



Pain coping strategies: Neonatal intensive care unit survivors in adolescence



Christ-jan van Ganzewinkel^{a,*}, Jasper V. Been^{b,c,d}, Jeanne P. Dieleman^e, Titia Katgert^f, Tera Boelen-van der Loo^g, Sylvia M. van der Pal^g, Monique van Dijk^h, Boris W. Kramer^{c,i,j}, Peter Andriessen^{a,c}

^a Department of Pediatrics, division of Neonatology, Máxima Medical Center, De Run 4600, 5504, MB, Veldhoven, The Netherlands

^b Department of Neonatology, Erasmus MC-Sophia Children's Hospital, Wytemaweg 80, 3015, CN, Rotterdam, The Netherlands

^c Department of Pediatrics, Maastricht University Medical Center, P. Debyeilaan 25, 6229, HX, Maastricht, The Netherlands

^d School for Public Health and Primary Care, Maastricht University, Universiteitssingel 40, 6229, ER, Maastricht, The Netherlands

^e MMC Academie; Máxima Medical Center, De Run 4600, 5504, MB, Veldhoven, The Netherlands

^f Department of Psychology, Máxima Medical Center, De Run 4600, 5504, MB, Veldhoven, The Netherlands

^g TNO Quality of Life, Prevention and Health, Schipholweg 77-89, 2316, ZL, Leiden, The Netherlands

^h Intensive Care, Department of Pediatric Surgery, Erasmus MC-Sophia Children's Hospital, Wytemaweg 80, 3015, CN, Rotterdam, The Netherlands

ⁱ School for Oncology and Developmental Biology (GROW), Maastricht University Medical Center, Universiteitssingel 40, 6229, ER, Maastricht, The Netherlands

^j School of Mental Health and Neuroscience (MHeNS), Maastricht University Medical Center, Universiteitssingel 40, 6229, ER, Maastricht, The Netherlands

ARTICLE INFO

Article history:

Received 17 February 2016

Received in revised form 16 June 2016

Accepted 4 July 2016

Available online xxxx

Keywords:

Newborn

Adolescents

Pain coping

Long-term follow-up

POPS-19

ABSTRACT

Background: Data on long-term consequences of preterm birth on pain coping later in life are limited.

Aim: To assess whether gestational age, birth weight and neonatal disease severity have effect on pain coping style in adolescents born preterm or with low birth weight.

Study design: Observational, longitudinal study (Project On Preterm and SGA-infants, POPS-19).

Subjects: We analyzed data of 537 adolescents at the age of 19 years, who were born at a gestational age < 32 weeks or with a birth weight < 1500 g.

Outcome measures: Participants completed the pain coping questionnaire (PCQ) that assesses pain coping strategies in three higher-order factors: approach ("to deal with pain"), problem-focused avoidance ("to disengage from pain") and emotion-focused avoidance ("expression of pain"). Furthermore, their pain coping effectiveness, pain controllability and emotional reactions to pain were assessed. All participants completed an IQ test.

Results: Univariate analysis showed no significant correlation between length of stay, sepsis and necrotizing enterocolitis and any of the higher-order factors. Approach was only correlated with IQ. Problem-focused avoidance was, in the multiple regression analysis (including gestational age, IVH and IQ), only correlated with IQ. For emotion-focused avoidance (including birth weight, SGA, IVH, respiratory support and IQ) three independent predictors remained: IVH was positively correlated, while respiratory support and IQ were negatively correlated with emotion-focused avoidance.

Conclusions: Early neonatal characteristics and neonatal disease severity have limited effect on pain coping style in adolescence. Higher IQ was associated with the use of adaptive coping strategies, while maladaptive strategies were used less.

© 2016 Published by Elsevier Ireland Ltd.

Abbreviations: IVH, intraventricular hemorrhage; IQ, intelligence quotient; IQR, interquartile range; NEC, necrotizing enterocolitis; NICU, neonatal intensive care unit; PCQ, Pain Coping Questionnaire; POPS, Project On Preterms and Small for gestational age infants; SD, standard deviation; SGA, Small for Gestational Age.

* Corresponding author. Tel.: +31 408889354; fax: +31 408889340.

E-mail addresses: c.vanganzewinkel@mmc.nl (C. van Ganzewinkel), j.been@erasmusmc.nl (J.V. Been), j.dieleman@mmc.nl (J.P. Dieleman), t.katgert@mmc.nl (T. Katgert), boelen@introweb.nl (T. Boelen-van der Loo), sylvia.vanderpal@tno.nl (S.M. van der Pal), m.vandijk3@erasmusmc.nl (M. van Dijk), b.kramer@maastrichtuniversity.nl (B.W. Kramer), p.andriessen@mmc.nl (P. Andriessen).

1. Introduction

The perception of pain and the response to pain reflect complex interactions of biological, psychological and social factors [1]. Biological factors may be influenced by complications of prematurity such as intraventricular hemorrhage and developmental problems specific to the vulnerable immature brain such as delayed myelination or reduced brain volume [2,3]. Long-term follow-up shows that adolescents born very preterm or with very low birth weight have internalizing

behavioral problems [4,5]. Internalizing behavioral problems may have great impact on perception of physical pain. Psychological and social factors may be moderated by the cognitive capacity of the developing child, parental education and parental employment [6].

Psychological adjustment to pain is closely related to pain coping strategies [7]. In adolescents with a variety of pain conditions, pain coping strategy influences pain sensitivity, symptoms of depression, and somatic symptoms, while maladjustment may lead to disability [8]. Therefore, identifying pain coping strategies may be clinically relevant. The Pain Coping Questionnaire (PCQ) is a validated measure for children and adolescents [7]. The PCQ assesses both adaptive and maladaptive pain coping strategies. Information seeking, problem solving, seeking social support, cognitive distraction and behavioral distraction reflect adaptive pain coping strategies. Additionally, positive self-statement or optimism is suggested to positively influence pain coping [9]. In contrast, internalizing/catastrophizing is a maladaptive coping mechanism associated with inward behavior, anxiety and depression [10,11]. Externalizing behavior is characterized by aggression, hyperactivity, antisocial behavior and delinquency [11]. It is suggested that pain controllability and emotion controllability leads to more use of adaptive coping strategies and less use of maladaptive strategies [7]. While the effect of preterm birth on behavioral outcome in children is known, no data exist on pain coping strategies in adolescents born preterm.

To the best of our knowledge, only two published studies provide important information on pain coping strategies in ex-preterm school children. One study showed differences in coping styles between 43 preterm born children (<26 weeks gestation) and 44 term born controls at the age of 11 years [12]. In general, preterm born children sought social support more often than term born controls. Information seeking was reported to be employed more often in a subgroup of 12 preterm born children exposed to major surgery or other major procedures (e.g. chest drains) during their NICU stay [12]. In a second study in 9 to 14 year old children, 19 preterm born children tended to catastrophize more often than 20 healthy term born controls [13].

Using the database of the Collaborative Project on Preterm and Small for Gestational Age Infants in the Netherlands (POPS-1983), we aimed to identify neonatal characteristics that may influence pain coping style in adolescence. We hypothesized that neonatal characteristics, and variables reflecting disease severity in preterm or low birth weight infants influence pain coping style in later life. Secondly, we examined the relationship between pain coping style and deficits in academic achievements as reported previously [4]. Finally, we examined how pain coping style in ex-preterm born adolescents compare to healthy children and adolescents in the general population.

2. Patients and methods

2.1. Subjects

The POPS project, a nation-wide follow-up program that studies the effects of prematurity and low birth weight on later outcome, comprised 94% ($n = 1338$) of all babies born alive in the Netherlands in 1983 with a gestational age <32 weeks or with a birth weight < 1500 g [14]. From the original cohort, 379 (28%) did not survive to the age of 19 years. The remaining 959 (72%) were eligible for the present study.

2.2. Procedure

At the age of 19 years, survivors were invited to participate in an extensive follow-up program, including assessment of pain coping mechanisms with the PCQ. Furthermore, pain-coping effectiveness, pain and emotion controllability and emotional reactions to pain were assessed. The medical ethics review boards of all participating medical centers approved the study protocol. The participating centers were all 10 NICU's in the Netherlands. Details on the logistics, response rate and selective non-response bias have been reported previously [15].

2.3. Questionnaires

Several studies have used the PCQ in healthy children up to the age of 18 years and in children with pain related morbidity [16–19]. The PCQ comprises 39 coping items categorized in eight subscales and may be presented as three higher-order factors [7]. The approach factor measures direct attempts to deal with the pain and the use of active methods to regulate feelings when in pain; it comprises information seeking (4 items), problem solving (5 items), seeking social support (5 items), and positive self-statements (5 items) subscales. The problem-focused avoidance factor measures attempts to disengage from the pain; it includes positive self-statements (5 items), behavioral distraction (5 items), and cognitive distraction (5 items) subscales. The emotion-focused avoidance factor measures strategies in which emotions are freely expressed and strategies that reflect a lack of effort to regulate feelings when in pain; it comprises externalizing (5 items) and internalizing/catastrophizing (5 items) subscales [7]. Participants were asked to indicate the frequency (1 = never, 2 = hardly ever, 3 = sometimes, 4 = often, 5 = very often) with which they used the 39 coping items in response to the prompt, *'When I am hurt or in pain for a few hours or days, I ...'*

Pain coping effectiveness was tested by rating seven items (e.g. *'I handled the pain well'*) on a 5-point Likert scale (1 = totally disagree, 5 = totally agree) [7]. Participants rated two questions indicative of pain and emotion controllability on a 5-point scale (1 = never, 5 = very often) as well: *'how often do you feel you can do something to change the pain'* and *'when in pain, how often can you do something about how you feel'* [7]. Emotional reactions to pain were assessed by rating on a 4-point scale (1 = not at all, 4 = really) the reactions happy, sad, angry, agitated, calm, afraid and nervous/worried to hours or days of pain [7]. Happy and calm were reverse coded. Scores of the tests for pain coping effectiveness, pain and emotion controllability and emotional reactions to pain were averaged to provide three composite values.

2.4. Intelligence (IQ)

Intelligence at 19 years of age was assessed with the computerized version of the Multicultural Capacity Test–Intermediate Level developed by Bleichrodt [20] and was used as a proxy for academic achievement. This standardized intelligence test measures intellectual and cognitive capacity and skills of individuals with secondary education. It derives an IQ with a mean of 100 and a standard deviation of 15 in a normal Dutch sample.

2.5. Background characteristics

The demographic data of gestational age, birth weight, gender, small-for-gestational age (SGA, birth weight less than the 10th centile for gestational age, gender and parity [21]) were extracted from the database. Length-of-stay, necrotizing enterocolitis (NEC, grade I–III according to Walsh and Kliegmann [22]), sepsis (defined as positive blood culture [23]), intraventricular hemorrhage (IVH, grade I–IV according to Papile [24]) were also extracted as estimates of disease severity. Since no control group was available, we searched the PubMed database for studies using PCQ with the search string “Pain Coping Questionnaire” AND “healthy”, and filtered for “adolescents 13–18 years” OR “young adults 19–24 years”.

2.6. Statistical analysis

Group comparisons of continuous data were analyzed with the Student *t*-test if normally distributed and the Mann-Whitney *U* test if not normally distributed. Group comparisons of categorical data were analyzed with the Pearson Chi square test. For each participant we

Download English Version:

<https://daneshyari.com/en/article/3916364>

Download Persian Version:

<https://daneshyari.com/article/3916364>

[Daneshyari.com](https://daneshyari.com)