

## Racial/Ethnic Disparities in Antenatal Depression in the United States: a Systematic Review

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## Presenter Disclosures

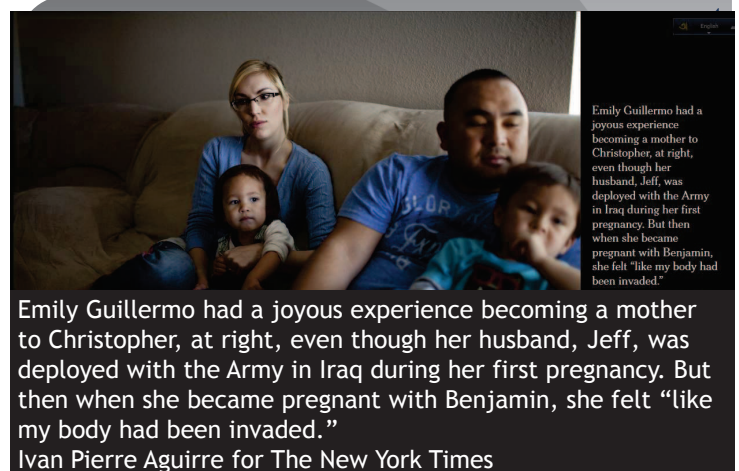
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## Outline

- Antenatal depression
- Rationale behind this review & Objectives
- Methods
- Summary of the studies
- Prevalence and distribution of antenatal depression
- Conclusion & recommendations
- List of eligible studies



Emily Guillermo had a joyous experience becoming a mother to Christopher, at right, even though her husband, Jeff, was deployed with the Army in Iraq during her first pregnancy. But then when she became pregnant with Benjamin, she felt “like my body had been invaded.”

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Ivan Pierre Aguirre for The New York Times

[http://www.nytimes.com/2014/06/16/health/thinking-of-ways-to-harm-her.html?\\_r=0&stid=show/100000002941456/10000002941464](http://www.nytimes.com/2014/06/16/health/thinking-of-ways-to-harm-her.html?_r=0&stid=show/100000002941456/10000002941464)

"..... I became too aimless to do anything.....  
 I had the sense of a figure towering over me. He was about 20ft high and draped in black....  
 "I haven't experienced a single positive thought about this baby," I confessed to Alan, and then cried at the baby's predicament, having a mother who couldn't love it.....  
 What changed? Seeing my baby on a scan towards the end of the first trimester.... I marvelled at his wholeness, his unimpeachable sovereignty, his mighty little republic of self.....  
 And although the statistics tell me that the figure in black is likely to return in his more familiar role of postnatal depression, it's OK because I now know that, like the hormones that conjured him, eventually he'll ebb away."

Excerpts from *Antenatal depression: 'I cried at my baby's predicament'* by Claire Kilroy; published in *The Guardian*, Friday September 2012

<http://www.theguardian.com/lifeandstyle/2012/sep/08/claire-kilroy-antenatal-depression>



## Antenatal depression

- 10-33% of pregnant women: mental health problems.
- 5%-30% of pregnant women: depressive symptoms.
- 13-20% of pregnant women in the U.S. experience depressive symptoms.
- Challenges with depression during pregnancy
  - Concern about safety of antidepressants
  - Overlap of symptoms with those of normal pregnancy
  - High-risk of relapse

WHO, 2008; Birndorf *et al.*, 2001; Diego, *et al.* 2006; Payne *et al.*, 2006; Payne, 2012; Bennett *et al.*, 2004



## Antenatal depression: consequences

- Gestational hypertension
- Spontaneous abortions
- High-risk behaviors
- Maternal suicide
- Epidural anesthesia and operative deliveries
- Preterm birth
- Low birth weight (LBW) infants
- Higher rates of malnutrition, stunting, diarrhea and other infectious diseases
- Decrease in breastfeeding initiation
- Postpartum depression

Grioriadis *et al.*, 2013; Grote *et al.*, 2010; Andersson *et al.*, 2004; Payne, 2012 ; Kurki *et al.*, 2000



## Rationale behind this systematic review

- Disparities in depression prevalence exist in adult population: Nearly 13% of non-Hispanic blacks and 11.7% of Hispanics compared with 8% of non-Hispanic whites.
- Various pregnancy outcomes, including preterm birth and low birthweight, are more prevalent in non-whites, compared to whites.
- Differences in maternal mental health might account for some of the unexplained racial/ethnic disparities in perinatal outcomes.
- No conclusive evidence regarding racial/ethnic distribution of depression among pregnant women.

[http://www.cdc.gov/features/dsdepression/revise\\_table\\_estimates\\_for\\_depression\\_mmwr\\_erratum\\_feb-2011.pdf](http://www.cdc.gov/features/dsdepression/revise_table_estimates_for_depression_mmwr_erratum_feb-2011.pdf)



## Aims of this systematic review

- To summarize existing literature concerning racial/ethnic disparities in prevalence of antenatal depression in the U.S.
- To examine how risk factors/correlates of antenatal depression vary by racial/ethnic groups.

## Methods

- Extensive electronic search for all published articles till October, 2014.
- Keywords: ("depression" or "depressive" or "mental" or "psychological") and ("pregnant" or "pregnancy" or "antenatal"; and "race" or "racial" or "ethnic").
- Databases: PubMed, CINAHL Plus with full texts and PsycINFO.
- Titles and abstracts screened.
- Full-texts reviewed for eligibility.

## Inclusion criteria

- Research articles published in peer-reviewed journals.
- Study sample included pregnant women, or, asked questions pertaining to their most recent pregnancy.
- Study conducted in the U.S.
- Provides data on the prevalence of depressive symptoms (physician-diagnosed; self-reported; or, measured by questionnaire) during pregnancy.
- Describes the racial/ethnic distribution of antenatal depression.

## Exclusion criteria

- Full texts could not be obtained.
- Full text not in English.
- Case studies and systematic reviews.
- All study participants belonging to single race/ethnicity.
- All study participants were depressed at baseline, or, had a history of depression.

## Study quality assessment

Standard quality assessment criteria (Kmet, Lee & Cook, 2004)

1. Question / objective sufficiently described?
2. Study design evident and appropriate?
3. Method of subject/comparison group selection or source of information/input variables described and appropriate?
4. Subject (and comparison group, if applicable) characteristics sufficiently described?
5. If interventional and random allocation was possible, was it described?
6. If interventional and blinding of investigators was possible, was it reported?
7. If interventional and blinding of subjects was possible, was it reported?
8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? means of assessment reported?
9. Sample size appropriate?
10. Analytic methods described/justified and appropriate?
11. Some estimate of variance is reported for the main results?
12. Controlled for confounding?
13. Results reported in sufficient detail?
14. Conclusions supported by the results?

## Scoring

- Each criteria has response options yes, partial, no and N/A.
- **Total sum**= (number of “yes” \* 2) + (number of “partials” \* 1)
- **Total possible sum** = 28 - (number of “N/A” \* 2)
- **Summary score**: total sum / total possible sum.
- Possible range of summary scores: 0-1.

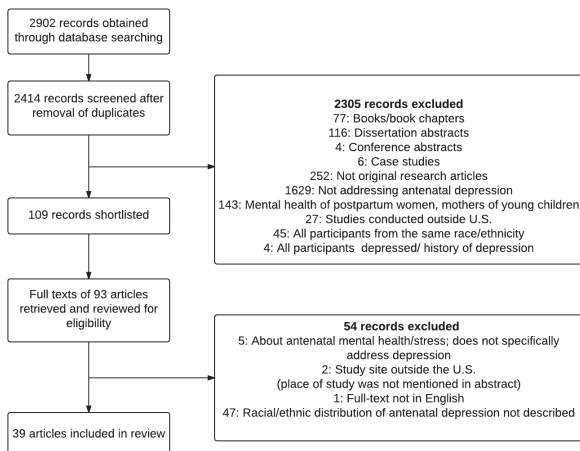


Figure 1: Results of search strategy

## Summary of the studies

- 39 articles met eligibility criteria
- Two articles used same sample as two other articles (i.e. based on same study).
- Dates of publication: range from 1995 to 2014; 23: published from 1995 to 2010; 17: after 2011.
- Sample sizes: vary widely; range from 56 to 19,219.
- Two studies included pregnant smokers only.
- Some used convenience samples; others did random sampling.

## Summary of the studies (contd.)

- Types of study: Cross-sectional (23 out of 40 studies); prospective cohort (15); randomized clinical trial (2).
- States: Maryland, California, Minnesota, Michigan, Illinois, Washington, North Carolina, Indiana, Pennsylvania, Michigan, Missouri, Hawaii, Connecticut, Massachusetts, New York, Tennessee, and Alabama.
- Highest number of studies in North Carolina and Michigan: Five each.
- One study used U.S. nationwide Data from NHANES.
- Scores for studies included in this review: 0.68-0.96.

## Summary of studies (contd.)

- Settings: Mostly urban and suburban; 2 studies specified that rural areas were included (Missouri and a Southeastern community).
- Participants recruited from: Federally Qualified Health Centers (FQHCs); community obstetric/gynecologic clinics; university-based hospitals and prenatal clinics.
- Studies also involved analysis of medical records, baseline data from longitudinal studies (e.g. Health Status in Pregnancy Study); and survey data.
- Some studies specifically focused on low-income women, inner-city women, and, minority women.

## Instruments used

- Center for Epidemiologic Studies Depression (CES-D) Scale: 14 articles.
- Patient Health Questionnaire (PHQ): 4 articles
- Edinburgh Postnatal Depression Scale (EPDS): 4 articles.
- Beck Depression Inventory (BDI): 8 articles
- Others: New York Statewide Perinatal Data System (SPDS) measure of depression; Structural Clinical Interview for DSM-IV (SCID); Diagnostic Interview Schedule (DIS)-IV; PRIME-MD.
- Standardized questionnaires; self-reports of diagnosis.

## Antenatal depression: prevalence

- Some studies categorized participants as depressed vs. non-depressed (or mild, moderate and severe depression) according to a cut-off.
- Others described mean & standard deviation of scores.
- Prevalence for most studies: 10% to 30%.
- Lowest prevalence: 5.1%  
Sample: 1997 women receiving prenatal care in a university clinic; 69% non-Hispanic white.
- Highest prevalence: 51%  
Sample: 85 Hispanic and 63 African-American women.

## Racial/ethnic distribution

- Majority of studies: Higher prevalence among Hispanics and non-Hispanic blacks, compared to non-Hispanic whites.
- Blacks and Hispanics were found to have up to 5 and 2 fold increased odds respectively.
- Prevalence among non-Hispanic whites: 3% to 28%.
- Prevalence among non-Hispanic blacks: 15% to 49%.
- Prevalence among Hispanics: 13% to 35%.
- In some studies Asians had significantly higher odds compared to whites.

## Racial/ethnic distribution (contd.)

- Study among pregnant women receiving WIC services in rural and urban Missouri:  
A higher prevalence of 12-month major depressive disorder among Caucasians (9.5%; 95% CI: 4.8-9.7) than African-Americans (7.2%; 95% CI: 6.3-12.7).
- In some cases: racial/ethnic differences were not statistically significant, especially after adjusting for covariates.
- Few studies found that the prevalence of antenatal depression among Latinas was comparable to, or, even lower than non-Hispanic whites.

## Conclusions

- Different instruments with different cut-offs have been used to assess antenatal depression.
- Most studies are clinic-based and conducted in urban areas.
- Prevalence of antenatal depression varies widely.
- In general, the prevalence is higher among minorities, including African-Americans and Hispanics.
- Attempts to examine risk factors of depression among pregnant women, by race/ethnicity are rare.

## Recommendations

- More population-based studies are necessary to examine the prevalence and distribution of antenatal depression.
- Studies focusing on American Indians and Asian Americans/Pacific Islanders.
- More studies need to be conducted in the rural areas in different parts of the country.
- Instead of having race/ethnicity as a covariate, it might be interesting to stratify and examine how the correlates vary.
- Inclusion of antenatal depression in Nationwide surveys, such as PRAMS.

## List of eligible studies

- Bennett, I. M., Culhane, J. F., Webb, D. A., Coyne, J. C., Hogan, V., Mathew, L., & Elo, I. T. (2010). Perceived discrimination and depressive symptoms, smoking, and recent alcohol use in pregnancy. *Birth, 37*(2), 90-97.
- Cameron, R. P., Grabill, C. M., Hobfoll, S. E., Crowther, J. H., Ritter, C., & Lavin, J. (1996). Weight, self-esteem, ethnicity, and depressive symptomatology during pregnancy among inner-city women. *Health Psychology, 15*(4), 293.
- Canady, R. B., Bullen, B. L., Holzman, C., Broman, C., & Tian, Y. (2008). Discrimination and symptoms of depression in pregnancy among African American and White women. *Women's Health Issues, 18*(4), 292-300.
- Chapman, H. A., Hobfoll, S. E., & Ritter, C. (1997). Partners' stress underestimations lead to women's distress: a study of pregnant inner-city women. *Journal of personality and social psychology, 73*(2), 418.
- Connelly, C. D., Hazen, A. L., Baker-Ericzén, M. J., Landsverk, J., & Horwitz, S. M. (2013). Is screening for depression in the perinatal period enough? The co-occurrence of depression, substance abuse, and intimate partner violence in culturally diverse pregnant women. *Journal of Women's Health, 22*(10), 844-852.

## List of eligible studies (contd.)

- Cook, C. A. L., Flick, L. H., Homan, S. M., Campbell, C., McSweeney, M., & Gallagher, M. E. (2010). Psychiatric disorders and treatment in low-income pregnant women. *Journal of Women's Health, 19*(7), 1251-1262.
- Dole, N., Savitz, D. A., Siega-Riz, A. M., Hertz-Picciotto, I., McMahon, M. J., & Buekens, P. (2004). Psychosocial factors and preterm birth among African American and White women in central North Carolina. *American Journal of Public Health, 94*(8), 1358.
- Dornelas, E., Oncken, C., Greene, J., Sankey, H. Z., & Kranzler, H. R. (2013). Major depression and PTSD in pregnant smokers enrolled in nicotine gum treatment trial. *The American Journal on Addictions, 22*(1), 54-59.
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- Gallagher, R. W., Hobfoll, S. E., Ritter, C., & Lavin, J. (1997). Marriage, Intimate Support and Depression during Pregnancy A Study of Inner-City Women. *Journal of health psychology, 2*(4), 457-469.

## List of eligible studies (contd.)

- Gavin, A. R., Melville, J. L., Rue, T., Guo, Y., Dina, K. T., & Katon, W. J. (2011). Racial differences in the prevalence of antenatal depression. *General hospital psychiatry, 33*(2), 87-93.
- Goebert, D., Morland, L., Frattarelli, L., Onoye, J., & Matsu, C. (2007). Mental health during pregnancy: a study comparing Asian, Caucasian and Native Hawaiian women. *Maternal and child health journal, 11*(3), 249-255.
- Haas DM, Weida J, Smith R, Abernathy MP (2011). A comparison of depression symptoms and histories in pregnant women. *J Reprod Med., 56*(1-2):39-43.
- Hickey, C. A., Cliver, S. P., Goldenberg, R. L., McNEAL, S. F., & Hoffman, H. J. (1995). Relationship of psychosocial status to low prenatal weight gain among nonobese black and white women delivering at term. *Obstetrics & Gynecology, 86*(2), 177-183.
- Holzman, C., Eyster, J., Tiedje, L. B., Roman, L. A., Seagull, E., & Rahbar, M. H. (2006). A life course perspective on depressive symptoms in mid-pregnancy. *Maternal and child health journal, 10*(2), 127-138.

## List of eligible studies (contd.)

- Jesse, D. E., Graham, M., & Swanson, M. (2006). Psychosocial and Spiritual Factors Associated With Smoking and Substance Use During Pregnancy in African American and White Low-Income Women. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 35*(1), 68-77.
- Jesse, D. E., & Swanson, M. S. (2007). Risks and resources associated with antepartum risk for depression among rural southern women. *Nursing research, 56*(6), 378-386.
- Lancaster, C. A., Flynn, H. A., Johnson, T. R., Marcus, S. M., & Davis, M. M. (2010). Peripartum length of stay for women with depressive symptoms during pregnancy. *Journal of Women's Health, 19*(1), 31-37.
- Levine, M. D., Marcus, M. D., & Leon-Verdin, M. (2008). Similarities in affect, perceived stress, and weight concerns between Black and White women who quit smoking during pregnancy. *Nicotine & tobacco research, 10*(10), 1543-1548.
- Liu, L., Setse, R., Grogan, R., Powe, N. R., & Nicholson, W. K. (2013). The effect of depression symptoms and social support on black-white differences in health-related quality of life in early pregnancy: the health status in pregnancy (HIP) study. *BMC pregnancy and childbirth, 13*(1), 125.

## List of eligible studies (contd.)

- Loprinzi, P. D., Fitzgerald, E. M., & Cardinal, B. J. (2012). Physical activity and depression symptoms among pregnant women from the National Health and Nutrition Examination Survey 2005-2006. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 41*(2), 227-235.
- Maxson, P. J., Edwards, S. E., Ingram, A., & Miranda, M. L. (2012). Psychosocial differences between smokers and non-smokers during pregnancy. *Addictive behaviors, 37*(2), 153-159.
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- Melville, J. L., Gavin, A., Guo, Y., Fan, M. Y., & Katon, W. J. (2010). Depressive disorders during pregnancy: prevalence and risk factors in a large urban sample. *Obstetrics and gynecology, 116*(5), 1064.
- Mora, P. A., Bennett, I. M., Elo, I. T., Mathew, L., Coyne, J. C., & Culhane, J. F. (2009). Distinct trajectories of perinatal depressive symptomatology: evidence from growth mixture modeling. *American journal of epidemiology, 169*(1), 24-32.

## List of eligible studies (contd.)

- O'Brien, L. M., Owusu, J. T., & Swanson, L. M. (2013). Habitual snoring and depressive symptoms during pregnancy. *BMC pregnancy and childbirth, 13*(1), 113.
- Orr, S. T., Blazer, D. G., & James, S. A. (2006). Racial disparities in elevated prenatal depressive symptoms among black and white women in eastern North Carolina. *Annals of Epidemiology, 16*(6), 463-468.
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- Ritter, C., Hobfoll, S. E., Lavin, J., Cameron, R. P., & Hulsizer, M. R. (2000). Stress, psychosocial resources, and depressive symptomatology during pregnancy in low-income, inner-city women. *Health Psychology, 19*(6), 576.
- Shieh, C., & Wu, J. (2014). Depressive Symptoms and Obesity/Weight Gain Factors Among Black and Hispanic Pregnant Women. *Journal of community health nursing, 31*(1), 8-19.

## List of eligible studies (contd.)

- Sidebottom, A. C., Hellerstedt, W. L., Harrison, P. A., & Henrikus, D. (2014). An examination of prenatal and postpartum depressive symptoms among women served by urban community health centers. *Archives of women's mental health, 17*(1), 27-40.
- Sleath, B., West, S., Tudor, G., Perreira, K., King, V., & Morrissey, J. (2005). Ethnicity and depression treatment preferences of pregnant women. *Journal of Psychosomatic Obstetrics & Gynecology, 26*(2), 135-140.
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- Smith, M. V., Shao, L., Howell, H., Lin, H., & Yonkers, K. A. (2011). Perinatal depression and birth outcomes in a Healthy Start project. *Maternal and child health journal, 15*(3), 401-409.

## List of eligible studies (contd.)

- Soubry, A., Murphy, S. K., Huang, Z., Murtha, A., Schildkraut, J. M., Jirtle, R. L., ... & Hoyo, C. (2011). The effects of depression and use of antidepressive medicines during pregnancy on the methylation status of the IGF2 imprinted control regions in the offspring. *Clin Epigenetics, 3*(2).
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*Thank You*

## Questions?

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