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# INTRAUTERINE GROWTH RESTRICTION AND NEURODEVELOPMENTAL OUTCOMES: A SYSTEMATIC REVIEW

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## Abstract

Intrauterine growth restriction is defined as a fetal growth retardation, resulting in an estimated fetal weight (postnatally confirmed by birth weight) below the 10th centile for gestational age. Developing brain of IUGR infants is affected by the atypical fetal growth, presenting altered structure and connectivity, exposing to an increased risk for neurodevelopmental impairments. Nevertheless, the association between growth restriction and later neurodevelopmental outcomes lacks systematic evidence. Indeed, the available studies often involve both in-utero diagnosed as well as at-birth small for gestational age children. However, considering birth weight diagnosis as proxy of fetal growth abnormalities, does not allow to isolate the effect of retardation in antenatal growth.

For these reasons, aim of this ongoing systematic review is to: *i*) identify the existence of a direct association between IUGR diagnosis and developmental outcomes across infancy and childhood; *ii*) highlight the moderating role of critical factors on this association.

One-hundred fifty-five studies have been selected from an initial pool of 4313 scientific papers recruited applying the following keywords: intrauterine growth restriction/retardation, small for gestational age and neurodevelopment, cognitive development.

First preliminary results highlight great variability in the definition and assessment methods for the intrauterine growth restriction. In addition, confounding factors, such as premature delivery, emerge to play a role in the association of IUGR and later outcomes.

Overall, considering the great variability in the collected studies, this study is intended as a starting point for a quantitative analysis of existing literature on the role of IUGR on child development. Indeed, the present study represents a closer examination of early mechanisms underpinning neurocognitive development in infants with Intrauterine Growth Restriction.