# Risk factors associated with postpartum depression in immigrants in the U.S.: A systematic scoping review

# Risk factors associated with postpartum depression in immigrants in the U.S.: A systematic scoping review

Michaela Ayisi
School of Public Health & Health sciences
Department of Health Promotion & Policy
Jamie Hartmann-Boyce
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# Abstract

## Background

Meta analysis has shown that immigrant women are twice as likely to display postpartum depression (PPD) symptoms than non-immigrant women yet, the reason behind this increased risk is unknown. This review sets out to synthesize existing research on PPD in immigrant women and illuminate gaps for future research.

The research question guiding this review is: what are the factors that impact postpartum depression (PPD) risk among immigrant women in the U.S.?

## Methods

APA PsychInfo was searched on 24 February 2025 for studies assessing the risk factors of PPD in immigrant women in the U.S at any time. Only primary, observational studies were included. Results were narratively synthesized, grouped by risk factor type and further divided by specific risk factor.

## Results

Five studies were included, representing 506 participants. The mean age of participants ranged from 29-33.4 and the mean years living in the U.S. ranged from 5.56-10. All included studies focused on immigrant populations originating from Asian and Middle Eastern countries. All studies utilized validated PPD measurements.

Two of five studies reported on acculturation; one reported that lower levels of acculturation related to higher levels of PPD symptoms, whereas the other found no significant correlation. Two of the five included studies reported on social support and all found that lower levels of social support were associated with higher levels of PPD symptoms, suggesting social support may be an important risk factor to consider. Two studies reported on family dynamic descriptors including marital relationship, in-law relationship, arranged marriage, and child's gender. Only marital relationship scores had significant associations with PPD scores. Two studies reported on mother's mental health and confidence. One study found antenatal anxiety, antenatal depression, life stress, and maternity blues all increase PPD symptoms; while the other study found that low maternal self-efficacy was related to higher PPD symptoms.

## Conclusion

The literature examining risk factors for PPD in immigrant women living in the U.S. is minimal. Data suggests strong associations between low social support and increased PPD symptoms. More research should be conducted to assess the impact of acculturation of PPD, as results are conflicting. Finally, future research should be done in immigrant populations from various countries of origin as current research heavily focuses on Asian and Middle Eastern countries.

# Introduction

## Background and definitions

Postpartum depression, also referred to as PPD, is a mood disorder that occurs within the first 12 months after childbirth.[1] It can manifest as a variety of symptoms including but not limited to: persistent sadness, anxiety, loss of appetite, and difficulty sleeping.[1] When left untreated PPD can be severe, long lasting, and interfere with a mother's ability to bond and care for the child, resulting in diminished wellbeing of both mother and child.[1] PPD affects about 13% of postpartum mothers in the United States (U.S.), making it one of the most common adverse birth outcomes.[2] Furthermore, this number is believed to be underreported as many mothers go undiagnosed as a result of stigma, lack of awareness, and other factors.[3]

Though all postpartum mothers are at risk for PPD, meta analysis has shown that immigrant women are twice as likely to display PPD symptoms than non-immigrant women.[4] The reason behind this increased risk is unknown but studies have suggested possible indicators being shorter length of residence in the destination country, lower levels of social support, and poorer marital adjustment.[4] Despite immigrants having double the risk of showing PPD symptoms [4] and academia having little understanding of the etiology[1], preliminary searches indicate that very little research has been done in this population. This finding is consistent with the fact that both immigrants and women are under researched demographics, limiting the information available.[5] Further research investigating the risk factors associated with PPD in immigrants can illuminate the reasons for the discrepancy in PPD prevalence.

## Health equity

There are various inequities that exist regarding the diagnosis and treatment of PPD that result in and perpetuate varying outcomes for different demographics.[2,6] Lack of representation in research decreases the generalizability of results which leaves providers and patients with best practices and guidelines that may not be applicable to certain demographics.[5] This perpetuates inequities because populations who have been included in research have the standard of care tailored to them while those who have been left out may receive less than optimal care.[5] Beyond research, health inequity exists in diagnoses of PPD.[2] Individuals who may be uninsured, or live in areas with less access to quality healthcare will go undiagnosed and be unable to receive any treatment at all.[6] For example, if an immigrant woman who speaks little English, attends a hospital that is overcrowded and under-resourced they may not have the capacity for a translator let alone the time to develop the rapport and trust required for proper PPD screening.

## Theoretical background

Cumulative stress theory posits that exposure to stressors add up overtime and cause physiological dysregulation which can result in both physical and mental health impairments.[7] Individuals migrating to a foreign country often face a multitude of stressors spanning individual, community, and societal levels.[7] Financial issues, language barriers, discrimination, finding secure housing, and navigating the complex U.S. healthcare system are all examples of prolonged stressors that many immigrants are faced with.[7] Based on the cumulative stress theory, these events/stressors build up overtime and cause a decline in health for those experiencing them. Immigrant mothers who give birth in the U.S. may be confronted with all the aforementioned stressors in addition to navigating life as a new mother. Based on the theoretical framework, this combination of stressors may serve as a possible explanation for the increased PPD symptomology seen in immigrant mothers.

## Rationale

In order to address the issue of PPD we first have to ensure it is thoroughly understood in multiple populations. In order to develop treatments and supports that are effective for all people, we have to know what is contributing to the disease burden in the immigrant population and why it varies so much from non-immigrants. Looking at the risk factors that contribute to PPD in immigrants will serve as the building blocks to better understanding the condition as a whole. Researchers, mental health providers, public health professionals, and other stakeholders who have interest in either PPD or immigrant health may find the results of this review useful and may be able to collaborate to further address the issue.

A review on this topic will synthesize what is known regarding postpartum depression in immigrant women and illuminate gaps for future research. In addition, a systematic review may aid in developing tailored intervention strategies for this population.

## Review question

What are the factors that impact postpartum depression (PPD) risk among immigrant women in the U.S.?

# Methods

I followed prespecified methods in order to conduct this review.

## Inclusion criteria

To be included studies must:

- Focus only on foreign born women who live in the U.S or a mixed population that reports immigrant specific results
- Examine women who have been formally diagnosed with postpartum depression or meet self report criteria for study
- Include information on risk factors associated with postpartum depression
- Be an observational study
- Be a primary study

## Searching

I searched APA PsychInfo on 24 February 2025 for studies assessing the risk factors of postpartum depression in immigrant women in the U.S at any time. I worked with a subject librarian to develop my search strategy. These are the terms I used: (postpartum depression or postnatal depression or ppd or pnd or post-partum depression or post-natal depression ) AND (immigrant OR foreign-born OR asylum seekers) AND (United states OR america OR USA OR U.S.)

## Screening

I downloaded my search results into Zotero and uploaded the references to Rayyan for screening. I screened my results individually. I screened all studies at the title and abstract stage and will screen them at the full text stage as well.

## Data extraction

I extracted data from the studies into a form I designed in Google sheets. I extracted information on the following variables where available:

- Methods (study design, PPD measurement scale, location and timing of the study)
- Participants (number, number and percentage of immigrants, mean age, country of origin, time between immigration and childbirth)
- Risk factors

## Data synthesis[1]

I narratively synthesized the results of included studies, grouping them by risk factor type and further separate by specific risk factor.

## Critical appraisal

As this is a scoping review I did not formally assess bias across studies. However, I extracted data on the following variables and considered them as potential indicators of study quality:

- PPD measurement type (I favored studies that utilize a validated measure for PPD and PPD symptoms as opposed to those who use a non-validated measure or no measure at all).
- Participant make up: (I favored the results of studies that focus solely on immigrant women as opposed to a mixed population. I considered that the methods in mixed population studies may be less culturally tailored to immigrant women and may affect the results).

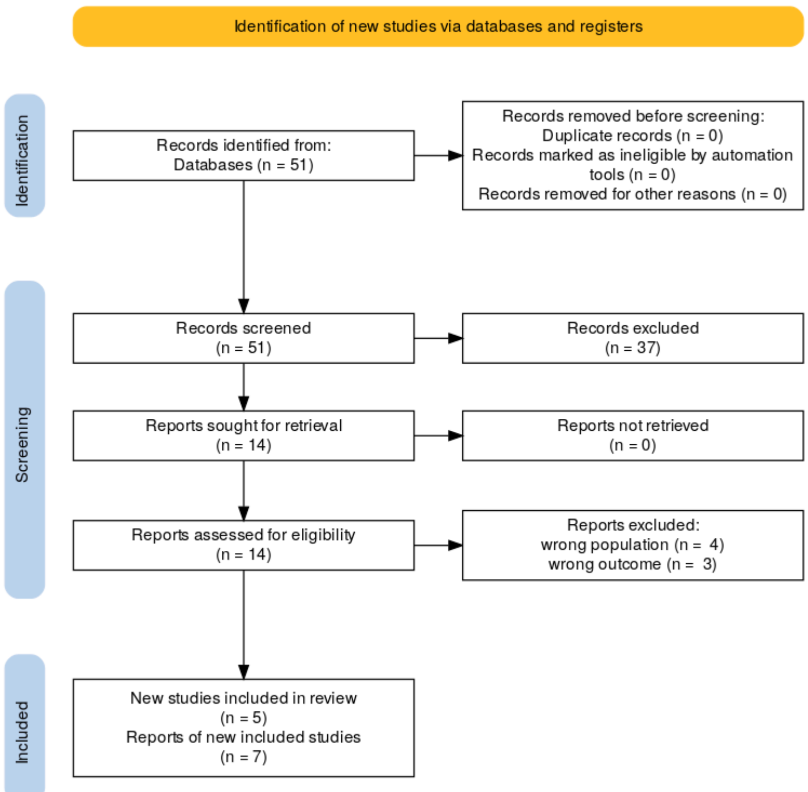
[1] I initially intended to group results by risk factor type and further separate by demographic information such as country of origin, age, and time between immigration and childbirth; however information was not available on individual participant demographics and their risk factors.

# Results

## Results of search

Initial searches yielded 51 studies (Figure 1). There were zero duplicates and I screened 51 titles and abstracts. I retrieved and screened 14 full texts excluding 7 due to: wrong population (4 articles) and wrong outcome (3 articles). I included 5 studies and 7 articles in my review.

Figure 1. PRISMA diagram of study flow




## Characteristics of included studies

Table 1 includes details of the five included studies and seven included reports. Overall, the included studies represented 506 participants, as three of the articles take from the same sample (Alhasanat-Khalil, 2019, Alhasanat-Khalil, 2018 A, and Alhasanat-Khalil, 2018 B). Three of the studies utilized a cross-sectional study design, one used a quantitative descriptive design, and one was not reported. All studies took place in the U.S., two of them occurred in Michigan, one of them occurred in California, one only reported that the majority of the sample resided in New York and California, and one only reported participant regions which included South, Northeast, West and Midwest. The mean age of participants in included studies range from 29-33.4. All included studies focused on immigrant populations originating from Asian and Middle Eastern countries or identified as Arab. The studies measured postpartum depression symptoms using either, the Edinburgh Postnatal Depression Scale (EPDS), Postpartum

Depression Predictors Inventory (PDPI), Oxford Happiness Inventory (OHI), Beck Depression Inventory (BDI), and Postpartum Depression Screening Scale (PPDS). The mean years living in the U.S. ranged from 5.56-10 in the studies. Four studies consisted of only immigrants and one study included half immigrants and half non-immigrants as a comparator group; only one study included a comparator group.

Table 1. Characteristics of included studies

| Study ID | n | Study design | State | Age | Country of origin | PPD scale | Years in the U.S. | % of immigrant in sample |
|---|---|---|---|---|---|---|---|---|
| Alhasanat-Khalil, 2018[8,9,10] | 115 | Cross-sectional | Michigan | 29.32 | Yemen, Lebanon, Iraq, others | Edinburgh Postnatal Depression Scale (EPDS) | 7.78 | 100% |
| Alhasanat-Khalil, 2017[11] | 50 | Cross-sectional | Michigan | 30.16 | Egypt, Iraq, Jordan, Lebanon, Palestine ,Qatar, Saudi Arabia, Yemen | Edinburgh Postnatal Depression Scale (EPDS) and Postpartum Depression Predictors Inventory (PDPI) | 6.36 | 100% |
| Fan, 2008[12] | 162 | NR | Majority California & New York | 31.51 (immigrant) 28.78 (non-immigrant) | Chinese ethnicity, immigrated from Taiwan | Edinburgh Postnatal Depression Scale (EPDS), Oxford Happiness Inventory (OHI), Beck Depression Inventory (BDI) | 5.56 | 50% due to comparator group |
| George, 2023[13] | 121 | Cross-sectional | Reported regions: South, Northeast, West, | 33.4 | India | Edinburgh Postnatal Depression Scale (EPDS) | 7.4 | 100% |

| Study ID | n | Study design | State | Age | Country of origin | PPD scale | Years in the U.S. | % of immigrant in sample |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | Midwest | | | | | |
| Goyal, 2006[14] | 58 | Quantitative, descriptive study | California | 29 | India | Postpartum Depression Screening Scale (PPDS) | 10 | 100% |

## Critical appraisal

All studies used validated scales for postpartum depression however Fan, 2008 uses three different scales for each variable measure which increases the validity of their results. All the included studies consisted of only immigrants except Fan, 2008 which included a comparator group on non-immigrants. For the sake of critical appraisal I still consider Fan, 2008 to be as strong as the other studies because they performed analysis for immigrant and non-immigrant populations separately.

## Synthesis of findings

Results are synthesized below in Tables 2-5. Results are organized by risk factor and their relationship to postpartum depression symptoms. Supporting data can be found in Tables 2 (acculturation), 3 (social support), 4 (family dynamic descriptors), and 5 (mother's mental health and confidence).

## Risk factors identified

### *Acculturation*

As seen in Table 2, two studies reported on acculturation which was measured as acculturation generally, as well as through attraction to American culture (AAmC), attraction to Arabic culture (AArC), acculturative stress, and marginalization.

<u>AAmC</u>

One study (Alhasanat-Khalil, 2018[8,9,10]) was conducted in Arab immigrant women and reported on attraction to American culture as an acculturation measurement. Findings revealed that attraction to American culture was not related to PPD symptoms. Correlation analysis found an r-value of − 0.07 and a p-value of 0.47, while multiple regression analysis reported a beta value of −0.11 and p-value of 0.34. Both showing a weak negative relationship between variables that is not statistically significant.

<u>AArC</u>

One study (Alhasanat-Khalil, 2018[8,9,10]) reported on attraction to Arab culture as an acculturation measurement. This study, which was conducted among Arab immigrant women, found that attraction to Arab culture was not related to PPD symptoms.

Correlation analysis found an r-value of −0.014 and a p-value of 0.88, while multiple regression analysis reported a beta value of −0.02 and p-value of 0.88. Both showing a weak negative relationship between variables that is not statistically significant.

Acculturative stress
One study (Alhasanat-Khalil, 2018[8,9,10]) conducted in Arab immigrant women, reported on acculturative stress. Results showed that higher levels of acculturative stress were related to higher levels of PPD symptoms. Correlation analysis found an r-value of 0.27 and a p-value of less than 0.01, while multiple regression analysis reported a beta value of 0.27 and p-value of 0.003. Both calculations, showing a statistically significant, positive correlation between acculturative stress and PPD symptoms.

Marginalization
One study (Alhasanat-Khalil, 2018[8,9,10]) reported on marginalization as an acculturation measurement. Marginalization was found not to be related to PPD symptoms. Correlation analysis resulted in an r-value of 0.25 and a p-value of 0.008 suggesting a statistically significant, positive correlation between marginalization and PPD symptoms. However, through further calculations, a multiple regression analysis found that marginality score was not significantly related to PPD symptoms with a beta value of β= 0.12 and a p-value of 0.17.

Acculturation
One study (George, 2023[13]) conducted in Indian immigrants, reported on acculturation generally and found that lower levels of acculturation were related to higher levels of PPD symptoms. Both the Asian American Multidimensional Acculturation Scale - Culture of Origin (AAMAS-CO) and the Asian American Multidimensional Acculturation Scale - European-American Culture (AAMAS-EA) were used to measure levels of acculturation. Correlation analysis of AAMAS-CO scores generated an r-value of −0.248 and a p-value of 0.006, while analysis of AAMAS-EA scores generated an r-value of −0.295 and a p-value of 0.001. Both analyses indicated acculturation was significantly and negatively correlated with PPD symptoms.

Table 2. Acculturation

| Study ID | Acculturation in relation to PPD symptoms |
|---|---|
| Attraction to American culture | |
| Alhasanat-Khalil, 2018[8,9,10] | AAmC was not related to PPD symptoms<br>Correlation analysis: ($r = -.07$, $p = .47$)<br>Multiple regression analysis:($\beta = -0.11$, $t = -0.94$, $p=0.34$) |
| Attraction to Arabic culture | |
| Alhasanat-Khalil, 2018[8,9,10] | AArC was not related to PPD symptoms<br>Correlation analysis: ($r = -.014$, $p = .88$)<br>Multiple regression analysis: ($\beta = -0.02$, $t = -0.15$, $p=0.88$) |
| Acculturative stress | |

| Study ID | Acculturation in relation to PPD symptoms |
| --- | --- |
| Alhasanat-Khalil, 2018[8,9,10] | Acculturative stress was significantly positively correlated with PPD symptoms. Higher levels of acculturative stress were related to higher levels of PPD symptoms<br>Correlation analysis: ($r = 0.27$, $p < .01$).<br>Multiple regression: ($\beta = 0.25$, $t = 3.08$, $p = .003$) |
| Marginalization | |
| Alhasanat-Khalil, 2018[8,9,10] | Women who reported higher levels of marginalization reported higher levels of PPD symptoms ($r = .25$, $p = .008$). Women who reported higher levels of marginalization reported higher levels of PPD symptoms<br>Correlation analysis: ($r = .25$, $p = .008$).<br>However, through multiple regression it was found that marginality score was not related to PPD symptoms<br>Multiple regression: ($\beta = 0.12$, $t = 1.37$, $p = .17$) |
| Acculturation | |
| George, 2023[13] | AAMAS-CO scores were significantly and negatively correlated with postpartum depression scores<br>Correlation analysis: ($r = -.248$, $p = .006$).<br>AAMAS-EA scores were also significantly and negatively correlated with postpartum depression scores<br>Correlation analysis: ($r = -.295$, $p = .001$)<br>Lower levels of acculturation were related to higher levels of postpartum depression symptoms. |

AAmc: Attraction to American culture
AArc: Attraction to Arabic culture
AAMAS-CO: Asian American Multidimensional Acculturation Scale (Culture of Origin) score
AAMAS-EA: Asian American Multidimensional Acculturation Scale (European-American Culture) score

### *Social support*

As seen in Table 3, two studies reported on social support and its relationship to PPD symptoms. One study (Alhasanat-Khalil, 2018[8,9,10]) conducted in Arab immigrant women, performed a correlation analysis yielding an r-value of −0.49 and a p-value of less than 0.0001. The other study (George, 2023[13]) was conducted in Indian immigrant women and calculated an r-value of −0.514 and a p-value of less than 0 .001. Both studies found significant and negative correlations between social support and PPD symptoms, meaning that lower levels of social support were related to higher levels of PPD symptoms.

Table 3. Social support

| Study ID | Social support in relation to PPD symptoms |
| --- | --- |
| Alhasanat-Khalil, 2018[8,9,10] | Social support was significantly negatively correlated with PPD symptoms; lower levels of social support were related to higher levels of PPD symptoms<br>Correlation analysis: ($r = -.49$, $p < .0001$)<br>Multiple regression: ($\beta = -0.47$, $t = -6.62$, $p < .0001$) |

| | |
|---|---|
| George, 2023[13] | Social support scores were significantly and negatively correlated with postpartum depression scores; that is; lower levels of social support were related to higher levels of postpartum depression symptoms<br>Correlation analysis: ($r = −.514$, $p< .001$) |

*Family dynamic descriptors*

As seen in Table 4, Two studies reported on family dynamic descriptors in relation to PPD symptoms and measured them by looking at ratings of marital relationship, in-law relationship, arranged marriage, and gender of child.

<u>Marital relationship</u>

One study (Fan, 2008[12]) conducted in ethnically Chinese women who immigrated from Taiwan, reported on marital relationship in relation to PPD symptoms. PPD symptoms were measured on three different scales (OHI,EPDS, BDI) and results were reported for each. Increased marital relationship score indicated greater satisfaction in marriage. When the marital relationship variable was added to a multiple regression analysis using OHI as PPD measurement, it changed the $R^2$ value by 0.17 with a p-value of less than 0.001. The same was done using EPDS and BDI as PPD measurement scales and both found change in $R^2$ of 0.17 and p-values of less than 0.001). This resulted in the conclusion that marital relationship had significant contributions to the prediction of postpartum mood in multiple regression model.

<u>In-law relationship</u>

One study (Fan, 2008[12]) conducted in ethnically Chinese women who immigrated from Taiwan, reported on in-law relationship in relation to PPD symptoms. PPD symptoms were measured on three different scales (OHI,EPDS, BDI) and results were reported for each. Increased in-law relationship score indicated a better relationship. Adding the in-law relationship variable to a multiple regression analysis using OHI,EPDS, and BDI resulted in no significant effect on predicting postpartum mood in any of the models. Specific statistical changes were not reported.

<u>Arranged marriage</u>

One study (Goyal, 2006[14]) was conducted in Indian immigrant women and reported on arranged marriage in relation to PPD symptoms. The study found no statistically significant difference in the level of postpartum depressive symptomatology between the women in arranged marriages and the women in non-arranged marriages. T-test analysis was conducted but no statistical values were reported.

<u>Gender of child</u>

One study (Goyal, 2006[14]) was conducted in Indian immigrant women and reported on gender of child in relation to PPD symptoms. The study stated that some Indian cultures prefer male over female children and hypothesized that gender of child may impact PPD symptomology. T-test analysis found no statistically significant difference in the level of postpartum depressive symptomatology between the women who had male infants and those who had female infants. Specific statistical changes were not reported.

Table 4. Family dynamic descriptors

| Study ID | Family dynamic descriptors in relation to to PPD symptoms |
|---|---|
| Marital relationship | |
| Fan, 2008[12] | OHI: Marital relationship had significant contributions to the prediction of postpartum mood in multiple regression model. Increased marital relationship score, increases OHI score. Multiple regression: ($R^2$ change = .17, β= 0.45, p < .001). EPDS: Marital relationship had significant contributions to the prediction of postpartum mood in multiple regression model. Increased marital relationship score, decreases EPDS score. Multiple regression: ($R^2$ change = .17, β= -.46, p < .001) BDI: Marital relationship had significant contributions to the prediction of postpartum mood in multiple regression model. Increased marital relationship score, decreases BDI score. Multiple regression: ($R^2$ change = .17, β= -.46, p < .001) |
| In-law relationship | |
| Fan, 2008[12] | OHI: In law relationship measure had no significant effect on predicting postpartum mood in multiple regression model. Multiple regression: NR EPDS: In law relationship measure had no significant effect on predicting postpartum mood in multiple regression model. Multiple regression: NR BDI: In law relationship measure had no significant effect on predicting postpartum mood in multiple regression model. Multiple regression: NR |
| Arranged marriage | |
| Goyal, 2006[14] | The analysis showed no statistically significant difference in the level of postpartum depressive symptomatology between the women in arranged marriages and the women in non arranged marriages T-test statistical result: NR |
| Gender of child | |
| Goyal, 2006[14] | The analysis showed no statistically significant difference in the level of postpartum depressive symptomatology between the women who had male infants and those who had female infants T-test statistical result: NR |

OHI: Oxford Happiness Inventory
EPDS: Edinburgh Postnatal Depression Scale
BDI: Beck Depression Inventory
*OHI, EPDS, and BDI relate to the postpartum mood scale utilized*

### *Mother's mental health and confidence*

As seen in Table 5, two studies reported on mother's mental health and confidence level in relation to PPD symptoms which was measured by looking at antenatal anxiety, antenatal depression, life stress, maternity blues, and maternal self-efficacy.

<u>Antenatal anxiety</u>

One study (Alhasanat-Khalil, 2017[11]) was conducted in Arab immigrant women and reported on antenatal anxiety in relation to PPD symptoms. The results found that antenatal anxiety was significantly, positively associated with EPDS score. Correlation analysis resulted in an r-value of 0.46 and a p-value of 0.001.

Antenatal depression

One study (Alhasanat-Khalil, 2017[11]) reported on antenatal depression in relation to PPD symptoms. This study conducted among Arab immigrants found that antenatal depression was significantly, positively associated with EPDS score. Correlation analysis resulted in an r-value of 0.45 and a p-value of 0.001.

Life stress

One study (Alhasanat-Khalil, 2017[11]) was conducted in Arab immigrant women and reported on life stress in relation to PPD symptoms. The results found that life stress was significantly, positively associated with EPDS score. Correlation analysis resulted in an r-value of 0.30 and a p-value of 0.02.

Maternity blues

One study (Alhasanat-Khalil, 2017[11]) reported on maternity blues in relation to PPD symptoms. Maternity blues was defined as feeling depressed during the first four weeks postpartum. This study conducted among Arab immigrants found that maternity blues was significantly, positively associated with EPDS score. Correlation analysis resulted in an r-value of 0.31 and a p-value of 0.02.

Maternal self-efficacy

One study (George, 2023[13]) conducted in Indian immigrants, reported on maternal self-efficacy. The results showed that lower levels of maternal self-efficacy were related to higher levels of postpartum depression symptoms. Correlation analysis yielded an r-value of −0.269 and a p-value of 0.003.

Table 5. Mother's mental health and confidence

| Study ID | Mother's mental health and confidence in relation to PPD symptoms |
|---|---|
| Antenatal anxiety | |
| Alhasanat-Khalil, 2017[11] | Antenatal anxiety was significantly, positively associated with EPDS score<br>Correlation analysis: ($r = .46$, $p = .001$).<br>Multiple regression: ($\beta = 1.237$, $t = 0.828$, $p = 0.412$)<br>Chi-square analysis: ($X^2=12.5$, $p = .0001$) |
| Antenatal depression | |
| Alhasanat-Khalil, 2017[11] | Antenatal depression was significantly, positively associated with EPDS score<br>Correlation analysis: ($r = .45$, $p = .001$).<br>Multiple regression: ($\beta = 1.554$, $t = 0.949$, $p = 0.348$)<br>Chi-square analysis: ($X^2=10.59$, $p = .001$) |
| Life stress | |
| Alhasanat-Khalil, 2017[11] | Life stress was significantly, positively associated with EPDS score<br>Correlation analysis: ($r = .30$, $p = .02$).<br>Multiple regression: ($\beta = 0.056$, $t = 0.139$, $p = 0.89$)<br>Chi-square analysis: NR |

| | |
|---|---|
| Maternity blues | |
| Alhasanat-Khalil, 2017[11] | Maternity blues was significantly, positively associated with EPDS score<br>Correlation analysis: ($r = 0.31$, $p = .02$).<br>Multiple regression: ($\beta = 3.003$, $t = 2.199$, $p= 0.033$)<br>Chi-square analysis: ($X^2=2.12$, $p= .015$) |
| Maternal self-efficacy | |
| George, 2023[13] | Lower levels of maternal self-efficacy were related to higher levels of postpartum depression symptoms<br>Correlation analysis:($r = -.269$, $p = .003$) |

# Discussion

## Summary of main results

The literature examining the risk factors for PPD in immigrant women that are specifically in the U.S. is minimal. Of the five studies included in this review, two reported on acculturation. One reported on acculturation generally and found that lower levels of acculturation related to higher levels of PPD symptoms. The other study measured acculturation through AArC, AAmC, and marginality scores, none of which were significantly correlated with PPD symptoms. Two of the five included studies reported on social support and all found that lower levels of social support were associated with higher levels of PPD symptoms, suggesting social support may be an important risk factor to consider. Two studies reported on various family dynamic descriptors in relation to PPD. One study measured marital relationship and reported that when added in multiple regression it made significant contributions to the prediction of the postpartum mood model in all three postpartum mood scales used. Increase in marital relationship score led to an increase in OHI score and a decrease in EPDS and BDI scores. The same study measures in-law relationship and found that when added to multiple regression it made no significant effect in predicting postpartum mood on any of the three scales. No further statistical data or inference was provided for in-law relationship. The other study reported on arranged marriage and gender of the child, both having no statistically significant effect on PPD symptomology. Two studies reported on mother's mental health and confidence. One study found antenatal anxiety, antenatal depression, life stress, and maternity blues all increase PPD symptoms. The other study found that low maternal self-efficacy was related to higher PPD symptoms.

## Strengths and limitations of the literature

The primary limitation of the literature is that there is very little research focused on immigrant women in the U.S. who experience PPD. In contrast, my preliminary research yielded more findings on this population in various European countries and Canada than the U.S. In addition, the amount of literature found on PPD for non-immigrants in the U.S. was substantial. It is also worth noting that there are many studies on PPD which include immigrant populations but fail to stratify findings by immigrant status. I originally hoped to conduct a literature review examining PPD in immigrants specifically from West Africa and identify risk and protective factors. I was particularly interested in how cultural practices, whether sustained or lost, impacted participant's symptomatology. However, due to limited literature I soon realized the population had to be expanded to all immigrants in the U.S. and a general focus on risk factors contributing to PPD would be the most feasible given the research available.

I considered both the validity of PPD measurement tool used and the percentage of immigrant population in study design as contributing to the strength of study. Validated PPD measurement tools and studies with a high percentage of immigrant participants were considered to be stronger studies. All five studies utilized validated measurement tools for PPD and four studies consisted of only immigrant participants, one consisted of half immigrants and half non-immigrants as a comparator group.

## Strengths and limitations of the review process

Strengths of this review include that I followed pre-specified methods, and searches were designed with the help from a specialist librarian. Limitations include that certain studies may have been assessing mental health after birth but not explicitly used the work postpartum depression or variants, thus not appearing in the sear. Another limitation is that screening and data extraction were not done in duplicate and therefore I could have possibly missed relevant studies or failed to include certain data or recorded it incorrectly.

## Findings situated is broader literature

A recent systematic review by Chen et al. investigating prevalence and risk factors of PPD in Chinese immigrant women has similar rationale for review.[15] This review utilized many similar search terms but also included broader terms that I did not include such as post-birth, depressive, mental health, and more. Chen et al. also found limited literature for their review, including only four studies that met their inclusion criteria. Reported findings state that risk factors for PPD in Chinese immigrants were lack of social support, economic status, and acculturation. This is mostly consistent with the findings of my review which state lack of social support as a risk factor, acculturation which was found to be a significant risk factor in one study but not the other, however economic status was not assessed in my included studies.

## Contextual considerations

When discussing PPD in immigrant populations it is important to address the societal context in which immigrants as a marginalized group are viewed, particularly in relation to motherhood and mental health. As mentioned previously, immigrants in the U.S. are a minority group who may face high levels of prolonged stress as a result of various social determinants of health such as socioeconomic status, housing status, language barriers, and discrimination.[7] Mental health conditions are also a highly stigmatized subject especially in certain cultures in which these women come from.[16] As a result of these factors, immigrant women may feel shameful about reaching out to be screened for PPD or they may not have the capacity to seek help due to barriers such as language, transportation, and insurance.[3] Those who have lower socioeconomic status may not be in close proximity to medical offices with the resources to provide quality care.[6] Consequently, these women may experience poor outcomes from low quality treatment or from not getting diagnosed at all.[6] For those who are able to get treatment, there may not be resources that are culturally informed or that take into account possible obstacles to utilizing treatment effectively.[5] As previously mentioned, immigrants and women are both underrepresented populations in research; as a result immigrant women experiencing PPD are situated at the intersection of this research gap and cannot be properly considered in the development of best practices and resources.[5] This further perpetuates health inequity between immigrant and non-immigrant women.

## Next steps

This review has important implications for future research and practice. In terms of practice, this review highlights the importance of social support as a factor affecting PPD in immigrants and may be a starting point for new interventions. The review also reported that higher rated marital relationships reduced PPD symptoms, this can also be used as a basis to inform interventions and educational programs for families and support systems.

There were conflicting results regarding acculturation as a risk factor for PPD which should be used as a point for future research as well as comparing the ways in which acculturation is measured. Future research should also focus on immigrant populations from countries outside of Asia and The Middle East. Lastly, research conducted in mixed populations of both immigrants and non-immigrants should separate results between the groups to be used as a comparison or to simply add to the body of literature surrounding this topic.

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