Intercorrelations between serum, salivary, and hair cortisol and child-reported estimates of stress in elementary school girls

Barbara Vanaelst, Inge Huybrechts, Karin Bammann, Nathalie Michels, Tineke de Vriendt, Krishna Vyncke, Isabelle Sioen, Licia Iacoviello, Kathrin Günther, Denes Molnar, Lauren Lissner, Noellie Rivet, Jean-Sebastien Raul, Stefaan de Henauw

Abstract

To evaluate the impact of stress on children's well-being, it is important to have valid and reliable stress assessment methods. Nevertheless, selection of an appropriate method for a particular research question may not be straightforward, as there is currently no consensus on a reference method to measure stress in children. This article examined to what extent childhood stress can be estimated accurately by stressor questionnaires (i.e., Coddington Life Events Scale) and biological markers (serum, salivary, and hair cortisol) using the Triads (a triangulation) method in 272 elementary school girls. Salivary cortisol was shown to most accurately indicate true childhood stress for short periods in the past (i.e., last 3 months), whereas hair cortisol may be preferred above salivary measurements for periods more distant and thus for chronic stress assessment. However, applicability should be confirmed in larger and more heterogeneous populations.

Keywords:

Children/infants; Stress; Social factors; Biochemical;Cortisol