criteria, prospective symptom tracking, and diverse participant demographics to enhance the quality and applicability of findings.

In conclusion, PMDD represents a serious but under-addressed mental health challenge that significantly elevates the risk of suicidality among affected women. Addressing this issue requires a multifaceted approach, one that includes more accurate diagnostic procedures, culturally inclusive research, lifestyle interventions, and tailored treatment options. Healthcare systems need to develop accessible, effective, and patient-centred care strategies that account for the biological, psychological, and social dimensions of PMDD. With enhanced research, early detection, and compassionate clinical management, the burden of suicidality in women with PMDD can be meaningfully reduced.

5. Conclusions

This study explored the suicide risks in women with premenstrual dysphoric disorder (PMDD), analysing seven studies. The findings revealed that PMDD, par-

ticularly its mood changes, can lead to hopelessness and despair, contributing to suicidal ideation and behaviour. PMDD typically begins in adolescence and persists throughout a woman's reproductive life, but it often goes undiagnosed, increasing suicide risk. Risk factors for PMDD include a history of PMS, family history of PMDD or PMS, mood disorders, and childhood abuse.

Symptoms of PMDD vary but generally begin one to two weeks before menstruation and end after the onset of bleeding. The most common symptom was severe depression, which led many women to experience suicidal thoughts and attempts. Studies consistently linked PMDD to a higher risk of suicidality compared to other mental health conditions, with PMDD sufferers being three times more likely to report suicidal ideation than those without the disorder.

The underlying mechanisms between PMDD and suicidality remain unclear. Some studies suggest hormonal fluctuations, particularly decreased oestrogen levels during the luteal phase, may contribute to mood and behaviour dysregulation. In contrast, others point to reduced serotonin levels leading to depression and suicide risk.

Treatment for PMDD includes SSRIs, hormonal therapies, oral contraceptives, and cognitive-behavioural therapy (CBT). While these treatments address mood symptoms, they do not directly target suicidality. The stigma surrounding PMDD often prevents women from seeking help. Thus, PMDD and suicidality are significant public health concerns that require a holistic, global approach to prevention and treatment. Healthcare professionals should screen women with PMDD for suicidality and provide appropriate support. More research is needed to understand the relationship between PMDD and suicidality and develop more effective treatments.

5.1. Recommendations

A global approach should be adopted to reduce suicide risks in women with PMDD. Simpler diagnostic methods need to be developed; This will make treatments more accessible and affordable. Establishing simple diagnostic methods will aid early detection. More education and enlightenment are necessary about PMDD, especially for young girls. Further research is needed to understand the causal mechanisms of PMDD, which would inform the development of preventive measures. Additionally, supporting women with PMDD, such as offering menstrual leave, could help reduce work-related stress, and this needs to be encouraged.

5.2. Strengths

This research is relevant and timely, addressing a global health issue—the systematic review synthesised evidence from various studies, providing a comprehensive analysis of suicidality in PMDD. The research involved large sample sizes and represented global evidence on the topic. This work lays the foundation for future studies on suicidality in women with PMDD.

5.3. Limitations

The short timeframe for the study limited the depth of research. The available studies on suicidality and PMDD were limited, and many diagnoses were retrospective or provisional. The inclusion criteria excluded studies older than 15 years, potentially missing relevant research. Some regions, such as Africa, had limited representation, and there was no data on completed suicides related to PMDD, making it difficult to estimate how many women die by suicide due to this condition.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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Abbreviations

- CASP—Critical Appraisal Skills Programme;
- CBT—Cognitive Behavioural Therapy;
- DSM—Diagnostical and Statistical Manual for Mental Disorders;
- MINI—International Neuropsychiatric Interview;
- PAF—Premenstrual Assessment Form;
- PMDD—Premenstrual Dysphoric Disorder;
- PMS—Premenstrual Syndrome;
- PRISMA—Preferred Reporting Items for Systematic Reviews and Meta-Analyses;
- PTSD—Post Traumatic Stress Disorder;
- SPIDER—Sample, Phenomenon of Interest, Design, Evaluation, Research type;
- SSRI—Selective Serotonin Reuptake Inhibitors;
- WMH-CIDI—World Mental Health Composite International Diagnostic Interview.