NIH Public Access
Author Manuscript
J Obstet Gynecol Neonatal Nurs. Author manuscript; available in PMC 2013 November 01.

Published in final edited form as:
J Obstet Gynecol Neonatal Nurs. 2012 November ; 41(6): E71–E81. doi:10.1111/j.1552-6909.2012.01385.x.

The Role of Mental Health on Maternal-Fetal Attachment in Low-Income Women

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Abstract

Objective—To examine and describe the influence of maternal depressive symptoms on maternal-fetal attachment (MFA) in predominantly low-income women.

Design—Mixed method.

Setting—Three urban obstetric/gynecologic (OB/GYN) clinics serving predominantly low-income women.

Participants—A convenience sample of 166 women participated in the quantitative component and a purposeful sub-sample of 12 women participated in the qualitative component; all women were between 24–28 weeks gestation at the time of data collection.

Methods—Linear regression models were used to examine the influence of depressive symptoms and social support on MFA. Individual in-depth interviews were conducted among a sub-sample of women to explore the influence of maternal depressive symptoms on MFA.

Results—Fifty-nine percent (n=98) of participants had scores that were clinically significant for depressive symptoms. In the final model of social support and depressive symptoms regressed on MFA, social support ($b = 0.23$, 95% CI [0.09, .37], $p = .002$) and depressive symptoms ($b = -1.02$, 95% CI [−1.32, −.73], $p < 0.001$) were significant predictors. This multivariate linear regression model with two variables accounted for 65.2% of the total variance in overall MFA. Qualitative participants discussed the importance of social support in contributing to their mood state and MFA.

Conclusions—Findings from this study highlight the importance of assessing for depressive symptoms during pregnancy given its influence on MFA. By understanding how important it was

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Disclosure: Supported by the National Institutes of Health (T32MH20014-08), National Institute of Nursing Research (F31NR010957-01A) and the National Center for Research Resources (5KL2RR025006).

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for these women to have a supportive person to experience their pregnancies with, nurses can improve the pregnancy experience for vulnerable populations.

Keywords

maternal-fetal attachment; mental health; health disparities; mixed method

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Adverse neonatal outcomes, including preterm birth and low birth weight, are thought to be caused by a multitude of factors operating at different levels. The most consistent socio-demographic and medical risk factors for these poor outcomes include ethnic minority, single marital status, inadequate prenatal care, poverty, psychosocial stress and preeclampsia (Dominguez, Schetter, Mancuso, Rini, & Hobel, 2005; Grote et al., 2010; Orr, James, & Prince, 2002). However, these variables are not mutually exclusive. Ethnic minority women are disproportionately more likely to be poor, be single, experience adverse events throughout their pregnancies, have limited access to prenatal care, and be exposed to a range of chronic stressors associated with living in impoverished communities (e.g., neighborhood violence, housing instability, food insecurity) (Kramer, Seguin, Lydon, & Goulet, 2000; Seguin, Potvin, St Denis, & Loiselle, 1999; Williams & Jackson, 2005). Moreover, women exposed to these chronic stressors are more likely to be depressed and have smaller social networks to rely on for help, factors that can compromise a woman's ability to emotionally attach to her unborn child and engage in healthy prenatal behaviors (Balaji et al., 2007; Costello, Compton, Keller & Angold, 2003; Kawachi & Berkman, 2001). This broad constellation of social, emotional, and environmental risk factors leading to adverse neonatal outcomes underscores the challenge of identifying how to best help economically disadvantaged pregnant women and their babies.

One area of focus that has received some attention is maternal fetal attachment (MFA), defined as "the extent to which women engage in behaviours that represent an affiliation and interaction with their unborn child" (Cranley, 1981, p.281). Diminished MFA has been associated with less investment in healthy prenatal practices, (Lindgren, 2001) thereby increasing the likelihood of adverse neonatal outcomes. However to date, there has been very little research on MFA in this highly vulnerable population of pregnant women and its relationship to maternal depression and low social support. Indeed, the research that has been published in MFA has primarily focused on middle-class, non-Latino White women with limited exposure to the chronic stressors common to poor women (Alhusen, 2008; Brandon et al., 2008; Condon & Corkindale, 1997; Lindgren, 2001, 2003; Mercer & Ferketich, 1994). The purpose of this mixed methods study was to address this important gap in the literature by examining the influence of maternal depressive symptoms and social support on MFA among a sample of urban, predominantly unmarried, low-income, African American pregnant women. In addition, qualitative interviews were obtained from a subsample of the women to better understand how depressive symptoms influenced their attachment to their unborn children.

Background

Depression is the leading cause of disease-related disability among women and women of childbearing age are at high risk for major depression (D'Alfonso, Iovenitti, Casacchia, & Carto, 2002; Kessler, Berglund, Demler, & et al., 2003; Stocky & Lynch, 2000). Pregnancy may increase the risk of depressive episodes, and depression during this period can have devastating consequences not only for the depressed woman but also for her children and family (Burke, 2003; Marmorstein, Malone, & Iacono, 2004; National Research Council and Institute of Medicine, 2009). Specific vulnerable populations report higher prevalence of antenatal depression with rates of 44% among single women, (Lindgren, 2001) and 51%

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among African-American women (Zayas, Cunningham, McKee, & Jankowski, 2002). Risk factors for antenatal depression are similar to risk factors for depression in women of child-bearing age and include poor social support, intimate partner violence, and low maternal education (Yonkers, Ramin, & Rush, 2001). Poverty is also a powerful predictor of antenatal depression with incidence rates of depression 1.5–2 times higher among lowest socioeconomic groups (Seguin et al., 1999; Weissman, 1988) though direction effects are an important consideration in interpretation (i.e. whether poverty causes depression or being depressed makes it difficult to attain or maintain employment).

Few studies have examined the relationship between depression and MFA and conflicting results have been obtained. In some studies, higher levels of depressive symptoms were found to predict lower levels of MFA (Brandon et al., 2008; Condon & Corkindale, 1997; Lindgren, 2001; Mercer et al., 1998). Other studies did not find an association between depressive symptoms and MFA (Chazotte, Freda, Elovitz, & Youchah, 1995; Hart & McMahon, 2006). A recent meta-analysis by Yarcheski and colleagues (2009) examined predictors of MFA, including 15 studies that examined the relation between depression and MFA. Results demonstrated that depression was found to be a predictor of MFA; however, the effect size was low (r = .17–.19). Noteworthy is that the range of individual effect sizes across studies for depression varied (r = .01–.38) and this warrants further study. Furthermore, the majority of these studies examined these relationships in samples that were largely White, partnered, and well-educated.

During pregnancy, social support is considered critical to the physical and mental well-being of the expectant mother (Balaji et al., 2007). Insufficient social support can have profound effects on a woman's physical and mental health during pregnancy, (Jesse, Walcott-McQuigg, Mariella, & Swanson, 2005; McKee, Cunningham, Jankowski, & Zayas, 2001) influencing pregnancy outcomes either directly or indirectly through unhealthy life style behaviors such as smoking or alcohol use (Ahluwalia, Mack, & Mokdad, 2004; Dole, Savitz, Hertz-Picciotto, Siega-Riz, McMahon & Buekens, 2003; Orr et al., 2002). Yarcheski and colleagues (2009), in their meta-analysis, included studies examining social support as a predictor of MFA and found that social support was the most powerful psychosocial predictor of MFA; however, its effect size was only moderate (r = .29), and it is uncertain whether the samples included were at risk of or reporting low levels of social support.

The relationships between antenatal depression and insufficient social support, more prevalent in vulnerable populations, highlight the necessity of examining these predictors as they relate to maternal-fetal attachment (Lorant, Deliege, Eaton et al., 2003; Melville, Gavin, Guo, Fan, & Katon, 2010). There is limited research examining these relationships in vulnerable populations which precludes an enhanced understanding of the associations between depressive symptoms and MFA in low-income, ethnic minority women. An improved understanding of the manner in which psychosocial variables may influence MFA is necessary, as these variables may be amendable to nursing interventions. Prenatal care presents a unique window of opportunity in which nurses can foster relationships with pregnant women, thereby increasing the likelihood of detecting depression and its related negative consequences such as diminished MFA, and poor health practices during pregnancy.

Methods

The primary research question was "What is the influence of depressive symptoms and social support on MFA?" The secondary aims were to understand how low-income, African American women described, MFA including factors felt to encourage or hinder their relationships with their unborn children. Furthermore, we sought to better understand what

role depressive symptoms and social support played in influencing women's bonds with their unborn children.

Design

An embedded mixed methods design was used that included quantitative and qualitative sampling techniques, data collection, and data analysis to examine the relationships of interest (Creswall & Clark, 2011). Quantitative and qualitative data collection occurred simultaneously, and the qualitative data provided a supportive, secondary role in this study (Creswall & Clark, 2011). Furthermore, the mixing of data occurred at the analytic level with comparisons and interpretations derived from each set of data. Through this approach, qualitative results were used to assist in explaining and interpreting the results obtained in the quantitative descriptive analysis (Sandelowski, 2000) while providing greater information about the construct of MFA in the lives of these vulnerable women.

Setting and Sample

A convenience sample of 166 women was recruited from three obstetrical clinics in Baltimore, Maryland. Each of these clinics serves a client population that is primarily African American (> 95%), and of low socioeconomic status. English-speaking pregnant women, aged 16 and older, with singleton pregnancies were eligible to participate. Exclusion criteria included a history of fetal or infant death, abnormal fetal diagnostic result (known fetal anomaly, abnormal first or second trimester screening), and known maternal chronic health disease. These exclusion criteria were assigned because of their potential to influence the attachment process quite differently as compared to those women experiencing seemingly uncomplicated pregnancies. At the time of entry into the study, all women were between 24 and 28 weeks gestation.

Qualitative Sample

A sub-sample of 12 women were invited to participate in the qualitative portion of the study using criterion sampling, a type of purposeful sampling, (Sandelowski, 2000) based on their scores on the Edinburgh Postnatal Depression Scale (EPDS), a screening tool designed to measure depressive symptoms (Cox, Holden, & Sagovsky, 1987). Variation in scores, relative to the EPDS instrument, was included thereby enhancing "informational representativeness" (Sandelowski, 2000, p.250). Specifically, we aimed to include a larger portion of women exceeding the cut-off score for depressive symptomatology (n=9) as well as a smaller number of women (n=3) who did not meet the threshold for depressive symptomatology to best understand the role of depressive symptoms in influencing maternal-fetal attachment. Purposive participant selection and conduction of in-depth interviews commenced at the same time that quantitative recruitment began. In-depth interviews were conducted until informational redundancy was achieved (Sandelowski, 1995).

Procedures

Approval for the study was obtained from the researcher's university institutional review board. Eligible participants were approached by the first author about enrollment in the study during their prenatal care visits. Participants who expressed an interest in participating but had not reached 24 weeks gestation were re-contacted and interviewed prior to scheduled appointments that occurred between 24–28 weeks gestation.

After a complete description of the study, informed consent was obtained. Participants were interviewed in a private space within the clinic. Quantitative interviews lasted approximately thirty minutes. The interviews were conducted by the PI, and an undergraduate nursing

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student trained in research compliance and study procedures. Participants were compensated $15 for their participation. Quantitative recruitment and data collection occurred over an eleven month time period.

Within two weeks following completion of the quantitative data collection phase, a sub-sample of women was invited to participate in the qualitative component based on the scores obtained from the EPDS (Cox et al., 1987). Women were informed that they were asked to participate in the individual in-depth interviews in an effort to better understand how a woman's mood state during pregnancy contributed to her attachment with her unborn child. The qualitative interviews lasted approximately 60 minutes and were conducted in private offices within the obstetrical clinics with only the researcher and participant present. With participant's permission, the individual interview was audio-taped. Participants received $25 for their participation in these interviews. Qualitative recruitment and data collection occurred over a six month time period.

Measures

Demographic and Pregnancy Background—A measure of demographic and pregnancy history data was created for use in this study. Demographic data collected included age, race, marital status, and measures of socio-economic status (i.e., insurance status, employment status, educational information, and household income). Pregnancy history collected included information related to current and past pregnancies (i.e., number of previous pregnancies, number of live births, and number of therapeutic and/or spontaneous abortions).

Maternal Fetal Attachment—The Maternal-Fetal Attachment Scale (MFAS), (Cranley, 1981) is a 24 item measure which measures how pregnant women engage in behaviors that express a sense of belonging and interaction with the unborn child. The response format is a five-point Likert-type items with response options ranging from 1 *(definitely no)* to 5 *(definitely yes)*. Examples of MFAS items include "I talk to my unborn baby" and "I imagine myself taking care of the baby." The total scale score ranges from 24–120 with higher scores denoting higher levels of MFA. This instrument is a widely used measure of MFA and has been used in diverse patient populations including samples of low SES adolescents (Ahern & Ruland, 2003; Hart & McMahon, 2006; Koniak-Griffin, 1988; Lewis, 2006; Lindgren, 2001, 2003; Shieh & Kravitz, 2002, 2006; Wayland & Tate, 1993; Wilson, White, Cobb, Curry, Greene, & Popovich, 2000; Zachariah, 2004) The Cronbach's α was .85 in a previous study (Cranley, 1981) and for the current study was .88.

Social Support—The social support sub-scale of the Prenatal Psychosocial Profile (PPP) was used to measure a woman's perceived social support (Curry, Burton, & Fields, 1998). The social support sub-scale consists of eleven items chosen from Brown's Support Behaviors Inventory (Brown, 1986). Using a Likert-type scale of 1 (*very dissatisfied*) to 6 (*very satisfied*), each woman was asked to rate her level of satisfaction with the support she received from her partner or from a family member if she reported no contact with her partner. Scores range from 11 to 66 for the support person identified by the woman. A higher score is indicative of increased perception of support. Validity and reliability have been supported in five studies that have included 3,444 ethnically diverse rural and urban women with reliability estimates of subscales ranging from .78–.98 (Curry, Campbell, & Christian, 1994). In the current study, the Cronbach's α was .96.

Depressive Symptoms—The Edinburgh Postnatal Depression Scale (EPDS) is a well validated and widely used 10 item screening tool to measure depressive symptoms during the perinatal period (Cox et al., 1987). This scale is brief and focuses less on somatic

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symptoms associated with depression than other instruments making it particularly valuable during pregnancy (Ryan, Milis, & Misri, 2005). The scale has been used with ethnically/racial diverse women and with postpartum and non-postpartum women and several studies have supported its use during pregnancy (Bennett, Einarson, Taddio, Koren, & Einarson, 2004; Evans, Heron, Francomb, Oke, & Golding, 2001). This study used the most widely recommended cut-off score during pregnancy of >12 as indicative of clinically significant depressive symptoms. A sensitivity rate of 82% with a specificity of 95% has been previously demonstrated with this cutoff point in a similar population (Tandon, Cluxton-Keller, Leis, Le & Perry, 2012). The Cronbach's α for the current study was .91.

Qualitative Interview—Qualitative data was obtained through individual semi-structured in-depth interviews that began with an open-ended question such as "Can you tell me about your relationship with your baby?" These questions were followed by more specific questions posed to complete the information gathered in the narratives. While all of the participants were invited to talk freely about their pregnancies, specific questions were asked about aspects of mental health (e.g. social support, depression) if participants did not spontaneously discuss them. For example, probes such as "tell me how you feel about your partner's support during this pregnancy" were used if participants did not talk about partner support. The list of specific interview questions and their probes is presented in Table 1. While the interviews followed a topical outline, the information obtained varied across interviews based on women's experiences during their pregnancies. The interviewer allowed flexibility during the interviews allowing women to describe their experiences, probing only for clarification.

Quantitative Data Analysis

Data were analyzed using PASW Statistics 18, Release Version 18.0.0. All continuous data were examined for normality before conducting inferential statistics. Descriptive statistics were used to summarize demographic information, and bivariate statistical measures were used. Prior to analyses, multicollinearity of the predictors of depressive symptoms and social support was examined based on the variance inflation factor (VIF), and tolerance. These analyses yielded a VIF ≤5 and tolerance ≥.2 suggesting that multicollinearity was not an issue in the data (Craney & Surles, 2002). A multi stage modeling process was used, with variables known to be relevant (e.g., maternal age, parity, income, marital status) included in the model regardless of statistical significance. Bivariate analysis was used to assess which variables were associated with MFA. A multiple linear regression model was then fit to assess the relationships of interest. The level of significance was set at $\alpha = .05$.

Qualitative Data Analysis

The audio-taped interviews were digitally recorded and then transcribed. Each transcript was read through several times, and reviewed for accuracy by the PI, who conducted the individual interviews. Interviews were uploaded into NVivo 8 (QSR International Pty Ltd, 2008) and coded as they were completed by the PI and one of the co-authors (LR), both trained in the coding process.

The narrative interview data were analyzed using conventional content analysis (Hsieh & Shannon, 2005). This type of content analysis is particularly useful when describing a phenomenon, in this case the influence of emotional health on MFA. Furthermore, this type of analytic approach is appropriate when research literature on the study phenomenon is limited (Hsieh & Shannon, 2005). Transcripts were read multiple times, with each read providing a richer level of contextualization and analysis. The first read allowed a broad understanding of the content and context of each narrative while also illuminating possible themes to explore. After open coding of several transcripts, the PI and co-author (LR)

agreed upon preliminary codes. The remaining transcripts were coded using these codes, with recoding of preliminary codes and the addition of others as needed. After all transcripts were coded, the data within each code was examined and ultimately organized into a hierarchical structure.

Quantitative Results

The demographic characteristics of the larger sample and the subsample of 12 women that participated in the qualitative interview are described in Table 2. Overall, the sample consisted of predominantly poor, unmarried, African American younger women.

Table 3 illustrates the scores on the measures of depressive symptoms, social support and MFA for the total sample of 166 and the subsample of 12 who participated in the qualitative interviews. At the time of data collection, 59% (n=98) of the total sample exceeded the chosen cut of score of >12 on the EPDS. The rates of depressive symptoms were higher in the subsample of women participating in the qualitative interviews (n=12) with 75% (n=9) of the women exceeding the cut of score of >12 on the EPDS which was in accordance with our criterion sampling plan ($\chi^2 = 1.36$, $p = .24$).

Bivariate correlations demonstrated that the variables of depressive symptoms and MFA were negatively correlated ($r = -.79$, $p < 0.001$), and the variables of social support and MFA were positively correlated ($r = .73$, $p < 0.001$). Additionally, the predictors of social support and depressive symptoms were negatively correlated ($r = -.81$, $p < 0.001$).

In the final model of social support and depression regressed on MFA, social support and depressive symptoms were significant predictors. This multivariate linear regression model with two variables accounted for 65.2% of the total variance in overall MFA (see Table 4). The covariates of income, and marital status failed to reach statistical significance but were included in the final model to control for their potential confounding effects.

Qualitative Findings

Consistent with, and expanding on the quantitative findings, the women participating in individual in-depth interviews noted to have higher scores on the EPDS discussed the lack of partner support as contributing to a strain on their attachment with their unborn child. For all women, social support was described as emotional support (from a partner or family member) or material support in the form of financial assistance. The fundamental finding or theme was the perception that social support, largely in the form of emotional support from a partner, was associated with the women's mental health. This relation, in turn, influenced the women's relationships with their unborn children. The presence of a supportive partner contributed to a more enjoyable pregnancy and consequently, improved maternal-fetal attachment. Additional findings or subthemes common to participants included the view that pregnancy is supposed "to be the happiest time in one's life" and meant "to be experienced by two."

It's supposed to be the happiest time in your life

Participants were able to elucidate the strong relationship between support and depression, and discussed how their mood state influenced their relationship with their unborn children. One participant said, "I think the relationship [with unborn child] is poor when a woman doesn't have anyone to help her through the pregnancy. It's supposed to be the happiest time in your life, but how could you be happy if you're going along all by yourself?" When asked how a lack of social support made another woman feel about her pregnancy, she responded "I'm depressed as shit. I mean, I'm supposed to be all happy and stuff and here I go bringing

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another baby into this world where I'm probably the only person that wants him. And me wanting him changes every day." Four participants talked specifically about their concerns about not having partners available during the births of their children. One participant said "I hope at least my mother will make it to the delivery room in time…because I know I can't depend on him [her partner] and that makes me sad, really sad." Another participant said:

> I'm depressed for both of us [participant and unborn child] because he [unborn child] won't have any pictures of his dad smiling all proud with him [unborn child] on the day he gets here…so yes, I think I'd be happier about his birth if his dad was here for both of us.

Finally, several participants talked about the stereotypical image of pregnancy being a "happy time of celebration" and how "far from the truth" that was for them. One participant said, "All the media likes to show is smiles, tears of joy, balloons and presents but the truth is, for me, that couldn't be further from the truth…I don't think my tears will be tears of joy." Another participant said, "what people need to know is that not everyone glows when they are pregnant…if they'd look a little deeper they'd understand why." Finally, another participant talked about her distress of feeling alone during the pregnancy and stated "Everyone asks me why I'm not smiling…I love this baby here but there ain't no smiling."

Pregnancy is meant to be experienced by two

Participants discussed with conviction that pregnancy was meant to be experienced by two people. For those women without a supportive partner, the presence of a family member or friend appeared to make the pregnancy experience easier to navigate. Three participants discussed how grateful they were to have supportive family members helping them with their pregnancies with one woman stating "if it weren't for my sister's love and help, I don't think I'd make it". Participants without a supportive partner described how that void influenced their relationship with their unborn child. One participant said:

> I think pregnancy is meant to be experienced by two. He's responsible for half this child and he walked away. Never even said congratulations. It wasn't my baby's fault so I feel bad that he won't have a father in his life…and that makes me sad and probably less excited about him and his arrival. I mean a mom can do a lot but a boy needs his dad.

Another participant described her futile efforts in engaging her partner during her pregnancy and how the lack of support contributed to her ambivalence about her pregnancy:

> It's [the arguments] all about him not helping at all. He gives me nothing. I am living in between houses all the time and he don't care. I want him involved in this baby's life and he wants nothing to do with her. It makes me mad. I didn't want her at first and I think a lot had to do with the fact that I knew I'd be doing this alone. It's hard to do this alone. It's hard enough to do it with someone. I just don't understand how he can make a baby and walk away but it happens all the time.

Participants talked specifically about how a lack of partner involvement influenced their relationship with their unborn children. When asked what made it hard for her to feel a special bond with her unborn child, one participant said,

> I guess mainly that's it just going to be me that's excited to meet him…he should have a father who is like "that's my boy," and he got a father who could care less about him. Before he's even here he doesn't care about him. That is the main thing that has made this [relationship] hard.

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Finally, those women who had previous pregnancies were able to compare those experiences with their current pregnancies and the role of support in influencing MFA was evident. One participant said,

> With my last pregnancy I remember getting excited over every little thing, and his father was always feeling him move in my belly…this time around, there is no one to share those moments with, and I swear this baby is quieter because of it.

Another participant, who described being in a "solid" relationship, said "This pregnancy I have her room all decorated, her ultrasound photo is framed…it's much easier to be excited about a baby when she's coming into a world where she has a family that wants her and loves her."

Discussion

This mixed methods study revealed the complex manner in which depressive symptoms influenced MFA in a sample of urban, predominantly low-income, African American women. In this sample, 59% of participants had clinically significant depressive symptoms. While extant literature supports strong linkage between depression and sociodemographic variables including low SES, single marital status, and poor social support, the manner in which they influence MFA, particularly in ethnic minorities, was far less understood. The very high correlations between depression and social support demonstrate the difficulties that may arise when attempting to disentangle aspects of mental health that may be contributing to adverse outcomes. The qualitative interviews helped illuminate how these constructs were related in this sample, and social support appeared to be critical to improved mental health as well as MFA in this sample.

Our findings suggest higher depressive symptomatology is associated with lower MFA. The qualitative participants were able to further delineate how depressive symptoms were related to MFA and spoke candidly about the extent to which social support influenced their pregnancy experience and their feelings toward their unborn children. While not all participants used the term "depression," most were able to equate feeling "down" or "stressed" to depression, and there was a palpable tone of sadness throughout many of the interviews. Furthermore, they spoke of the strong links between depression and social support, often by comparing and contrasting pregnancy experiences.

The quantitative findings of this study are consistent with the work of Lindgren (2001) who found that women with higher levels of depressive symptoms reported lower levels of MFA. The influence of depression on MFA was far less in that study (depression accounting for 3% of the variance in MFA), perhaps because most of the women in that sample were White, married, well-educated, and had higher incomes and few were classified as depressed.

The qualitative findings assisted in better understanding the way in which depressive symptoms affects MFA. Those women reporting previous pregnancies (75%) were able to compare and contrast their pregnancy experiences with their current pregnancies. They often attributed an increase in MFA behaviors such as talking to their unborn child, voicing excitement over the impending birth, and imagining maternal role behaviors when they felt a supportive partners' presence. Those women reporting low levels of support ascribed lack of MFA behaviors to an absence of support that was often accompanied by a depressed mood. These women believed that pregnancy was "meant to be experienced by two" and "meant to be the happiest time in your life." Those women who had little support during their pregnancies expressed deep sadness and disappointment and voiced difficulty over attaching to their unborn children.

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The generalizability of our findings is limited due to the use of a small, convenience sample. The cross-sectional design of this study did not lend to discernment of temporal causes and effects though the qualitative component aided in the interpretation of results. Nonetheless, an important strength of this study is the mixed methods design which allowed greater depth and understanding of how maternal depressive symptoms relates to MFA in this highly vulnerable sample of pregnant women.

Future researchers should examine broader contextual influences on MFA from the neighborhood level to the societal level. Specifically, the women in this sample were all living in poverty, thus an enhanced understanding of how their environment may be shaping their pregnancy experiences, influencing their mood state, and contributing to MFA is essential. Implications for Practice

These findings provide evidence of the influence of maternal depressive symptoms on MFA in an urban sample of primarily low-income, African American women. In this sample, rates of depressive symptoms were higher than reported in many samples (Chu, Goodwin, & D'Angelo, 2010; Rosen, Seng, Tolman, & Mallinger, 2007; Smith, Poschman, Cavaleri, Howell, & Yonkers, 2006). This is concerning given the strong link between prenatal and post-partum depression, and the known negative sequelae on both maternal and child health (Grote et al., 2010; Ludermir, Lewis, Valongueiro, de Araujo, & Araya, 2010; Mann, Gilbody, & Adamson, 2010) . The findings highlight the necessity of assessing for depression, particularly in those women at increased risk for adverse birth outcomes, for example young, low-income women without a support system in place. The prenatal visit provides an ideal opportunity for depression screening and intervention as depressive symptoms often emerge during this time period and most pregnant women will obtain prenatal care at some point during their pregnancy (Marcus, Flynn, Blow, & Barry, 2003).

Research suggests that women who experience perinatal depression use healthcare resources during pregnancy at a greater rate than their non-depressed counterparts, which may allow providers more opportunities to screen for and address depressive symptoms during prenatal care visits (Andersson, Sundstrom-Poromaa, Wulff, Astrom & Bixo, 2004). Nurses should urge that screening and counseling about depression should become a routine part of both preconception and prenatal care in their practice locations.

Clinicians need to assess for the presence of supportive persons in a woman's family and friend network so that prenatal care and education can be tailored to her needs while including her support network. This study, particularly the qualitative component, highlighted how important social support was to women in influencing their mood states as well as their relationships with their unborn children. For those women without adequate support, linkages to community resources must be made. Home-visiting programs for first time low income mothers have been documented as a beneficial intervention for improving maternal and child outcomes; an expansion of such programs to include mothers experiencing subsequent pregnancies is necessary given their evident unmet needs (Olds, 2008; Olds, Kitzman, Cole et al., 2010). Early assessment and intervention is critical in improving pregnancy outcomes and the health and well-being of both mother and child.

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Table 1

Individual Interview Guide

Topic	Probes
The experience of being pregnant: Describe what it's like being pregnant	How do you feel about your pregnancy? How has this pregnancy been compared to other pregnancies? What is challenging about being pregnant? What concerns do you have about being pregnant?
Maternal-Fetal Attachment: I would like to better understand what your relationship is like with your baby. Some people refer to this relationship as maternal- fetal attachment. Tell me about your relationship with your unborn child?	What types of behaviors do you do that you feel demonstrate a bond? How have your feelings about your baby changed over the course of your pregnancy? What things have happened during your pregnancy that impacted this bond?
Depression: Women often report pregnancy as being somewhat of an emotional rollercoaster. Can you share with me how you have felt, emotionally, during this pregnancy?	How did your emotional status change once you became pregnant? What about this pregnancy has made it harder to feel good emotionally? What resources do you have?
Social Support: Many women find it easier to manage the stressors that accompany pregnancy when they have a strong support group in place. Can you share with me what types of support you have?	How do you feel about your partner's support? Tell me about a time when you wished you had more support? How does your partner's level of support impact your relationship with your baby?

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Table 2

Demographic Characteristics of Sample (n=166)

Demographic	Total Sample (n = 166) n (%)	Subsample (n = 12) n (%)
Age in years, mean (range)	23.3 (16–39)	24.3 (16–29)
Race		
African-American	155 (93)	12 (100)
White non-Hispanic	9 (5)	0 (0)
Other	2 (2)	0 (0)
Education		
Less than High School	110 (67)	9 (75)
High School Graduate/GED	45 (27)	3 (25)
Some College/Trade School	5 (3)	0
College/Trade School Graduate	6 (3)	0
Marital Status		
Single	90 (54)	8 (67)
Partnered/Not Married	56 (34)	2 (17)
Married	17 (10)	2 (17)
Other	3 (2)	0 (0)
Employment Status		
Unemployed	127 (77)	10 (83)
Employed Full Time	25 (15)	1 (8)
Employed Part Time	14 (8)	1 (8)
Household Income		
Under $10,000	76 (46)	8 (67)
$10,001–$20,000	66 (40)	3 (25)
$20,001–$30,000	12 (7)	1 (8)
$30,001–$40,000	8 (5)	0
>$40,000	4 (2)	0
Gravidity		
Primigravida	54 (32)	3 (25)
Multigravida	112 (68)	9 (75)

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Table 3

Participant Scores on Study Instruments

Health Indicator (Score Range)	Total Sample (n =166) Mean (SD)	Subsample (n =12) Mean (SD)
Edinburgh Postnatal Depression (0–30)	13.7 (7.8)	19.2 (7.3)
Social Support (Prenatal Psychosocial Profile) (11–66)	38.5 (16.7)	31.4 (15.0)
Maternal-Fetal Attachment Scale (24–120)	84.2 (14.2)	83.0 (12.9)

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Table 4

Multiple Regression Analysis for Predicting Maternal Fetal Attachment[†] [b](n=166)

Variables	*b*	*SE*	*t*	95% CI	*p*
Constant	90.16	4.48	20.13		<0.001
Social Support	0.23	0.07	3.20	[.09, .37]	0.002
Depression[a]	−1.02	0.15	−6.91	[−1.32, −.73]	<0.001

[†]Adjusted for income, and relationship status

[a]Higher depression score indicative of increased depressive symptoms

[b]r^2 for this model = .652