

Parental psychological well-being and behavioral problems of very low birth weight (VLBW) infants

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The PIPARI Study



Turku University
Hospital, Finland

Prospective cohort
study

The development and
functioning of very
low birth weight
infants from infancy
to school age



Institution: [Turku University \(Turun Yliopisto\)](#)

Article

Parental Psychological Well-Being and Behavioral Outcome of Very Low Birth Weight Infants at 3 Years

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ABSTRACT

OBJECTIVE: The purpose was to explore whether poor parental psychological well-being is associated with behavioral problems of very low birth weight (VLBW, ≤ 1500 g) infants at 3 years of age.

METHODS: In this prospective cohort study, 189 VLBW preterm infants born between January 2001 and December 2006 at the Turku University Hospital, Finland, were followed. Validated questionnaires (Beck Depression Inventory, Parenting Stress Index, and Sense of Coherence Scale) were mailed to the parents when their children were 2 years corrected age. A total of 140 parents evaluated the behavior of the child at 3 years by filling out the Child Behavior Checklist.

RESULTS: There were significant associations between most of the measures of parental symptoms of depression, parenting stress, and sense of coherence and the behavioral outcome of the VLBW infants. The concomitant symptoms of both parents were associated with more problematic child behavior.

CONCLUSIONS: Parents report more behavioral and emotional problems in VLBW children at age 3 if they themselves have had symptoms of depression, parenting stress, or weak sense of coherence 1 year earlier. The new finding of this study was to show the significance of the father's psychological well-being on the behavioral development of a preterm child.

Huhtala M, Korja R, Lehtonen L, Haataja L, Lapinleimu H, Rautava P, on behalf of the PIPARI Study Group. Parental Psychological Well-Being and Behavioral Outcome of VLBW Infants at 3 Years. *Pediatrics*. 2012 Apr;129(4):e937-44. Epub 2012 Mar 12.

Introduction

- Preterm infants are at increased risk of behavioral, emotional and neurological problems.
- Problems are multi-etiological: biological factors, parenting styles, home environment, and parents' distress.
- Biological factors on psychoneurological development decrease by time and the role of social environment grows.

Premature birth interrupts the psychological process of becoming a parent

- Concerns about child's health, development, abilities, well-being
 - affect parental perceptions, attitudes, parent-child interaction, parenting styles
 - negative effects on the behavior of the child?



Hypothesis

- Poor psychological well-being of both parents is associated with behavioral problems of VLBW children



Study subjects

VLBW infants

246

≤ 1500 g, < 37 gw

born in Turku University Hospital,
Finland 5/2001 - 12/2006

- 11 (4,5 %) Declined participation
- 39 (15,8 %) Died during neonatal period
- 3 (1,2 %) Outside the catchment area
- 1 Multiple anomalies
- 1 Osteogenesis imperfecta
- 2 (0,8 %) Other languages than Finnish/Swedish in the family

189

Eligible VLWB infants



Background Characteristics		VLBW infants, n=189
Birth weight, mean (range)		1071 g (400-1500 g)
Gestational age, mean (range)		28.8 w (23.0-35.3 w)
Male		103 (54 %)
Small for gestational age (SGA)		72 (38 %)
Multiple birth		56 (30 %)
Neurodevelopmental impairment		21 (11 %), missing data n =6
Mental developmental Index < 70		5 (2.7 %)
Cerebral palsy		13 (7.1 %)
Severe hearing deficit/visual impairment		9 (4.8 %)
Mother	Education ≤9 years / ≥ 12 years	24 (13 %) / 109 (59 %), missing data n=5
	Smoker	36 (20.7 %), missing data n=15
	Employed	94 (53 %), missing data n=11
Father	Education ≤9 years / ≥ 12 years	18 (10 %) / 57 (31 %), missing data n=6
	Smoker	56 (32 %), missing data n=16
	Employed	166 (94 %), missing data n=13
Parents married		170 (98 %), missing data n=16
divorced after 2 years		12 (7 %), missing data n=19

Methods

Parents' psychological well-being

- Assessed at infants 2 years of age
- Questionnaires:
 - Beck Depression Inventory (BDI)
 - Parenting Stress Index (PSI)
 - Child characteristics (Child domain)
 - Parent's own sources of stress (Parent domain)
 - Total stress
 - Antonovsky's Sense of Coherence Scale (SOC-13)
 - Comprehensibility, meaningfulness and manageability of one's own life

Evaluation of VLBW children

- Parental ratings
 - 3 years: Child Behavior Checklist for Ages 1½-5 (CBCL/1½-5, Achenbach T. 2001)
 - 5 years: Five to Fifteen (FTF, Kadesjö B et al. 2004)

Child behavior at 3 years

- CBCL 1½-5
 - Focuses on behavioral and emotional problems
 - Reflects similar patterns of psychiatric problems in 23 countries including Finland (Ivanova M et al. *J Am Acad Child Adolesc Psychiatry* 2010)
 - 100 problem items (0=not true, 1=somewhat/sometimes true, 2=very/often true)
- Total problem score
- Internalizing problems score
(Emotional reactivity, anxiety/depression, somatic complaints without medical cause, withdrawal from social contacts)
- Externalizing problem score
(Aggressive behavior, attention problems)

Child behavior at 5 years

- Five to Fifteen, FTF
 - Parents' concerns regarding the child development
 - 181 questions (0=does not apply, 1=applies sometimes or to some extent, 2=definitely applies)
 - Higher scores = more problems
 - 8 domains
 - Emotional and behavioral problems domain (incl. internalizing and externalizing problems and obsessive/compulsive behavior)

Results

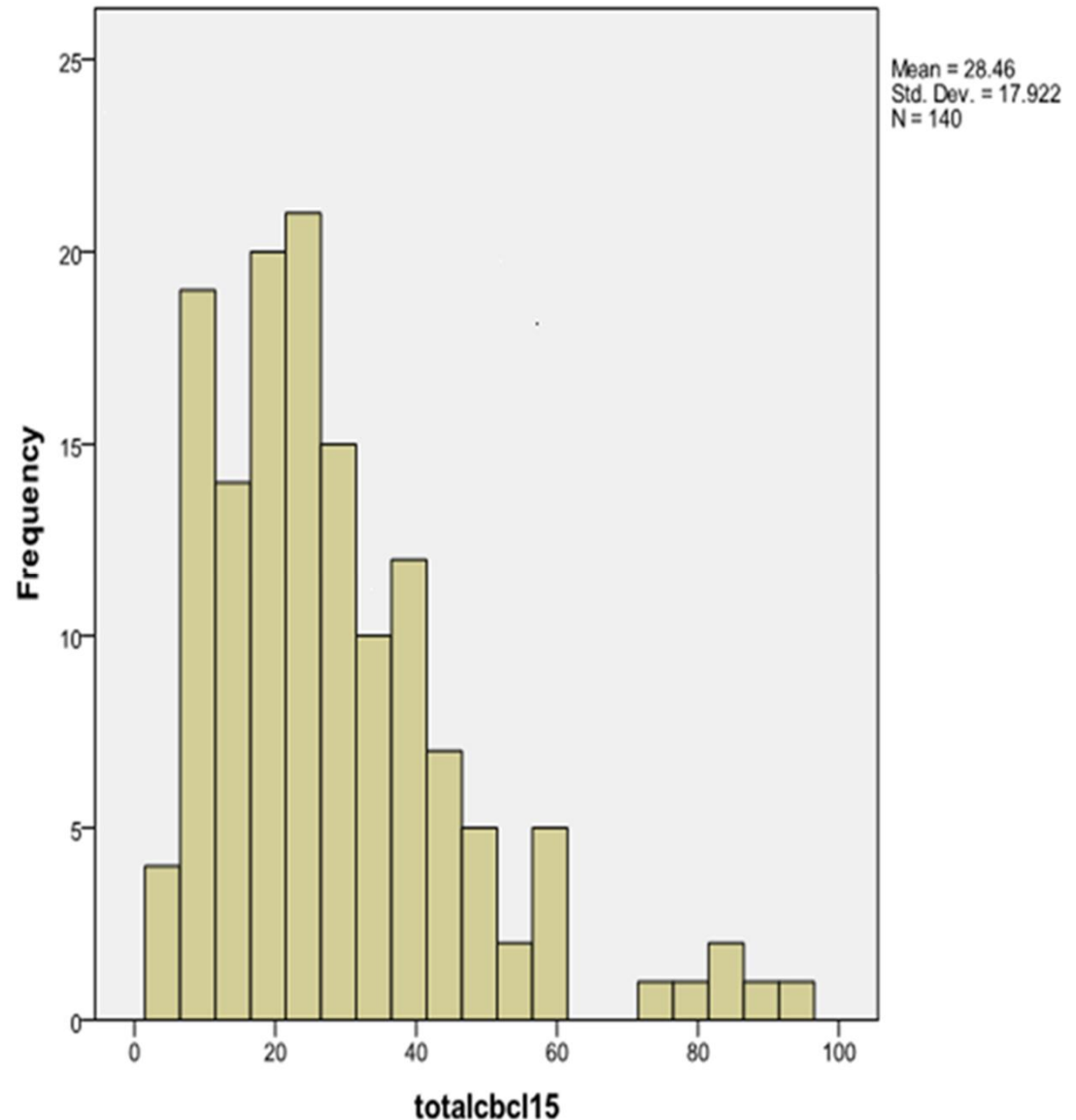


Parents' psychological well-being

- Depressive symptoms
 - Mothers reported more often than fathers ($p < .05$)
- Parenting stress
 - Mothers reported more stress than the fathers ($p < .01$), particularly the parents' own sources of stress (parent domain) ($p < .001$)
 - Fathers reported more stress caused by adaptability ($p < .05$) (child domain) and attachment ($p < .01$) (parent domain)
- Sense of coherence
 - No difference between mothers and fathers

CBCL

- 140 (74 %) CBCL questionnaires returned
 - Dropouts more often divorced and smokers
- Similar scores than in a non-selected Finnish population sample of 3-year-olds (Sourander A. *Eur Child Adolesc Psychiatry* 2001)



	CBCL	Scores ≥ 90th percentile According to ASEBA
VLBW children 3 years n=140	Total	10 (7.1 %)
	Internalizing	7 (5 %)
	Externalizing	10 (7.1 %)

ASEBA, Achenbach System of Empirically Based Assessment

CBCCL

- No differences in the mean CBCCL scores between
 - genders
 - multiples and singletons
 - SGA children and AGA children

Five to Fifteen

- Preliminary results of 5 cohorts (missing 1 year)
- 164 eligible families
- 129 (79 %) questionnaires returned
- No differences in the scores between
 - genders
 - multiples and singletons
 - SGA children and AGA children

VLBW children 5 years n = 129	FTF scores > 90th percentile according to the manual
Emotional/behavioral problems	20 (16 %)

Associations between depressive symptoms and child behavior

- At 3 years of age
 - Mothers' depressive symptoms \leftrightarrow Internalizing problems
 - Mothers' depressive symptoms \leftrightarrow Externalizing problems
 - Fathers' depressive symptoms \leftrightarrow Internalizing problems
- At 5 years of age
 - Mothers' depressive symptoms \leftrightarrow Emotional and behavioral problems

Associations between parenting stress and child behavior

- At 3 years of age
 - Mothers' parenting stress \leftrightarrow Internalizing problems
 - Mothers' parenting stress \leftrightarrow Externalizing problems
 - Fathers' parenting stress \leftrightarrow Internalizing problems
 - Fathers' parenting stress \leftrightarrow Externalizing problems
- At 5 years of age
 - Mothers' parenting stress \leftrightarrow Emotional and behavioral problems
 - Fathers' parenting stress \leftrightarrow Emotional and behavioral problems

Associations between sense of coherence and child behavior

- At 3 years of age
 - Mothers' sense of coherence \leftrightarrow Internalizing problems
 - Mothers' sense of coherence \leftrightarrow Externalizing problems
 - Fathers' sense of coherence \leftrightarrow Internalizing problems.

- At 5 years of age
 - Mothers' sense of coherence \leftrightarrow Emotional and behavioral problems
 - Fathers' sense of coherence \leftrightarrow Emotional and behavioral problems

Discussion



Discussion

- Poor psychological well-being of parents was strongly associated with behavioral problems at age 3
- Consistent with a previous study of mothers (Miceli et al. *J Pediatr Psychol* 2000)
- New finding of the significance of fathers
- Fathers might tolerate more externalizing behavior than mothers

Discussion

- The role of fathers' depressive symptoms on behavioral problems of the child gradually decreases with time
- We speculate that mother or other important person compensates

Discussion

- The mean CBCL scores (total, internalizing, externalizing) were similar to the scores of full term peers
- Encouraging finding, in line with other findings of PIPARI Study

Conclusion

- Psychological well-being of the mothers and the fathers contributes to behavioral problems of preterm children.
- The parents should be offered psychosocial support if they feel depressed or stressed after having a preterm baby.
- Parental well-being should also be taken into account in the routine follow-up of preterm children.

Thank you!



- Study families
- PIPARI Study Group

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