



## Patterns of psychological distress in mothers of preterm infants



Diane Holditch-Davis<sup>a,\*</sup>, Hudson Santos<sup>a</sup>, Janet Levy<sup>a</sup>,  
Rosemary White-Traut<sup>b</sup>, T. Michael O'Shea<sup>c</sup>,  
Victoria Geraldo<sup>d</sup>, Richard David<sup>e,f</sup>

<sup>a</sup> School of Nursing, Duke University, Durham, NC 27710, United States

<sup>b</sup> Children's Hospital of Wisconsin and the College of Nursing, University of Illinois at Chicago, Chicago, IL 60607, United States

<sup>c</sup> Wake Forest School of Medicine, Winston Salem, NC 27157, United States

<sup>d</sup> Mount Sinai Children's Hospital, Chicago, IL 60608, United States

<sup>e</sup> College of Medicine, University of Illinois at Chicago, Chicago, IL 60607, United States

<sup>f</sup> Stroger Hospital, Chicago, IL 60612, United States

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### ABSTRACT

Mothers of preterm infants experience significant psychological distress, with elevated levels of inter-correlated depressive, stress, anxiety and post-traumatic stress symptoms. In a sample of racially and ethnically diverse mothers of preterm infants, we identified differing patterns of psychological distress during infant hospitalization and examined the effect of these psychological distress patterns on longitudinal trajectories of each psychological distress measure and on maternal perceptions of the child over the first year of the infant's life. Mothers of preterm infants ( $N=232$ ) completed five questionnaires assessing depressive symptoms, anxiety, post-traumatic stress symptoms, stress due to infant appearance, and stress due to parental role alteration during enrollment during the neonatal hospitalization, discharge, and at 2, 6, and 12 months of age adjusted for prematurity. Latent class analysis on the enrollment psychological distress variables allowed us to identify five sub-groups of mothers exhibiting similar patterns of psychological distress, differing primarily in degree and type: low distress, moderate distress, high NICU-related distress, high depressive and anxiety symptoms, and extreme distress. These classes continued to show different longitudinal trajectories for the psychological distress measures through 12 months corrected age. Mothers in the extreme distress class and, to a lesser degree, mothers in the high depressive and anxiety symptom class remained at risk of significant psychological distress one year after discharge and had less positive perceptions of their child (greater worry and higher perceptions of child vulnerability). In conclusion, distinctive sub-groups of mothers during hospitalization had different patterns of psychological distress throughout the 12-month period and may require different interventions in the NICU.

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\* Corresponding author at: Duke University, School of Nursing, 307 Trent Drive DUMC 3322, Durham, NC 27713, United States.  
E-mail address: [diane.hd@duke.edu](mailto:diane.hd@duke.edu) (D. Holditch-Davis).

## 1. Introduction

Prematurity affects about 11.5% of all births in the United States (WHO, 2012). Mothers of preterm infants experience significant psychological distress as evidenced by elevated levels of depressive, stress, anxiety and post-traumatic stress symptoms (Holditch-Davis et al., 2009), which are often inter-correlated (Holditch-Davis et al., 2009; Jubinville, Newburn-Cook, Hegadoren, & Lacaze-Masmonteil, 2012; Singer et al., 1999). The purpose of this study was to identify sub-groups of mothers who showed different patterns of psychological distress (specifically, stress due to infant illness and appearance in the neonatal intensive care unit (NICU), stress due to parental role alteration in the NICU, depressive symptoms, state anxiety, and post-traumatic stress symptoms), to determine whether these sub-groups differed on maternal and infant characteristics and to examine how early psychological distress sub-groups are longitudinally related to psychological distress measures and maternal perceptions of the child throughout the first year after hospital discharge.

Mothers of preterm infants experience marked psychological distress during infant hospitalization (Holditch-Davis et al., 2009; Jubinville et al., 2012; Schappin, Wijnroks, Uniken Venema, & Jongmans, 2013). They fear that the infant may not survive and grieve over the infant's immaturity and frequent health crises (Miles, Holditch-Davis, Schwartz, & Scher, 2007; Smith, 2001). In addition, the loss of the expected maternal role due to infant illness and separation from the infant during hospitalization is a major source of stress (Miles, Funk, & Carlson, 1993; Miles, Funk, & Kasper, 1992). Almost 50% of mothers of premature infants have high levels of anxiety and/or depressive symptoms during infant hospitalization (Davis, Edwards, Mohay, & Wollin, 2003; Mew, Holditch-Davis, Belyea, Miles, & Fishel, 2003; Miles et al., 1992, 2007; Zerkowitz, Bardin, & Papageorgiou, 2007). The severity of psychological distress may be related to severity of the infant illness (Singer et al., 1999), although findings are inconsistent (Rogers, Kidokoro, Wallendorf, & Inder, 2013; Shaw et al., 2014). In addition, this distress may be worsened by other factors in the mothers' lives such as daily stressors or post-partum depression (Beck, 2003; Holditch-Davis et al., 2009).

Elevated levels of maternal psychological distress may continue for months or even years after hospital discharge. The severity of psychological distress after discharge is related to the severity of psychological distress while the infant is hospitalized (Holditch-Davis et al., 2009; Northrup, Evans, & Stotts, 2013). Many mothers of preterm infants continue to have high levels of anxiety and/or depressive symptoms for months after infant hospital discharge (Davis et al., 2003; Mew et al., 2003; Miles et al., 1992, 2007; Zerkowitz et al., 2007), and some show post-traumatic stress symptoms related to the NICU experience and infant illness severity (CMDS, 1999; DeMier, Hynan, Harris, & Manniello, 1996; Holditch-Davis et al., 2009; Shaw et al., 2014).

The various types of psychological distress in mothers of preterm infants are inter-correlated, both during hospitalization and after infant discharge (Holditch-Davis et al., 2009; Jubinville et al., 2012; Singer et al., 1999). Yet most studies continue to examine single psychological distress outcomes and do not account for potential response differences within sub-group of mothers (Miles et al., 2007; Northrup et al., 2013; Shaw et al., 2014; Zerkowitz et al., 2007), with one exception. In a study that only dealt with African-American mothers of preterm infants, researchers identified sub-groups of mothers who had different patterns of psychological distress defined as a composite of six psychological distress measures (Holditch-Davis et al., 2009). However, a comprehensive psychological distress profile for mothers of diverse ethnic groups has not been available to researchers and clinicians. Expanding knowledge to comprehensively understand differences in psychological distress among a diverse population may help us develop ways of identifying sub-groups of mothers with high vulnerability, important periods during the first years that are effective times for interventions and resources to ameliorate maternal psychological distress and in turn minimize poor health outcomes for mothers and their offspring.

This study estimated the inter-correlations between depressive symptoms, state anxiety, post-traumatic stress symptoms, stress due to infant appearance and behavior, and stress due to parental role alteration in a multi-ethnic sample of mothers of pre-term infants during initial hospitalization. We conducted a latent class analysis based on the five measures of maternal psychological distress and examined whether psychological distress class membership was related to characteristics of the mother or infant. Finally, the study tested the effect of psychological distress class membership on longitudinal trajectories of each psychological distress measure over the first year of the infant's life, maternal worry about child health, parenting stress after-discharge, and maternal perceptions of child vulnerability at 12 months.

## 2. Methods

The study employed a longitudinal repeated measure design as part of a randomized controlled trial testing the effects of two maternally administered interventions for preterm infants on infant health and development, maternal psychological well-being, and the maternal–infant relationship (Holditch-Davis et al., 2014; White-Traut, Wink, Minehart, & Holditch-Davis, 2012). In the parent study the interventions had no effect on maternal psychological distress. The focus of the current analysis was on the psychological distress measures collected at study enrollment, which were measured before the intervention begun and were unlikely to be affected by later psychological distress treatment. Yet the effect of the intervention was included in all longitudinal models to eliminate any possible confounding of intervention effects with the sub-group patterns that are the focus of this report.

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