

## Eight-year Outcome of Very-low-birth-weight Infants Born in KK Hospital

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### Abstract

**Aim:** To determine the education, neurodevelopmental outcome and educational achievement of babies weighing <1500 g at 8 years of age. **Materials and Methods:** This prospective study involved 171 of 202 survivors from KK Women's and Children's Hospital (KKWCH). Cognitive function was assessed using the Wechsler Intelligence Scale for Children – version III (WISC-III). **Results:** Of these, 90.1% were in mainstream education and 1.2% were in home or religious schools. Special education programmes were recommended for 11.1% of children [24.4% of 56 extremely-low-birth-weight (ELBW) babies <1000 g and 9.6% of 115 larger babies weighing 1000 to 1499 g]. Of these, only 7.8% eventually enrolled and 1.2% were not in any programme. In 136 children who had psychological assessments, the mean full-scale, verbal and performance intelligence scores were  $87.0 \pm 17.7$ ,  $86.6 \pm 17.0$  and  $90.1 \pm 21.8$  in ELBWs and  $96.1 \pm 18.3$ ,  $93.3 \pm 15.7$  and  $100.0 \pm 17.5$  in larger children, with the former having significantly lower scores than the latter (full scale:  $P = 0.02$ , 95% CI  $-18.23$ ,  $-4.18$ ; verbal:  $P = 0.04$ , 95% CI  $-13.8$ ,  $-1.95$ ; performance:  $P = 0.004$ , 95% CI  $-17.67$ ,  $-3.35$ ). 33.8% of the cohort, 49.0% of ELBWs and 25.3% of larger children had neurodevelopmental impairment (full scale score <85 or in need of special education). Logistic regression analysis showed that birth weight <1000 g, female sex, Chinese race, a non-intact family structure and bronchopulmonary dysplasia (BPD) were significant risk factors associated with neurodevelopmental impairment. 72.7% of children scored  $\geq 50\%$  of total marks for English, Mathematics and second language. 14.1% had Band 4 (<50% of total marks) in all 3 subjects. Logistic regression analysis showed that the only significant risk factors associated with adverse school performance in any of these three subjects were hypoglycaemia in the newborn period and impaired cognitive function. **Conclusion:** The outcome of ELBWs is a major cause of concern. BPD and hypoglycaemia were the only perinatal factors that still exerted an influence on outcome at 8 years. Better methods of prediction of academic difficulty are critical for this high-risk group of children

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**Key words:** Cognitive outcome, Education, Extremely low birth weight, Long-term outcome

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