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Original article

Psychiatric disorders in low birthweight young adults. Prevalence and association with assessments at 11 years

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ABSTRACT

Objective: To compare mental health of 136 young adults without neurosensory handicaps born with low birthweight (LBW, birthweight less than 2000 g) with 132 adults with normal birthweight (NBW).

Method: A cohort of moderate LBW and NBW young adults were assessed with the Mini-International Neuropsychiatric Interview (MINI) at 19 years and the Children Assessment Schedule (CAS) at 11 years of age.

Results: At 19 years of age, 44 out of 136 (32%) LBW young adults were diagnosed with a psychiatric disorder compared to 10% NBW (OR: 2.8; 95% CI: 1.1, 4.5, $P = 0.02$). Among the LBW young adults, affective-, anxiety-, ADHD- and antisocial personality disorders were most common, and nine subjects (20%) had more than one diagnosis. Of 97 LBW subjects examined both at 11 and 19 years of age, 54 (56%) were mentally healthy though out adolescence. This was half as many as for controls (OR: 0.6; 95% CI: 0.3 to 0.9).

Conclusion: Moderate LBW was associated with an increased risk of psychiatric disorders in young adulthood. Only half of LBW young adults stayed healthy throughout adolescence.

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1. Introduction

During the last decades, an increasing number of low birthweight (LBW) infants have survived without major handicaps, and attention to long-term mental health consequences of LBW has become more important [11]. As reported by us and others, infants born preterm or with LBW are at increased risk of mental health problems, particularly attention deficit disorders (ADHD), other behavioural problems and difficulties related to interaction with peers during childhood [13,8,16]. Little is known about prevalence and nature of mental health problems when reaching adulthood [12,4,2,1,6]. Furthermore, the few studies addressing adult mental outcome of LBW have mainly been limited to children born very LBW (BW less than 1500 g). Among survivors of various degrees of LBW, the overall risk of psychiatric disorders at young adulthood or adolescence have been reported to be increased three to four fold compared to subjects born at term, but little is known regarding mental health outcomes of adults born less preterm or with BW closer to normal [11,13,6,20,10,3].

We have followed a population based cohort of children with BW less than 2000 g (LBW) and without major handicaps and a control group born at term with normal birthweights (NBW) prospectively at 5, 11 and 19 years of age. At 11 years, psychiatric disorders were reported [8]. The aims of the present study were to examine the prevalence and nature of psychiatric disorders in the 19-year-old LBW population compared to those born with NBW, and to assess consistency of psychiatric disorders between 11 and 19 years.

2. Method

2.1. Population

In this population-based study, the LBW survivors, here defined by BW less than 2000 g, were born in the county of Hordaland, Norway, between 1st April 1986 and 8th August 1988 [23]. The population of 174 eligible LBW subjects has been followed prospectively along with a control group born at term with NBW, here defined by BW above 3000 g [16,7,17]. Children with major handicaps (mental retardation, cerebral palsy, deafness, blindness) were excluded [23]. At 11 years of age, 130 (75%) children participated, and at 19 years of age, 136 (79%) participated (Table 1).

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Table 1

Neonatal characteristics of the population (174) of non-handicapped survivors^a of birthweight (LBW) less than 2000 g assessed at 11 and 19 years of age.

	LBW 11 years	LBW 19 years
Assessed, n (% of eligible)	130 (75)	136 (79)
Birthweight, gram (mean, SD)	1544 (369)	1537 (367)
Gestational age, weeks (mean, SD)	32.2 (3)	32.1 (3)
Male, n (%)	62 (46)	68 (52)

^a Children with major handicap (mental retardation, cerebral palsy, deafness, blindness) were excluded.

Information regarding the families' socioeconomic status (SES) was obtained at the 11-year follow-up but not at 19 years of age [8]. In short, the LBW children were raised in families where the parents had lower mean education level, child rearing was often less nurturing, and maternal psychological distress and total parental stress were higher compared to the NBW children [8]. These four factors were included in analyses (at 19 years of age) when controlling for SES.

Cognitive abilities were assessed using two subscales from the Wechsler Abbreviated Scale of Ability and have been described in an earlier paper [18]. At 19 years of age the mean prorated IQ score was 6 points lower for the LBW than for the NBW group (95 IQ points, SD13 IQ points vs 101 IQ points, SD14 IQ points, mean difference 5.95; 95% CI: 2.31 to 9.59, $P = 0.001$).

2.2. Assessment of mental health

At 19 years, the Mini-International Neuropsychiatric Interview (MINI) was used [21,22]. This is a short-structured diagnostic interview, developed jointly by psychiatrists and clinicians in the United States and Europe, for diagnosing psychiatric disorders according to the DSM-IV and ICD-10 classification. It was designed to meet the need for a short but accurate structured psychiatric interview for multicentre clinical trials and epidemiology studies and takes approximately 15 minutes to administer. It has been validated against the Structured Clinical Interview for DSM-III-R, Patient Version, the Composite International Diagnostic Interview, and consider valid for applications for clinical studies [21,22]. The last author assessed all participants blinded to birthweight status. The interviews were video-recorded and evaluated for reliability by an experienced research psychiatrist.

We have previously reported mental health at 11 years of age, which was assessed from a semi-structured interview with the child according to the Children Assessment Schedule (CAS) [8]. Twenty-seven per cent of the LBW children were diagnosed with a psychiatric disorder compared to 9% of the NBW children (OR: 3.1; 95% CI: 1.5 to 6.5, $P = 0.001$).

2.3. Statistical analysis

Firstly, outcomes for the LBW and the NBW groups were expressed as means with one standard deviation (SD) or as proportions, and differences were tested for statistical significance using t -tests and the χ^2 test. Secondly, risk of specific outcomes was calculated as odds ratios (OR) with 95% confidence intervals (CI) adjusted for gender, cognitive abilities, and socioeconomic status (SES) using binary regression analyses with forward conditional selection of variables. SPSS for Windows, version 15.0 was used for the statistical analyses.

The Regional Committee of Medical Research Ethics approved the project protocol, and written consent was obtained from all the participants and also from the parents, if the participant was still underage.

3. Results

3.1. Population

At 19 years of age, 136 of 174 eligible LBW infants (78%) and 130 of 170 (75%) NBW infants participated. Characteristics of the cohorts are presented in Table 1. Ninety-seven of the LBW and 105 of the NBW children were seen both at 11 and 19 years. One hundred and sixty-nine LBW children were assessed at 11 or 19 years of age. For the 72 LBW not assessed twice (11 and 19 years of age), mean BW and GA were comparable to the 97 assessed.

3.2. Mental health at 19 years of age

The overall prevalence of psychiatric disorders was twice as common in the LBW compared to NBW controls (32% vs 10%; OR: 2.8; 95% CI: 1.1 to 4.5, $P = 0.02$) (Table 2). There were no significant differences between the various subgroups of disorders although the tendency of all the subgroups was the same as for the overall prevalence (Table 2). When controlling for gender, cognitive abilities and SES factors, the difference in rates of overall psychiatric disorder between the LBW and NBW groups did not change significantly.

Within the LBW group, there were no significant differences in rates of any psychiatric disorder for gender (19% males and 22% females) or BW category (21% for BW 1500–2000 and 20% for BW less than 1500 g).

3.3. Mental health at 11 and 19 years

Out of the 97 LBW and 105 NBW subjects examined at both 11 and 19 years, 43 (44%) of the ones with LBW vs 18 (17%) of the ones with NBW were assessed as having a psychiatric disorder on at least one occasion (OR: 2.4; 95% CI: 1.7 to 7.0, Table 3).

Seven of the ones with LBW (7%) compared to NBW were found to have a psychiatric disorder at both assessments (Table 3). They were diagnosed with ADHD at both occasions.

Out of the 17 LBW subjects who lost their diagnosis from 11 to 19 years, four out of 13 had ADHD, six had anxiety, four had encopresis/enuresis and three had behavioural or adjustment disorders at 11 years (Table 3).

Out of the 19 LBW with a psychiatric disorder at 19 years, but no disorder at 11 years, 10 had affective disorders, seven antisocial personality disorders, one an eating disorder, and one a psychotic

Table 2

Prevalence (n [%]) of psychiatric disorders at 19 years among the children with low birthweight (LBW) without handicaps and controls with normal birthweight (NBW) according to MINI.^a

	LBW ^b n = 136	NBW ^c n = 132	OR (95% CI)	P
Affective disorder	11 (8)	7 (5)	1.6 (0.6 to 4.3)	0.3
Anxiety disorder ^d	7 (5)	2 (2)	2.6 (0.7 to 17.8)	0.1
Psychotic disorder	1 (1)	0		
Eating disorder	4 (3)	0		
Dimorphic body disorder	3 (2)	1 (1)	3.1 (0.3 to 29)	0.3
Somatiform condition	2 (2)	1 (1)	2.0 (0.2 to 22)	0.6
ADHD ^e	7 (5)	3 (2)	2.5 (0.6 to 9.5)	0.2
ASPD ^f	9 (7)	4 (3)	2.3 (0.7 to 7.8)	0.2
Any psychiatric disorder ^g	44 (32)	14 (10)	2.8 (1.1 to 4.5)	0.02

^a The Mini-International Neuropsychiatric Interview.

^b Birthweight less than 2000 g.

^c Birthweight 3000–4000 g.

^d Phobic disorders excluded.

^e Attention Deficit Hyperactivity Disorder.

^f Antisocial Personality Disorder.

^g Psychiatric diagnosis defined as having one or more of the eight categories.

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