Rates and Predictors of Depression in Adoptive Mothers
Moving Toward Theory

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There are approximately 1.8 million adopted children living in the United States. Adoptive parents may experience depressive symptoms and put their children at risk for negative outcomes. The results of this study describe the rates of depression in 300 adoptive mothers and associations with hypothesized explanatory variables, which predict approximately half of the variance in maternal depressive symptoms: expectations of themselves as mothers, the child, and family and friends; feeling of rest; past and present psychiatric difficulties (self-esteem, history of depression); and interpersonal variables (bonding, marital satisfaction, perceived support). These findings are useful in planning effective interventions to mitigate depressive symptoms. **Key words:** *adoptive parents*, *Center for Epidemiologic Studies Depression Scale*, *depression*, *Edinburgh Postnatal Depression Scale*, *postadoption*

APPROXIMATELY 1 782 000 CHILDREN in the United States are adopted (ie, living with neither biologic parent).[1] Traditionally, social workers have been viewed as the professionals most involved with adoptive families. However, nurses interact with adoptive parents either for the parent's health or the children's health in a number of health care settings. From women's health clinics to pediatric visits to mental health counseling, nurses are in key positions to apply the nursing process to support optimal family functioning. Although most adoptive parents make the transition to parenting without difficulty, recent empirical research indicates that some parents do not make the transition in the postplacement time period as easily as others. Specifically, many adoptive parents may be at risk for, and exhibit, depressive symptoms.[2-4] Unfortunately, the literature that describes the transition to parenting and parental needs after adoption is scarce.[5,6] In the current study, we utilize a large community sample of adoptive mothers to examine postadoption depression and test constructs from Foli's Mid-Range Theory of Postadoption Depression.

The negative effects of parental depression in birth parents have been extensively studied, and adverse outcomes in children of all ages have been well documented, including lower IQ scores,[7] externalizing and internalizing behavior problems,[8] and adverse emotional and behavioral outcomes for children aged 3 to 5 years.[9] There is also tentative evidence about the detrimental effect

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of parental depression on adopted children. Adoptive parental depression has been linked to the child having significantly greater risk for major depression and disruptive behavior disorders.[10] One study that examined both birth and adoptive parents' depressive symptoms with toddler behavior found that regardless of the timing of maternal depression during the infancy and toddler period, adoptive mothers' depressive symptoms contributed to toddlers' externalizing behaviors.[11] Exploring across time contributors, adoptive fathers' depression at 9 months was significantly correlated with maternal depression at 27 months and also contributed to toddler externalizing behaviors at 27 months of age.[11] Moreover, depression in adoptive parents may be particularly detrimental to marital satisfaction,[12] a finding that fits with abundant research demonstrating links between depression and marital distress.[13,14] The argument could be made that children who are adopted are at higher risk for adverse outcomes of parental depression and marital distress than birth children as a result of the environments that they were in prior to relinquishment and the psychological transition to a new family.[15]

To date, a wide range of postadoption depression rates have been reported; however, these studies are limited by the use of small samples and/or recruitment from single adoption agencies.[3,4,16,17] Despite methodologic limitations, 3 studies are of note. Senecky et al[4] measured depressive symptoms of 39 mothers and found clinically significant symptoms of depression in 25.6% of mothers before adoption and in 15.4% of mothers 6 weeks after adoption.[4] A later study found an even higher rate of depression in 86 adoptive mothers of infants younger than 12 months who were followed during the first year postplacement.[3] Using a modified Edinburgh Postnatal Depression Scale (EPDS), the authors found significant depressive symptoms (EPDS score ≥12) in 27.9% of subjects at 0 to 4 weeks and 25.6% at 5 to 12 weeks, although rates dropped to 12.8% at 13 to 52 weeks postadoption. Significant depressive symptoms were not associated with personal or family psychiatric history but were associated with stress and adjustment difficulties.[3]

In the third study, Mott and colleagues[17] compared anxiety and depression in 147 adoptive mothers, recruited from a large agency specializing in international adoptions, and 147 postpartum mothers for the first 12 months from birth or placement in home. The final model, which explained 35% of the variance in adoptive mothers' depressive symptoms, included 4 significant variables: past psychological disorder, sleep deprivation, the degree to which the individual was bothered by infertility, and martial adjustment. Rates of depressive symptoms were not found to be significantly different between adoptive and birth mothers.[17]

Building upon this work, a logical place to begin is with the literature on postpartum depression. In a meta-analysis, Beck[18-21] developed the Postpartum Depression Predictors Inventory (PDPI) and found associations of medium effect size between postpartum depression and 10 risk factors: prenatal depression, child care stress, life stress, social support, prenatal anxiety, marital satisfaction/relationship, depression history, infant temperament, maternity blues, and self-esteem.[20,21] Three other factors, socioeconomic status, marital status, and unplanned/unwanted pregnancy, had smaller but still significant effects.[19]

Additional variables were found in a study that looked at *paternal* postpartum depression, variables that correlated most strongly with depressed mood were depression level of the mother, high discrepancy between expectations and the reality of family and social life after the birth of the child, and low satisfaction with the marital relationship.[22] It is possible that the etiology and causal factors behind postadoption depression are different from other forms of depression, including postpartum depression. In an earlier study that compared birth and adoptive parents, Levy-Shiff et al[23] surveyed 52 first-time adoptive couples with 52 first-time birth parent couples and found predictors of parental experiences were parental expectations and

depressive mood for both groups; additional predictors of parental transition for adoptive couples were feelings of deprivation, social support, and self-concept. Interestingly, adoptive parents had more positive expectations and reported more satisfying experiences in their transition than did biologic parents.[23] In another study examining stress in adoptive mothers, higher maternal depressive symptoms, higher expectations of child behavior/emotional problems, and a greater number of children in the family preadoption accounted for 22% of the variance in parenting stress at 6 months postadoption.[24]

FOLI'S MID-RANGE THEORY OF POSTADOPTION DEPRESSION

To forward nursing science and further our understanding of parental postadoption depression, this study includes in the proposed explanatory variables constructs within a midrange theory surrounding expectations of adoptive parents. These parental preadoption expectations were revealed in the findings by Foli.[2] On the basis of this research and discussions in the literature, factors inherent in the adoption process create parental expectations; it is hypothesized that these expectations can increase the risk for depressive symptoms of adoptive parents.

Foli's Mid-Range Theory of Postadoption Depression is based on a study using grounded theory and employing triangulation of data methods and participants.[2] In a purposive sample, 21 adoptive parents who acknowledged being depressed after their child was placed in the home shared narratives via semistructured interviews. In addition, 11 cross-disciplinary adoption experts were interviewed to share their insights into the dynamics of parental depression. As part of theoretical sampling, data collection was expanded to include observation of, and participation in, an adoptive parent support group of 12 to 15 members.

Data revealed recurrent themes in relation to postadoption depression, and these domains held across the various paths to adoption. Whether parents chose to adopt internationally, privately, or through the public welfare system, they expressed *unfulfilled/unrealistic expectations* in the domains of self, child, family/friends, and society/others.[2] Unmet and unrealistic parental expectations are cognitively or affectively perceived by the parent in the preadoption time period. These expectations stem from a variety of sources, from constructing themselves as "super parents" to an assumption of an instant bond with the child. Later, a dissonance occurs after the child is placed in the home when expectations do not meet the reality of the experience. This dissonance can lead to depression and is acutely felt by some adoptive parents who have actively sought out the experience of parenting and voluntarily engaged in an adoption process to build a family.[2]

For example, an adoptive parent may bring an older child from the public welfare system into the family and find that the child's issues of past abuse and trauma surface, causing behaviors that create a dissonance, or internal discord, between what was expected (or not expected) and what the current reality is. Similarly, a parent who adopts a child from an Eastern European country may see the child display maladaptive behaviors learned while in the orphanage.[2] In both cases, the unmet parental expectations of the child cause the parent to feel dissonance. Family and friends support may be lacking and perceived as not equitable to the support offered to birth parents.[2]

Additional evidence that adoptive parents hold unrealistic expectations is provided by Narad and Mason.[25] They described myths of international adoption that may be interpreted as expectations: Children adopted from international countries are raised in environments that meet their needs; medical reports contain correct and complete information about the child's needs; the developmental delays the child experiences in the institution are normal and will resolve following adoption; the child can be quickly integrated

into the family routine at an age-appropriate level; and all the child needs is love.[25]

Researchers have also noted the positive expectations held by most adoptive parents in the preadoption time period,[26] which may account for the discrepancies between expected family life and the reality of family life in the postadoption time period. Expectations of parents who adopted children from institutionalized care and the relationship to stress was studied by Chesney,[27] who found:

In particular, gaps between expectations and experiences that are related to children's behavior and parents' responses to behavior seem to be the strongest predictor of parenting stress, followed by unmet expectations regarding child activity/attention demands versus parents needs for time and rest.[(p257)]

CURRENT STUDY

To fill the gaps in understanding maternal postadoption depression, the current study sought to achieve the following aims:

1) Measure depressive symptoms in mothers who have adopted a child, using tools that are widely used in community and clinical epidemiologic samples.
2) Test predictors of postadoption depression: expectations held by parents,[2] variables adapted from the Postpartum Depression Predictors Inventory–Revised (PDPI-R),[14] mother to child bonding, demographic and adoption variables, and maternal and marital satisfaction.

SUBJECTS AND METHODS

Study design

Entry was gained into an online adoption organization of approximately 3000 members. Inclusion criteria consisted of mothers who have adopted a child within the past 12 months via public, private, domestic, or intercountry adoption, ability to understand and respond to questions in English, and access to the Internet. After receiving institutional review board approval for the study, data were collected in the fall of 2010.

Study sample

A total of 233 responding participants met the criterion of having adopted a child within the past 12 months; an additional 67 mothers enrolled in the study despite having adopted a child more than 12 months and less than 24 months ago (total N = 300). The researchers controlled for this variable by correlating time postplacement with depression and found no significant differences in depressive symptoms between those mothers who had adopted within the past 12 months and those who had adopted within the past 24 months. Significant differences in the 2 subsamples are noted in the length of fertility treatments (6.89 vs 13.38 months), time since last fertility treatment (1.55 vs 2.69 years), type of adoption (public 25% vs 63%; private 14% vs 15%; international 61% vs 22%), history of smoking (11% vs 22%), and the related variables to type of adoption (birthplace of adopted child, ethnicity of adopted child).

After reviewing the differences in variables and the findings of Payne et al[3] that revealed a depression rate of 12.8% at 12 months, we believed that combining the 2 subsamples (12 vs 24 months postplacement) would not jeopardize the validity of the study findings. This decision was also based on the postpartum literature that indicated that the duration of maternal postpartum depression may extend past 12 months, with negative effects on children increasing with duration.[28,29]

As shown in Table 1, most respondents were white (88%) (ethnicity was defined by the respondent), married or cohabitating (85%), from a self-identified middle socioeconomic class (86%), with 4 or more years of college and/or postgraduate degree (75%). Respondents had adopted children through the public foster care system (33%), private domestic agencies (14%), and intercountry (52%). Approximately one-third of the children (26%) were white and 29% were African

Table 1. Sample Characteristics

	n (%) or Mean ± SD (n)
Age	40.50 ± 7.09 (286)
Age of adopted child	4.64 ± 4.43 (273)
Employment status	
Full-time	109 (36)
Part-time	38 (13)
Self-employed full-time	10 (3)
Self-employed part-time	29 (10)
Out of work	7 (2)
Homemaker	105 (35)
Retired/student/declined	2 (0)
Marital status	
Single	29 (10)
Married/cohabitating	246 (85)
Separated/divorced	7 (2)
Widowed	1 (0)
Partnered	5 (2)
Religious preference	
Protestant	82 (27)
Roman Catholic	45 (15)
Nondenominational Christian	115 (38)
Jewish	12 (4)
Other	23 (8)
None/declined	23 (8)
Education	
High school or GED	10 (3)
High school plus technical	13 (4)
High school plus college	51 (17)
Four-year college graduate	115 (38)
Postgraduate degree	110 (37)
Waiting period (mo)	11.64 ± 14.12 (287)

	n (%)	
Socioeconomic status		
Low	4 (1)	
Middle	246 (86)	
High	36 (13)	
Income		
$15K to <$25K	3 (1)	
$25K to <$35K	6 (2)	
$35K to <$50K	21 (7)	
$50K to <$75K	62 (21)	
$75K to <$100K	69 (23)	
> $100K	118 (39)	
Don't know/declined	20 (7)	
	Parent	Child
Ethnicity		
White	263 (88)	78 (26)
Black	11 (4)	86 (29)
Native American	3 (1)	3 (1)
Hispanic	6 (2)	21 (7)
Asian/Pacific Islander	6 (2)	72 (24)
Biracial/multiracial	7 (2)	23 (8)
Other	2 (1)	13 (4)
Declined	2 (1)	2 (1)
Special needs child (agency)		
Yes	135 (46)	
No	160 (54)	
Special needs adopt child (parents)[a]		
Yes	48 (30)	
No	112 (70)	
Experience of failed adoption		
Yes	56 (19)	
No	243 (81)	

	n (%)
Unsuccessful conception	
Yes	118 (40)
No	175 (60)
Infertility treatment	
Yes	101 (34)
No	194 (66)
Type of adoption	
Public (domestic)	100 (33)
Private (domestic)	43 (14)
Intercountry	157 (52)
Number of children in household	
1	72 (24)
2	96 (32)
3	50 (17)
4	27 (9)
>4	51 (17)
Number of adopted children	
1	135 (45)
2	95 (32)
3	35 (12)
4	14 (5)
>4	18 (6)
Length of time adopted child in home, mo	
0-3	35 (12)
4-12	198 (66)
13-15	20 (7)
16-18	27 (9)
19-24	20 (7)

[a]If agency information indicated that your child was not special needs, do you consider your child special needs?

American. The average age of the child at the time of adoption was 4.6 years (SD = 4.4). It is unknown how many of the total parents enrolled in the online organization met the inclusion criteria and thus response rate cannot be calculated.

Measures

Aspects of adoption and health-related variables

Participants were asked to report on the age of the child at adoption, the number of children who were adopted, the ethnicity/race of the child(ren) who was adopted, and whether the child was considered "special needs." Type of adoption, length of waiting time to placement, and time since placement were also included. Finally, participants were asked to report on the following related to their health history: history of mental illness in themselves or their partner, current or past smoker, current alcohol consumption, height, weight, sleep patterns, and perceived health.

Depression

Depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale (CES-D), a 20-item self-report scale designed to measure symptoms of depression in the general population.[30] The CES-D includes 20 items that are rated on a 4-point scale (0-3), yielding scores with a range of 0 to 60. An adapted version of EPDS[31] was used, a 10-item inventory with total scores ranging from 0 to 30. The PDPI-R[20,21] is designed to assess for risk factors for postpartum depression. Wording was adapted from "infant" to include "child" for this study. Life stressors were also adapted to the adoptive parent population. All 3 scales have good established reliability and validity: α values for the CES-D, EPDS, and PDPI-R are .83, .86, and .80, respectively.

Mother-to-Infant Bonding scale

The Mother-to-Infant Bonding (MIB) scale is composed of 8 self-rating MIB questions measured on a 4-point Likert scale: loving, resent-ful, neutral or felt nothing, joyful, dislike, protective, disappointed, and aggressive.[28] Good internal reliability (Cronbach $\alpha = 0.71$) was reported.[32] The wording of the scale was adapted to include "child."

Dyadic Adjustment Scale (7-Item Short Form)

The Dyadic Adjustment Scale (DAS)[33] is a 32-item questionnaire of relationship satisfaction that provides a global adjustment score and 4 subscale scores (consensus, satisfaction, cohesion, and affectional expression). The Dyadic Adjustment Scale (7-Item Short Form) (DAS-7) is a brief form of the DAS, which has been found to have adequate internal reliability (Cronbach $\alpha = 0.75$-0.79), criterion validity, and construct validity.[33-36]

Statistical analysis

Basic descriptive statistics were computed across the sample. Internal consistency was measured by computing Cronbach α coefficients. If a respondent completed at least 75% of items of the CES-D, EPDS, DAS, and MIB scale, the researchers substituted each item with item-mean value. To accomplish the first study aim, the rates of depressive symptoms by the CES-D and the EPDS were computed. To accomplish the second aim, both the CES-D and EPDS responses were treated as continuous variables and a squared root transformation was taken to reduce variance. Bivariate analyses were performed by regressions or one-way analyses of variance to establish significance between potential predictors and total score of the depression scales. Next, a stepwise regression analysis was then conducted with bivariate correlates of $P < .20$ in predicting the dependent variable, depression. All the analyses were performed in SAS 9.2.[37]

RESULTS

Reliability

The CES-D, EPDS, DAS, and MIB scale demonstrated acceptable reliability. Cronbach α

values were 0.94 for the CES-D (n = 300) and 0.88 (n = 292) for the EPDS. The overall Cronbach α value for the MIB scale was 0.89 (n = 284), and the DAS demonstrated acceptable consistency with a Cronbach α value of 0.83 (n = 256). The α value for the PDPI-R was not calculated, given the data collection method and the use of different life stressor variables. Instead, each individual item was used as an independent variable.

Rates of depression

The overall rate of depression for the 300 mothers was 26% as measured by the CES-D (a score of ≥16) and 18% by the EPDS (a score of ≥12). Pearson correlation was also calculated for total scores of the instruments, revealing a high association between the 2 scales ($r = 0.87$, $P < .0001$). The McNemar test was conducted to discern the overlap of depressive symptoms measured by 2 scales using those participants who had completed *both* scales (n = 292). The EPDS and the CES-D could both detect depressive symptoms in 16% of the parents, whereas 72% of the parents did not meet the threshold for symptoms as measured by both instruments. The McNemar test indicated that depression/nondepression rates differed by the instrument ($P = .0002$). Thus, the 2 instruments seem to be measuring different types of depressive symptoms.

To estimate depression *prior to* placement, respondents were queried whether they were depressed *during the adoption process*. If they responded "yes," they were further asked, "How mild or severe their depression has been." Of the total mothers responding to these 2 items (n = 285), 44% (n = 124) reported not being depressed during the adoption process. More than one-third (n = 114; 40%) were mildly depressed; 12% were moderately depressed (n = 35); and 4% reported experiencing severe depression (n = 12).

Bivariate analyses of demographic and adoption variables with depression scales

As shown in Table 2, respondents' expectations of themselves as parents, the child,

and family and friends were significantly correlated with depression ($P < .0001$). The more parents agreed with having unmet expectations postplacement, the more likely they were to experience depression. Eleven of the PDPI-R items were significantly associated with depression as measured by the CES-D and the EPDS; only the items "unplanned adoption" and the researchers' "life stressor" variables were not significantly related. Length of time since placement was also associated with depressive symptoms (CES-D: $P = .03$; EPDS: $P = .001$). Education level was found to be significant as assessed by the CES-D ($P = .01$).

Results also included that if mothers were informed of their child having special needs, there was no correlation between this variable and symptoms of depression; however, if the mother was informed that the child did not have special needs, yet upon placement the parent determined that the child has special needs, the parents were significantly more likely to have depressive symptoms as measured by both the CES-D ($P < .0001$) and the EPDS ($P < .0001$). General information pertaining to the child as relayed by the adoption agency and preparation for parenting were also correlated with depressive symptoms ($P < .0001$).

Mother-to-child bonding and dyadic adjustment were negatively related to depressive symptoms. Significant values of $P < .0001$ for both scales and both variables (bonding and dyadic adjustment) were found. Parental demographic characteristics were not associated with depressive symptoms (eg, age, employment, religion, income, socioeconomic status, marital status and length of marriage, and ethnicity of parent). Several adoption variables were not associated with reported levels of depression (eg, type of adoption, number of children in household, birthplace of child, waiting period for child, and known special needs of the child). Past experiences with unsuccessful attempts to conceive, adopt (failed adoptions), infertility, and fertility treatments were also not significant. History of smoking, drinking (alcohol), body mass index, and partner's history of mental illness were also not

Table 2. Bivariate Analysis of Demographic and Adoption Variables[a]

Variables	Mean ± SD (n) or n/N	P CES-D	P EPDS
Child and adoption variables			
Age of adopted child	4.64 ± 4.43 (273)	.005	.008
Ethnicity of adopted child	White 78/298 (see Table 1)	.35	.18
Length of time since placement	9.57 ± 5.50 (300)	.03	.001
Number of adopted children	1.94 ± 1.14 (297)	.48	.23
Special needs adopted child (disclosed) (yes/no)	Yes 135/295	.54	.99
Special needs adopted child (undisclosed)[b] (yes/no)	Yes 48/160	<.0001	<.0001
Child information before adoption (1-5)	2.38 ± 1.21 (283)	<.0001	.0004
Preparation to be adoptive parent (1-5)	1.60 ± 0.86 (286)	<.0001	<.0001
Parental variables			
Education (yes/no)	Four-year college 115/299	.01	.17
History of mental illness (yes/no)	Yes 17/275	.20	.26
Alcoholic drinks per week (1 = no drink; 4 = >4)	1.60 ± 0.86 (288)	.49	.57
Feeling of rest (1-5)	2.95 ± 1.05 (289)	<.0001	<.0001
Marital status	Married/partnered 251/288	.09	.17
Life stressors (0-5)	0.58 ± 0.81 (295)	.22	.11
PDPI-R (12 variables)			
PDPI-R: self-esteem (0-3)	2.84 ± 0.50 (282)	<.0001	<.0001
PDPI-R: depression (0-1)	0.57 ± 0.50 (289)	<.0001	<.0001
PDPI-R: anxiety (0-1)	0.68 ± 0.47 (287)	.003	.0004
PDPI-R: unplanned adoption (0-2)	0.18 ± 0.39 (287)	.08	.47
PDPI-R: history of depression (0-3)	0.91 ± 1.12 (289)	<.0001	<.0001
PDPI-R: partner support (0-4)	3.40 ± 1.11 (260)	<.0001	<.0001
PDPI-R: family support (0-4)	3.04 ± 1.44 (284)	<.0001	<.0001
PDPI-R: friend support (0-4)	3.51 ± 1.07 (284)	<.0001	<.0001
PDPI-R: marital satisfaction (0-3)	2.47 ± 0.99 (275)	<.0001	<.0001
PDPI-R: child care stress (0-3)	0.56 ± 0.70 (284)	<.0001	<.0001
PDPI-R: infant temperament (0-3)	0.57 ± 0.92 (280)	<.0001	<.0001
PDPI-R: postadoption blues (0-1)	0.33 ± 0.47 (288)	.0001	<.0001
Mother-Infant Bonding Scale	20.10 ± 4.53 (284)	<.0001	<.0001
Mother bonding w/ child	Yes 267/286	<.0001	<.0001
Partner bonding w/child	Yes 240/258	.12	.33
Dyadic Adjustment Scale	26.62 ± 5.49 (256)	<.0001	<.0001
Enthusiasm			
Enthusiasm of partner to parent (1-5)	1.41 ± 0.65 (263)	<.0001	.03
Enthusiasm of partner to adoptive parent (1-5)	1.54 ± 0.77 (264)	<.0001	.02
Expectations			
Expectations of self as parents (1-5)	2.82 ± 1.31 (284)	<.0001	<.0001
Expectations of child (1-5)	3.25 ± 1.24 (285)	<.0001	<.0001
Expectations of family/friend (1-5)	1.73 ± 0.88 (281)	<.0001	<.0001
Acceptance of society (1-5)	1.61 ± 0.71 (282)	.07	.12

Abbreviations: CES-D, Center for Epidemiologic Studies Depression Scale; EPDS, Edinburgh Postnatal Depression Scale; PDPI-R, Postpartum Depression Predictors Inventory–Revised.

[a]If "(0-1)" is listed, categorical variable analyzed by χ^2; If "(1-5)" is listed, Likert-type question was used: strongly agree, agree, neutral, disagree, and strongly disagree. If "(0-3)" is listed, then variable is derived from a set of 3 categorical questions, each with a yes/no format. These variables are considered continuous for the analysis.

[b]Item: "If agency information indicated that your child was not special needs, do you consider your child special needs?"

Table 3. Age of Child and Parental Depressive Symptoms

Age of Adopted Child at Placement (0-201 mo)	Mean ± SD	
	CES-D	**EPDS**
Newborn to <12 mo	8.03 ± 7.81 (n = 89)	5.24 ± 4.26 (n = 84)
12 to <24 mo	10.80 ± 10.24 (n = 50)	6.68 ± 4.80 (n = 49)
24 mo to <5 y	11.14 ± 11.18 (n = 56)	6.63 ± 5.98 (n = 56)
5 to <12 y	11.28 ± 10.92 (n = 53)	7.16 ± 5.44 (n = 52)
≥12 y	16.56 ± 14.11 (n = 25)	9.00 ± 6.84 (n = 25)
P	.02	.07

Abbreviations: CES-D, Center for Epidemiologic Studies Depression Scale; EPDS, Edinburgh Postnatal Depression Scale.

significantly associated with depressive symptoms.

Child age at placement

Age of the child at the time of placement was also considered in separate analyses. As show in Table 3, analysis revealed no significant associations between age of the child at placement and depressive symptoms as measured by the EPDS; however, there was a significant association between the CES-D scores and the age of the child at placement ($P = .02$). The Tukey's post-hoc test revealed that compared with parents whose child was less than 12 months old at the time of placement, parents who adopted a child over 12 years had significantly higher CES-D scores ($P = .006$).

Ethnicity of parent and child

As Table 4 shows, parents whose ethnicity differed from the child did not report higher depressive symptoms; however, parents whose ethnicity differed from their child were less likely to perceive that society had accepted them as an adoptive family ($P = .0007$).

Regression analysis

After using stepwise selection method with entry and stay criteria of $P < .05$, significant variables were left. Stepwise regression analysis revealed similar models for each scale (CES-D: $R^2 = 0.58$; n = 234; EPDS: $R^2 =$

0.51; n = 255). Nine shared explanatory variables were feeling of rest, self-esteem, history of depression, perceived friend support, mother-to-child bonding, marital satisfaction, and the theoretical constructs of expectations (of themselves as parents, the child, and family and friends) (Table 5).

DISCUSSION

This study adds important information and theory development in understanding the depression experienced by some adoptive mothers after the child is placed in the home. Although rates vary, the prevalence of *postpartum* depression is approximately 10% to 15% of birth mothers.[38] The Pregnancy Risk Assessment Monitoring System more recently determined a prevalence rate for 11.7% to 20.4% across 17 states, although the risk factors of maternal age, marital status, maternal education, and Medicaid coverage for delivery do not seem to apply to adoptive mothers.[39] In contrast, adoptive mothers in this study reported rates of 26% (CES-D) and 18% (EPDS), although the overlap in positive assessments between the 2 tools is not clear. Two final models offer possible predictors of depressive symptoms in adoptive mothers. Nine explanatory variables were shared between the 2 models. Parental expectations were predictors of depressive symptoms in adoptive mothers in both models and provide tentative support for Foli's Mid-Range Theory of Postadoption Depression.

Table 4. Depressive Symptoms, Child/Parent Ethnicity, Child Expectations, and Acceptance by Society

| | Child/Parent Ethnicity, Mean ± SD (n) or n (%) | | |
	Same	Different	P
CES-D	11.16 ± 10.98 (93)	10.61 ± 10.24 (203)	.79
EPDS	7.05 ± 5.48 (89)	6.45 ± 5.25 (199)	.29
Child expectation: "I expected parenting this child would be easier"	3.11 ± 1.31 (87)	3.31 ± 1.20 (195)	.21
Strongly agree	11 (13)	13 (7)	
Agree	22 (25)	44 (23)	
Neutral	14 (16)	43 (22)	
Disagree	26 (30)	59 (30)	
Strongly disagree	14 (16)	36 (18)	
Acceptance by society: "Society has accepted us as an adoptive family"	1.39 ± 0.60 (86)	1.70 ± 0.74 (193)	.0007
Strongly agree	56 (65)	87 (45)	
Agree	27 (31)	78 (40)	
Neutral	2 (2)	26 (13)	
Disagree	1 (1)	2 (1)	
Strongly disagree	0 (0)	0 (0)	

Abbreviations: CES-D, Center for Epidemiologic Studies Depression Scale; EPDS, Edinburgh Postnatal Depression Scale.

Beck's PDPI-R[20,21] also contributed to the variance of depressive symptoms in the models (self-esteem, history of depression, perceived friend support, and marital satisfaction [for EPDS model]). Although there seems to be overlap of symptoms between postpartum depression and postadoption depression, it would appear that adoptive mothers experience different dynamics than postpartum mothers and thus may have different health care needs.[40] Findings are also consistent with a pilot, qualitative study conducted by McKay and Ross.[41] In this study, 2 meta-themes regarding the transition period for adoptive parents was identified: facilitators and challenges. Challenges included fear and anxiety, lack of information about or experience with children, and isolation/lack of social support.[41]

One variable, bonding between mother and child, has also been linked to postpartum depression[32]; our findings would support this relationship between mother-to-child bonding and depressive symptoms. It is unclear, however, whether depression influences the ability to bond or whether the inability to bond influences the presence of depressive symptoms. Marital dissatisfaction also is a predictor of depression in adoptive mothers, congruent with the postpartum literature. Findings also demonstrate that the age of the child being adopted may influence parental depressive symptoms. Future research should explore factors that may contribute to these depressive symptoms with "older" child adoptions. Transracial adoptive families may need increased support from society and preparation on what to expect from society when adopting a child whose ethnic or racial background differs from their own.

Although all depressive symptoms were collected via self-report, literature supports the reliability of self-report data in predicting health outcomes.[42] The study does have limitations that must be acknowledged. Respondents could choose to skip questions, which resulted in an uneven response rate with missing data on several variables. Selection

Table 5. Final Regression Models Predicting Depressive Symptoms

	β	SE	95% Confidence Interval	Partial η^2	F	P
CES-D ($R^2 = 0.58$, n = 234)[a]						
DAS: marital satisfaction	−.046	0.015	(−0.08, −0.02)	0.040	9.28	.003
Feeling of rest	.391	0.081	(0.23, 0.55)	0.094	23.17	<.0001
PDPI-R: self-esteem	−.672	0.160	(−0.99, −0.36)	0.073	17.75	<.0001
PDPI-R: history of depression	.199	0.069	(0.06, 0.33)	0.036	8.39	.004
PDPI-R: perceived friend support	−.210	0.068	(−0.34, −0.08)	0.041	9.50	.002
Mother-to-child bonding	−.692	0.302	(−1.29, −0.10)	0.023	5.23	.02
Expectations of being a parent	−.172	0.070	(−0.31, −0.03)	0.026	6.00	.02
Expectations of child	−.184	0.075	(−0.33, −0.04)	0.026	6.05	.01
Expectations of family/friends	.253	0.085	(0.09, 0.42)	0.038	8.87	.003
EPDS ($R^2 = 0.51$, n = 255)[a]						
Feeling of rest	.288	0.053	(0.18, 0.39)	0.106	29.10	<.0001
PDPI-R: self-esteem	−.332	0.113	(−0.56, −0.11)	0.034	8.59	.004
PDPI-R: history of depression	.200	0.047	(0.11, 0.29)	0.070	18.44	<.0001
PDPI-R: perceived friend support	−.119	0.048	(−0.21, −0.02)	0.024	6.12	.01
PDPI-R: marital satisfaction	−.127	0.053	(−0.23, −0.02)	0.022	5.75	.02
Mother-to-child bonding	−.478	0.213	(−0.90, −0.06)	0.020	5.05	.03
Expectations of being a parent	−.166	0.049	(−0.26, −0.07)	0.045	11.52	.0008
Expectations of child	−.104	0.052	(−0.21, −0.001)	0.016	3.95	.048
Expectations of family/friends	.136	0.059	(0.02, 0.25)	0.021	5.22	.02

Abbreviations: CES-D, Center for Epidemiologic Studies Depression Scale; DAS, Dyadic Adjustment Scale; EPDS, Edinburgh Postnatal Depression Scale; PDPI-R, Postpartum Depression Predictors Inventory–Revised.
[a]$df = 1$ for all variables.

bias may also be a limitation in that mothers who had adopted across the previous 24 months were included in the study. Although the PDPI-R was designed to be conducted as part of a clinical interview, we adapted its wording to be a self-administered questionnaire using Web-based survey software. Because of this adaptation, conclusions regarding the overall predictive ability have not been included in this discussion. In addition, the specificity and sensitivity of the CES-D and the EPDS cannot be determined in this study.

Future research should include a criterion measure(s) to determine these psychometric properties. The final regression models only predicted 58% to 51% of depressive symptoms. This leaves the question of what other explanatory variables may have been omitted. Finally, population parameters for adoptive parents are elusive, because individual states are not required to record the number of

private domestic adoptions, adoption statistics may include stepparent adoptions, and parameters fluctuate over time. In addition, consideration of external validity is challenging when dyad functioning is considered (the parametric features of both the mother and the child).

IMPLICATIONS FOR PRACTICE

These findings have a number of nursing implications. Examination of expectations held of themselves as parents, of the child, and of their friends and family should be openly discussed prior to the child's placement and during home and primary health care provider visits conducted after placement. The rates of postadoption depression found in the current study are consistent with Payne et al[3] and indicate a need for adoptive mothers to

be screened for postadoption depression. Assessing for fatigue and the feeling of rest in adoptive mothers may be a simple, yet effective, way of supporting parents. Adequate educational preparation of "adoption smart" professionals is necessary for effective interventions and assessments for those adoptive families who struggle.[43]

Future research should include criterion validity to establish psychometric properties of the tools used to assess for depressive symptoms. Findings may also be used to pilot test a tool for predicting postadoption depression as well as interventions derived from the explanatory variables: for example, examination of mother-to-child bonding and marital satisfaction. Whether depressive symptoms cause or are the result of difficulties in mother-to-child bonding, lowered self-esteem, lack of rest, and marital dissatisfaction should also be considered as future studies are conducted.

In conclusion, adoptive maternal depression may be predicted by assessing parents' expectations of themselves as parents, of the child, and of family and friends, reported feelings of rest, past, and present mental health difficulties (self-esteem and history of depression), and interpersonal interactions (child-to-parent bonding, marital satisfaction, and perceived support).

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