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Is difficult childbirth related to postpartum maternal outcomes in the early postpartum period?

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Abstract

Unplanned, adverse events during labor or delivery may generate a negative response during the early postpartum period, resulting in disruption of usual functioning and mood. High levels of maternal depressive symptoms are associated with parenting, infant attachment, behavioral problems and cognition (Beck 2002). The purpose of this study was to examine the relationship of adverse events in labor or delivery and depressive symptoms, functional status and infant care at 2-weeks postpartum. The secondary aim was to explore the role of social support as a possible moderator in the relationship between adverse birth events and maternal outcomes. A secondary analysis of data ($n=123$) was performed using data collected in a prospective, observational study examining the effects of antidepressant use during pregnancy. Adverse events did not significantly predict depressive symptoms (odds ratio=1.34, $p=.536$), functional status (R^2 change=.001, $p=.66$), or infant care (R^2 change=.004, $p=.48$) at 2-weeks postpartum when controlling for depression during pregnancy, antidepressant use at delivery, education level, age, and parity. Social support had significant effects on depressive symptoms ($p=.02$), functional status ($p=.014$), and infant care ($p<.001$) but did not moderate the effect of adverse events when predicting depressive symptoms (odds ratio=1.01, $p=.045$), functional status (R^2 change=.009, $p=.056$) and infant care (R^2 change<.001, $p=.92$). Adverse events did not predict maternal outcomes at 2-weeks postpartum. Social support was related to depressive symptoms, functional status and infant care, but did not moderate the effects of adverse events.

Keywords

Difficult childbirth; Adverse birth event; Social support; Maternal depression; Maternal functional status; Infant care

Introduction

The event of birth is often portrayed with an idyllic view, with joyful pregnancies, seemingly effortless labors, and uneventful, quick deliveries. However, data regarding birth events are not consistent with this perception. Vaginal delivery is the expected mode of delivery, and women are often ill-prepared for circumstances that result in more intense intervention. Unexpected complications occur in the laboring woman. In 2005, over 210,000 deliveries were characterized by precipitous, prolonged or dysfunctional labor (National Vital Statistics 2006). Breech or atypical fetal presentations accounted for over 170, 000 births, and fetal distress in labor was evident in over 132,000 deliveries (National Vital Statistics 2006). Eight percent of all deliveries are diagnosed with dystocia in some form (Algovik et al. 2004).

A woman's dissatisfaction with her own childbirth experience may affect her emotional well-being and willingness to have another baby (Waldenstrom et al. 2004). Alterations in maternal mood, particularly depression, may be unrecognized during the postpartum period. The "baby blues" are a common experience in childbearing women; however, alterations in maternal mood can lead to a more debilitating condition known as postpartum depression (PPD) (Wisner et al. 2002).

Prevalence rates of PPD in the United States are estimated at 14.5% (Gaynes et al. 2005). In other words, approximately one out of seven new mothers experiences depression (Gaynes et al. 2005). PPD affects 500,000 mothers and infants each year with subsequent recurrence rates in future pregnancies at about 25% (Wisner et al. 2002; Wisner et al. 2004).

Maternal depression has negative effects for mothers including reduced quality of life, reduced functional status, and altered parenting skills (Beck 2002). If left untreated, depression can result in prolonged psychiatric illness and potential detriment for the entire family. Depression has a negative impact upon infants including reduced mother-infant attachment, increased infant behavioral problems, and decreased infant cognition (Beck 2002).

An unexpected, often traumatic, adverse birth event may precipitate depressive symptoms and alterations in functional status and infant care. There is a need to focus on depressive symptoms early in the postpartum period beyond what is typically expected. Depressive symptoms can include fatigue (beyond what is expected for a new mother), feelings of worthlessness or guilt, diminished ability to concentrate, insomnia, or diminished interest or pleasure (Wisner et al. 2004). Alterations in functional status after childbirth include the inability to perform tasks at the level of functioning that was exhibited prior to childbirth. Such activities may include household chores, social and community activities, self-care activities and occupational activities (Fawcett et al. 1988). Infant care, although not

exhibited prior to childbirth, is a primary goal of successful functional status after childbirth. It is possible that women who had negative birth experiences may need to meet their own emotional needs before they can meet those of their infants, or may feel obligated to meet the infant's needs, but not their own (Kennell and Klaus 1979).

A significant body of research has demonstrated that social support is facilitative of well-being during major life transitions and periods of acute stress (Cohen and Wills 1985). Childbirth should be considered a major life transition and as such it can be assumed that social support is potentially influential in developing maternal outcomes following delivery. Previous studies have shown that social support is a moderating factor in postpartum recovery. Social support, defined as a well-intentioned action that is given willingly to a person with whom there is a personal relationship and that produces an immediate or delayed positive response in the recipient, has been studied extensively in pregnancy and parenting (Hupcey 1998). Receiving social support early in the postpartum period has been linked to better maternal-child interactions and smaller incidence of PPD (Logsdon et al. 1994). Prior research findings suggest several intervention points for new mothers including adequate social support screening (Soet et al. 2003). Sources of social support desired in childbirth have been studied. Although prior research has found that the source of support differed based on age, socio-economic status and ethnicity, the partner (baby's father) was an important part of emotional, informational, and instrumental support (McVeigh 2000). Similarly, support given by health care providers and delivery attendants has been shown to be influential.

The 2-week time point has been purposefully selected as the time period of interest for this study. The postpartum period, in general, has been recognized as a time for increased vulnerability for depression but the diagnostic criteria for PPD, particularly time of onset, have been frequently debated. Potential debate as to whether perinatal depression arising in pregnancy or very early postpartum differs from late onset depression is ongoing (Stowe et al 2004). In a recent study, Heneghan, et al., suggested that pediatricians take a role in screening for depression in the mothers of new infants (Heneghan et al. 2004). Practical, legal and ethical issues may arise regarding the pediatrician's role in assessing mothers' mental health; however, clinicians are beginning to recommend that PPD screening occur at the neonatal visit, often occurring at 2-weeks postpartum. Given that PPD is amenable to treatment, specifically psychotherapy and pharmacotherapy, early screening and detection may result in quicker onset of treatment and decreased morbidity for the mother and infant.

Lastly, preliminary research suggests the predictive power of depressive symptoms in the immediate postpartum period in the development of PPD (Dennis 2004). Significant positive correlations have been found on measures of depressive symptoms found at 2 weeks and time points later in the postpartum period, such as 6 weeks. Dennis, et al., used the Edinburgh Postnatal Depression Scale to assess depressive symptoms on a sample of 166 women at 1 week postpartum (Dennis 2004). They found that almost 30% of new mothers in their sample exhibited depressive symptoms at 1 week postpartum, implying that women can experience some form of mental distress in the immediate postpartum period.

Prior studies have focused on specific depressive symptoms found later in the postpartum period, when considerable physical, mental, and emotional symptoms have already surfaced. Little research exploring the relationship of adverse, unplanned events in labor or delivery and maternal outcomes in the immediate postpartum period has been completed. Much of the literature addresses high-risk pregnancy events, such as preterm labor, which are already diagnosed by the onset of labor. Investigators have also focused on a single, or small subset of adverse events, such as surgical or assisted delivery. The wide variety of adverse events that can occur during labor or delivery, have been minimally evaluated. The purpose of this study was to examine the relationship of a variety of adverse birth events on maternal outcomes in the early postpartum period. The relationship of adverse birth events with maternal outcomes was examined if the woman experienced one or more adverse event. Secondly, we aimed to explore if social support was a moderator of the relationship between unplanned, adverse birth events and maternal depression, functional status, and infant care at 2 weeks postpartum.

Methods

To examine the relationship between adverse birth events and depressive symptoms, functional status and infant care, a secondary analysis of data from a prospective, observational study, Antidepressant Use During Pregnancy (ADUP; NIH R01 MH60335) was performed. Supported by a grant from the National Institute of Mental Health, ADUP was designed to investigate the impact of antidepressant use in pregnancy on reproductive outcomes. For this secondary analysis a cross-sectional descriptive design was used.

Study participants

Participants consisted of 123 women with postpartum data available from ADUP. Pregnant women were recruited for ADUP from two sites: Cleveland, OH ($n=21$; 1/23/00–4/01/01) and Pittsburgh, PA ($n=217$; 04/23/03–07/11/07). Recruitment was by self and physician referral, advertising and screening in the obstetrical ultrasound suite. Inclusion criteria for ADUP were age 18 years or older, pregnant, at least 20 weeks gestation at time of entry, English-speaking, and able to provide informed consent. Exclusion criteria were active substance abuse within the past 6 months and no obstetrical care. The setting for ADUP was a mental health outpatient program designed to study and support postpartum depression. Participants in ADUP were included in this study if the following instruments were completed following the 2 week postpartum visit: Peripartum Events Scale (PES), Postpartum Support Questionnaire (PSQ), Edinburgh Postnatal Depression Scale (EPDS), Inventory of Functional Status After Childbirth (IFSAC), and Infant Care Survey (ICS).

Data collection

The measures proposed for this study were selected from those available through ADUP and were consistent with the conceptual framework for this study. All instruments were well established with moderate to strong psychometric properties. The covariates of maternal age, parity, education level, depression during pregnancy, and antidepressant use at delivery were collected from a series of interviews and demographic questionnaires developed for ADUP. The specific diagnosis of MDD during pregnancy was made according to the Structured

Clinical Interview for DSM-IV (SCID). Interviews and questionnaires were administered by the ADUP investigators during the participants' initial visit upon entry into the study

Peripartum Events Scale (PES)—The presence of an adverse birth event was the primary independent variable for this study. Subjects having an adverse birth event were identified by positive responses and comments in designated categories of the Peripartum Events Scale (PES). The PES is a 14-item scale developed to quantify stressful events related to delivery (O'Hara et al. 1986). Data on the PES were retrieved by obstetrical content experts, specifically an OB/GYN physician and a labor and delivery nurse (who were blind to the study hypotheses) via a retrospective medical record review. For intended use, increased scores, or responses, on the PES indicate increased stressful events related to the delivery. The total PES score that was obtained for the parent study was not used for this study.

Specific categories on the PES that were reviewed for this study were: precipitous labor, secondary arrest of labor, other traumatic or life threatening events such as abruption or cord prolapse, midforceps or vaginal breech delivery, vacuum extraction, primigravida labor longer than 20 h, multigravida labor greater than 14 h, primigravida second stage longer than 2 h, multigravida longer than 1 1/2 h, abnormal FHR, abnormal contractions, fetal blood sampling, abnormal fetal monitoring, significant lacerations, or term infant to NICU—unplanned. In addition to a yes/no response on the PES, all categories had an additional field for comments. For this secondary analysis, a careful review of the above listed categories and their corresponding comments was completed on all women identified as having complete data as defined for this investigation. A judgment was determined as to whether or not the birth had an unplanned, adverse event. All judgments were validated by a second obstetrical content expert who was also labor and delivery nurse. After consensus on identification of the occurrence of an adverse event between both reviewers, participants were coded either [0] indicating no adverse event, or [1] indicating the occurrence of an adverse, unplanned event(s) in labor or delivery. A participant could be identified as having more than one adverse event as events were not mutually exclusive. After the participants were identified as having an adverse, unplanned event(s), they were entered into new categories of events that were created for grouping analysis in this study (Table 1).

Postpartum Support Questionnaire (PSQ)—Social support, the moderating variable, was measured by the Postpartum Support Questionnaire (PSQ). The PSQ is a self-report, 34-item likert-scale used to measure postpartum social support in four categories (informational, material, emotional, and comparison). Higher scores on the PSQ indicate higher levels of postpartum social support. In five studies of postpartum women, Cronbach's alpha scores have ranged from .88 to .95. Test-retest reliability and concurrent validity have been established (Logsdon et al. 1996). All 34 items (and all categories) were included for analysis in this study.

Edinburgh Postnatal Depression Scale (EPDS)—Depressive symptoms, the first outcome variable, were measured by the Edinburgh Postnatal Depression Scale (EPDS). The EPDS is a widely used, 10-item self-report instrument with likert-scaling used for the detection of postnatal depression (Cox et al. 1987). Boyd et al.(Boyd et al. 2005) completed

a brief review of all postpartum depression screening instruments and found that across all studies, the EPDS had internal consistency estimates ranging from .73–.87 and test-retest reliability ranging from .53–.74 (time points ranging from 3 to 12 weeks). A recommended cut-off point of nine or ten has been suggested to increase sensitivity for the purposes of community screening (Dennis 2004; Hanusa et al. 2008). For screening of depressive symptoms in this study, a cut-off of nine was used. The EPDS was statistically validated by the investigators of this study for use at the 2-week time point.

Inventory of Functional Status after Childbirth (IFSAC)—Postpartum functional status of the mothers, the second outcome variable, was measured by the Inventory of Functional Status after Childbirth (IFSAC). The IFSAC is a self-report, 36-item, likert-scale designed to measure functional status after childbirth. Test-retest reliability was greater than 0.82 for all subscales, except the occupational activities subscale, due to the small number of women from the sample who had returned to work at the time of the psychometric property testing (Fawcett et al. 1988).

Infant Care Survey (ICS)—Infant care, the third outcome variable, was measured by the total score of the Infant Care Survey (ICS). The ICS is a self-report, 52-item scale measuring parents' beliefs about their knowledge of and skills with infant care activities relating to health, safety, and diet on a 5-point likert scale ranging from 1, *a great deal of confidence* to 5, *very little confidence* (Froman and Owen 1989). Higher scores indicate less confidence regarding infant care activities. The internal consistency estimates for knowledge and skills based on Cronbach's alpha were .95 and .96 (Froman and Owen 1989).

Data were entered by the staff at Women's Behavioral Health CARE, Pittsburgh, PA, the project site for ADUP. Approval to conduct this study was provided by the University of Pittsburgh IRB.

Data analysis

Data were analyzed using SPSS (version 14, SPSS, Inc., Chicago, IL). The initial review of the data was the verification of the Peripartum Events Scale (PES) and the identification of unplanned, adverse birth events occurring during labor or delivery. Hierarchical linear regression analysis was performed with the adverse event indicator as the independent variable. The acknowledgement that other factors can also greatly impact a mother's birth outcomes were addressed as covariates influencing the maternal response. Covariates included age, parity, education level, depression during pregnancy, and antidepressant use at delivery. Maternal age, parity and education level can influence a mother's reaction to her birth (Horowitz and Goodman 2004). Also, prior history of depression and antidepressant use during delivery were also examined as they could directly contribute to a mother's postpartum mental state. All 5 covariates were used in the statistical analysis for both the primary and secondary aims.

Because the data collected on the EPDS were not normally distributed, EPDS scores were categorized into two groups for use with binary logistic regression analysis. Total scores ranging from 0–8 were given a value of [$=0$] and total scores equal to or greater than nine were given a value of [$=1$]. Cut-off scores for the EPDS were purposefully set for

community screening and were set low in order to identify those women with depressive symptoms. To investigate whether a relationship existed between the adverse birth events and depressive symptoms, logistic regression was used to compare each maternal outcome by the adverse event incidence. To investigate whether a relationship existed between the adverse birth events and the outcomes of maternal functional status and infant care, statistical modelling using multiple linear regression analysis was used to compare each of these continuous type maternal outcomes by adverse event incidence. The level of statistical significance was set at .05.

To explore whether social support was a moderator in the relationship between unplanned birth events and depressive symptoms, functional status, and infant care, an analytic approach similar to that described for the analysis of data for the primary specific aim was employed.

Results

Sample

There were 123 women with complete data that met the criteria for this study. Given the fixed sample size of 123, the minimum detectable effect size in terms of R^2 was estimated using PASS (version 2005, NCSS, Kaysville, UT). Because prior studies did not use the same covariates when estimating the effects of the addition of an adverse event in labor or delivery on maternal outcomes, a range of R^2 values attributed to the covariates was used for predicting power. For the primary aim, a sample size of 123 had 80% power to detect a change in R^2 ranging from .045 to .054 attributed to the addition of the adverse events indicator variable. This estimation included controlling for all covariates, with an estimated R^2 ranging from .1 to .25, when using an F-test from a hierarchical regression model with a significance level of .05.

For the secondary aim, a sample size of 123 had sufficient power (at least 80%) to detect a change in the R^2 statistic ranging from .045 to .06 attributed to the interaction term for social support with the adverse birth event indicator variable when using an F-test with a hierarchical regression model and a significance level of .05. This model also assumed controlling for the main effect terms for social support as well as all covariates.

The sample of women was primarily Caucasian (80%) which is consistent with the demographics of Allegheny County, Pennsylvania. Of the 123 women, 19 were African American and six were within other racial groups. Ninety-six women were married or cohabitating with a significant other. Only 27 of the women reported that they were single. The majority of the women had more than a high school education with 85 of them reporting college degrees or graduate college education. The mean age of the women was 30.5 years old. The mean number of children for the women was about 2. Twenty-six percent of the women reported being depressed at some point during the pregnancy and 21 women were taking antidepressants at the time of delivery. Over 26 (21%) of the postpartum women scored above or equal to the cut-point score of nine on the EPDS at 2-weeks postpartum. The scores for functional status, infant care, and social support were normally distributed

and generally demonstrated that the women were normal functioning and receiving adequate social support.

Descriptive statistics

Adverse birth events—The number of women identified as having an adverse, unplanned event in labor or delivery was 57 (46%). The adverse, unplanned events identified for the sample from the PES are described in Table 1. For clarification purposes, the following adverse birth events were defined for this study as follows (most are self-explanatory): prolonged first stage of labor was defined as exceeding 20 h for nulliparous women and exceeding 14 h in multiparous women; prolonged second stage of labor was defined as exceeding 2 h in nulliparous women and 1.5 h in multiparous women; precipitate delivery was defined as labor and delivery occurring in less than 3 h; significant perineal lacerations was defined as presence of third or fourth degree vaginal lacerations; significant blood loss after the third stage of labor was defined as 500 cubic centimeters or more.

Primary aim—Upon examination of the logistic regression results, an adverse event in labor or delivery did not predict depressive symptoms when using the two categories of scores as provided by the EPDS data (odds ratio=1.38, $p=.536$). The depression in pregnancy covariate (odds ratio=6.94, $p=.001$) was the only significant covariate for predicting postpartum depressive symptoms. Based on the change in R^2 using multiple linear regression less than 1 % of additional variance was explained in functional status ($p=.66$), and less than 1% of additional variance in infant care ($p=.41$).

Secondary aim—For the secondary aim, it was hypothesized that social support directly influences the maternal response at 2 weeks postpartum to negative birth events and may moderate the effect of unplanned adverse events during labor/delivery. To explore if social support was a moderator in the relationship between unplanned birth events and depressive symptoms, functional status, and infant care, an analytic approach similar to that described for the analysis of data for the primary specific aim was used. The hierarchical regression models developed for each outcome variable in the primary aim was expanded to also include the main effect for social support and the interaction effect of the adverse event indicator with social support after controlling for the covariates of maternal age, parity, education level, antidepressant use during delivery, and depression during pregnancy.

Main effect of social support—Social support was a weak predictor of depressive symptoms when added to the initial hierarchical model for logistic regression (odds ratio: 1.008, 95% confidence interval: 1.001, 1.016, $p=.02$). Adding social support to the hierarchical model for multiple linear regression was the strongest explanatory variable with an additional 1.6% of explained variance in functional status ($R^2=.712$, $p=.014$), and 9% additional explained variance in infant care ($R^2=.415$, $p<.001$).

Moderating effect of social support—The interaction of social support and the adverse event indicator when added to the logistic regression model to predict depressive symptoms was not significant (odds ratio=1.015, 95% confidence interval: .999, 1.028, $p=.045$). When added to the multiple linear regression hierarchical model, the interaction between social

support and the adverse event indicator explained less than 1% of additional variance in functional status ($R^2=.721$, $p=.056$), and no additional variance in the infant care ($R^2=.415$, $p=.92$).

Discussion

The findings in this study did not indicate that women with adverse, unplanned events in labor or delivery had varying outcomes related to depressive symptoms, functional status, or infant care at 2 weeks postpartum. There are several potential reasons as to why we didn't find what we hypothesized. By reviewing prior studies involving similar concepts, we can easily draw comparisons to our findings. Although there exists a gap in the literature specifically looking at a variety of unplanned, adverse events in labor or delivery and maternal outcomes in the early postpartum period, there have been prior studies focused on the birth event and maternal outcomes.

In a prospective, longitudinal study (Creedy et al. 2000) examining women ($n=499$) in the third trimester and following them until 4–6 weeks postpartum, one in three women identified a negative birth event and reported the presence of at least three trauma symptoms following the birth. Similarly in our study, 46% of the women experienced an adverse event as identified by a retrospective medical review. Without specific interviews with the women in this study, it is unknown whether or not they perceived their deliveries as unplanned, adverse events. The acknowledgement of an adverse event by the women, such as in Creedy et al. (Creedy et al. 2000) study, could alter their self-report scores on the scales used in this study and thus the findings could have differed significantly. In other words, a woman's perception of degree of stress related to an event could impact her response. Future studies may include a qualitative approach that elicits women's perceptions of negative events.

Similar to our measurement of functional status after childbirth, Lydon-Rochelle et al. (Lydon-Rochelle et al. 2001) assessed the association between method of delivery and the general health status and physical functioning. Sexual, bowel and urinary functioning of primiparous women was measured at 7 weeks postpartum (Lydon-Rochelle et al. 2001). Their subset of events only included surgical and assisted deliveries. At 7 weeks postpartum, women who had surgical or assisted vaginal deliveries reported significantly lower postpartum general health status scores than women with unassisted vaginal delivery (e.g., did not use forceps or vacuum extraction). Additionally, women with assisted vaginal deliveries reported significantly worse sexual, bowel and urinary functioning. Future studies may be designed to focus on a single, or a subset, of adverse events, potentially resulting in significant results for our specified outcomes.

Much of the focus in prior research examining maternal outcomes following an adverse birth event is related to Posttraumatic Stress Disorder (PTSD). Typically, studies investigating PTSD focus on later periods during the postpartum recovery where symptoms of PTSD become more evident and more debilitating as opposed to early in the postpartum time period. Creedy et al. (Creedy et al. 2000) found that 28 women (5.6%) met DSM-IV criteria for acute Posttraumatic Stress Disorder (PTSD). In their study, the level of obstetric intervention experienced during childbirth ($\beta=0.351$, $p<0.0001$) and the perception of

inadequate intrapartum care ($\beta=0.319$, $p<0.0001$) during labor were consistently associated with the development of acute trauma symptoms. In contrast, this study did not examine specific symptoms of PTSD, but rather more general alterations in a larger category of maternal depression in the early postpartum period. By using an instrument in future studies designed to measure more acute symptoms of stress and depression, we could potentially elicit more specific negative responses, similar to those of PTSD.

Finally, with regards to why we didn't find what we hypothesized, it is plausible to consider that there is not an association between adverse birth events during labor or delivery and postpartum depressive symptoms. Depression shortly after labor and delivery may in fact be more closely related to either: a.) depression during pregnancy (which was identified as a predictor of depression earlier in this analysis) or b.) the hormonal changes normally associated with labor and delivery (Cooper and Murray 1998). Maternal outcomes identified at 2 weeks postpartum may not be influenced by the childbirth process and this study may add to the existing literature by demonstrating a wide variety of maternal responses, regardless of the mother's childbirth event.

Future studies may also include later time points examining the effects of adverse birth events. Research has shown that a diagnosis of PPD can surface between 1 and 6 months, with 3 months being the most common time point (Gaynes et al. 2005). Most of the women in this sample were free of depression symptoms at 2 weeks postpartum. In fact, only 21% scored above the cut-off point used for community screening. A possible time point of comparison to reanalyze this data collected at 2 weeks could be 3 months postpartum. By utilizing a longitudinal design, future studies could potentially find results similar to prior studies.

Similar to prior studies, the covariate of depression in pregnancy was significantly related to postpartum depressive symptoms. The etiology of PPD appears to be multifactorial and complex (Martinez-Schallmoser et al. 2003). Psychosocial risk factors and mental health history continue to be consistently linked as the major etiological factors in PPD (Cooper and Murray 1998). Other risk factors for PPD that have been previously reported include depressive symptoms during the pregnancy, young, single, lower socio-economic status, exposure to recent life stress, difficult infant temperament, mode of delivery, infant health at delivery, and absence of social support (Beck 2002). Depressive symptoms during pregnancy (OR 6.78) were also identified as a strong, significant risk factor for postpartum depressive symptoms in a study completed by Rich-Edwards et al. (2006).

Also similar to prior studies, this study found that the main effect of postpartum social support was significant when predicting depressive symptoms, functional status and infant care. Unlike our study, social support has also been studied with the broader concept of mothering and has been found to cushion the experience of moving into the motherhood role and critical for maternal role adaptation (McVeigh 2000). In a prospective, longitudinal study completed by McVeigh examining the relationship between satisfaction with social support and functional status after childbirth, it was reported that satisfaction from support from one's partner was significantly correlated with infant care at 6 weeks postpartum, self-care at 3 months, and community activities at 6 months (McVeigh 2000). Similarly, Cooper,

et al, completed a descriptive, cross-sectional study on 147 South-African women and found that social support provided by the partner was significantly increased in the nondepressed women (Cooper et al 1999). A study completed by Coffman, et al, examined relationships in mothers of distressed and normal newborns (Coffman et al 1991). The results of their study provided support for a proposed model of social support indicating that close support and met expectations of support were related to both maternal postpartum mood and positive maternal attitude toward the infant. In fact, they found that maternal mood actually mediated the attitudes toward infants thus reinforcing prior research suggesting that maternal mood contributes to disturbances in the mother-infant relationship, and that postpartum social support has implications for both maternal and child well-being. Klaus' continued program of research on mother-infant relationships supports the notion that social support ante-and post partum improves the psychological health of the mother with associated parental benefits which result in stronger mother-infant ties (Klaus 1998).

Prior evidence demonstrates that postpartum social support is a critical component for maternal and infant health. By incorporating social support screening during the labor and delivery admission, healthcare providers may improve outcomes by providing resources for support in the event that social support is minimally available. Although by 4–6 weeks postpartum, depressive symptoms and alterations in functional status or infant care may have already developed, or even subsequently resolved, postpartum visits should allow for appropriate screening of not only outcomes development, specifically depressive symptoms, but also the presence or need for additional social support. Healthcare providers can play a key role in not only assessing a mother's well-being during or following the birth of a child, but also can contribute to a patient's pool of resources that provides social support.

This study did not investigate all possible maternal outcomes. For instance, maternal role gratification and general health were not examined in this study, but are areas of potential focus for future studies. General limitations of completing a secondary data analysis must also be addressed as the original hypothesis for the data being collected varies from the hypotheses proposed here, and the data collection methods were defined for the original ADUP study, not for the study being currently addressed. A final possible limitation of this study was the sample size. A larger sample could have resulted in more statistically significant findings when considering the presence of an adverse birth event with alterations in mood, functional status and infant care and more complex models considering moderation effects.

Conclusion

Although the data used for this study met the requirements for the stated hypotheses, and the community-dwelling sample represented a diverse population in terms of health, and labor and delivery management, the occurrence of an adverse, unplanned event during labor or delivery did not significantly impact several maternal outcomes at 2-weeks postpartum. This study adds to the literature by providing lack of evidence to support altered maternal outcomes as a result of difficult childbirth. Women who have suffered from adverse events in labor or delivery can possibly be reassured that their postpartum recovery and health should mirror that of friends and family who did not suffer from a traumatic childbirth experience.

Although, it may appear logical that women with adverse events in delivery would exhibit signs of depressive symptoms early in the postpartum period, our study did not demonstrate these findings. There is little reason to believe that women with uneventful, planned deliveries could not experience depressive symptoms or alterations in functional status or infant care; therefore, the need for consistent teaching, screening, and support for all women following the birth of an infant is justifiable. In order to minimize potential downstream effects on women and their children, early screening of depressive symptoms, and treatment of PPD, should still be encouraged.

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Table 1

Adverse, unplanned events identified in the sample

	N	%
Vacuum Extraction	10	19
Cesarean Section due to FTP, CPD, FTD	10	19
Significant lacerations or blood loss	8	15
Term Infant to NICU-Unplanned	6	11
Emergency C-Section due to abruption or fetal distress	6	11
Prolonged second stage of labor	5	9
Forceps delivery	3	6
Amniofusion for meconium or abnormal HR monitoring	3	6
Precipitate delivery	2	4
Prolonged first stage of labor	1	2
Development of preeclampsia in labor	1	2
Cord Prolapse	1	2
Shoulder dystocia	2	1
Total N	57	46