

I.F. Briefing 6

Sleep and Well-being – What are the Connections?

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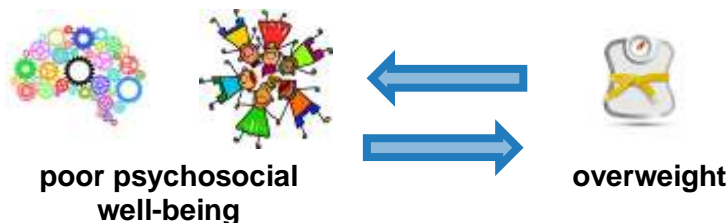
What is well-being?

It is hard to give a simple, standard definition. However, as a concept closely related to health and quality of life it encompasses physical, mental and social aspects. Moreover, it depends on the perspective of the person and it takes into account that health is more than just the absence of disease. In IDEFICS and I.Family, we focussed on the mental and social aspects of well-being. We therefore use the term **psychosocial well-being**.

Well-being and its connection to overweight

Although research is still in the early stages, various aspects of well-being have been related to overweight in adults and children.^{1, 2} In our study, we found that:

1. Children with poor psychosocial well-being (in particular, emotional and behavioural problems, problems with friends or peers) were at greater risk of becoming overweight.³
2. Overweight children were at greater risk of developing poor psychosocial well-being – in particular, worse emotional well-being, lower self-esteem, and problems in relationships with both family and friends.³



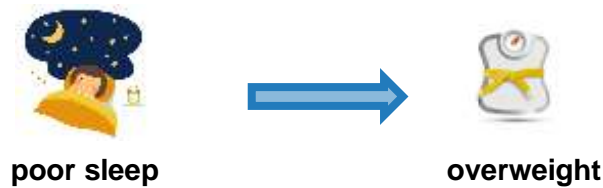
Although we have not investigated this, the effect of well-being on overweight might be explained by biological mechanisms (such as hormones) or behavioural factors (e.g. unhealthy diet, increased sedentary behaviour). Reasons why overweight might lead to poor well-being are experiences of stigmatization and teasing or higher levels of body dissatisfaction.

Sleep in children and adolescents

Some studies have shown that sleep duration has been decreasing over recent decades.⁴ Adolescents in particular often sleep fewer hours than they need. This is partly due to biological processes during puberty which make adolescents prefer later bedtimes. This leads to shorter sleep as they nevertheless must get up early in the morning to go to school.

Sleep and its connection to overweight

There exists a large body of evidence to suggest that short sleep duration and poor sleep quality are risk factors for childhood overweight.⁵ We also found that children with short sleep duration were at increased risk of being overweight.⁶

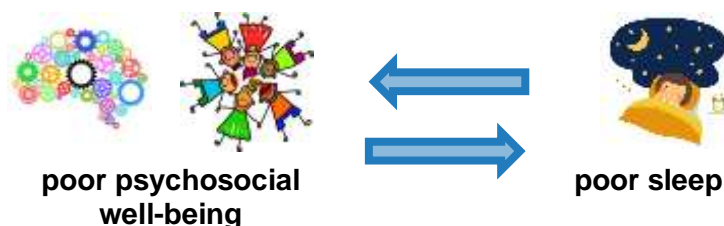


Various researchers have suggested that there are biological pathways linking sleep to overweight, i.e. poor sleep causes changes in the body which directly influence metabolism and affect appetite-regulating hormones. Most likely, there are also behavioural explanations. For example, less time spent sleeping means there is more time to eat. Fatigue caused by poor sleep could also increase the likelihood of being less physically active and more sedentary (watching TV, etc).

The connection between well-being and sleep

As both well-being and sleep have been linked to overweight, we should ask whether there is also a connection between well-being and sleep. We found that:

1. Children whose well-being improved over time or stayed at a constant level tended to sleep longer at night as compared with children whose well-being worsened. In addition, they tended to have fewer difficulties in falling asleep and getting up in the morning.
2. Furthermore, children who improved their night-time sleep duration or stayed at a constant level tended to have better well-being as compared with children whose sleep duration reduced. Children whose sleep quality remained good over time tended to have better well-being compared to those whose sleep quality got worse.



What do we gain from this knowledge?

Knowing more about the links between well-being and sleep helps us to disentangle the various pathways that lead to overweight and related cardio-metabolic disorders like hypertension, dyslipidaemia and insulin resistance in children and adolescents. For example, in future research with the IDEFICS and I.Family data we will examine whether poor well-being leads to poor sleep and subsequently to worse cardio-metabolic health.

Our results indicate that interventions targeting well-being could have a positive effect on sleep and similarly, interventions targeting sleep could have a positive effect on well-being. Although the development of appropriate interventions is another research

area, some interventions have already been evaluated: School-based interventions that targeted not only individual behaviours but also the social and school environment had positive effects on well-being of children.⁷ Similarly, educational interventions that aim to improve knowledge about sleep and to change behaviour may also be promising ways to improve sleep.⁸

Summary

Poor psychosocial well-being and poor sleep are both potential risk factors for childhood overweight – data from our study confirm findings from other studies.

Our data also show that well-being and sleep are connected in both directions. Firstly, better well-being has a positive impact on sleep and secondly, good sleep is beneficial for well-being.

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- ¹ Cameron et al. 2012. A bi-directional relationship between obesity and health-related quality of life: evidence from the longitudinal AusDiab study. *International Journal of Obesity* 36: 295-303.
 - ² Jansen et al. 2013. Bidirectional associations between overweight and health-related quality of life from 4-11 years: Longitudinal Study of Australian Children. *International Journal of Obesity* 37: 1307-1313.
 - ³ Hunsberger et al. 2016. Bidirectional associations between psychosocial well-being and body mass index in European children: longitudinal findings from the IDEFICS study. *BMC Public Health* 16: 949.
 - ⁴ Matricciani et al. 2012. In search of lost sleep: secular trends in the sleep time of school-aged children and adolescents. *Sleep Medicine Reviews* 16: 203-211.
 - ⁵ Chen et al. 2008. Is sleep duration associated with childhood obesity? A systematic review and meta-analysis. *Obesity* 16: 265-274.
 - ⁶ Hense et al. 2011. Sleep duration and overweight in European children: is the association modified by geographic region? *Sleep* 34: 885-890.
 - ⁷ Muellmann et al. 2016. Effectiveness of school-based interventions for the prevention and/or reduction of psychosocial problems among children and adolescents: a review of reviews. *Gesundheitswesen* [Epub ahead of print].
 - ⁸ Blunden et al. 2012. Are sleep education programs successful? The case for improved and consistent research efforts. *Sleep Medicine Reviews* 16: 355-370.