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Short sleep duration is associated with an increased risk of gestational diabetes: Systematic review and meta-analysis

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Short sleep duration (SSD) is an established risk factor for Type 2 Diabetes in the adult population. It is unclear whether SSD is also a risk factor for developing diabetes in pregnancy (Gestational Diabetes (GDM)). The aim of the present study was to review the available evidence for an association between SSD and GDM using a systematic review and meta-analysis. EMBASE and Medline were searched for studies published prior to 2014 that included regression models assessing the relationship between SSD and GDM. Two independent reviewers (AAA and NAA) manually screened the search results for any relevant studies. Random effects models were used to calculate the combined odds of GDM, together with I^2 and χ^2 statistics to assess the level of heterogeneity amongst studies included in the models. A total of n = 79 studies were found that had examined the relationship between sleep and various pregnancy outcomes. Ten studies included SSD as an exposure and three of these explored the relationship between SSD and GDM.[1,2,3] All three studies were undertaken in the US using prospective longitudinal designs and multivariable analyses. GDM was diagnosed using an oral glucose tolerance test whilst sleep duration was assessed using subjective questionnaires across a range of different gestational ages in participants with single or multiple pregnancies, or both. Meta-analyses of these studies indicated that SSD (<7 hours/night) was associated with 2·39 the odds of GDM (95 % CI = 1·48 to 3·86; p < 0·001; I^2 = 0·0 %; p = 0·803; Figure 1); the low level of heterogeneity reflecting similarities in the three studies' designs.

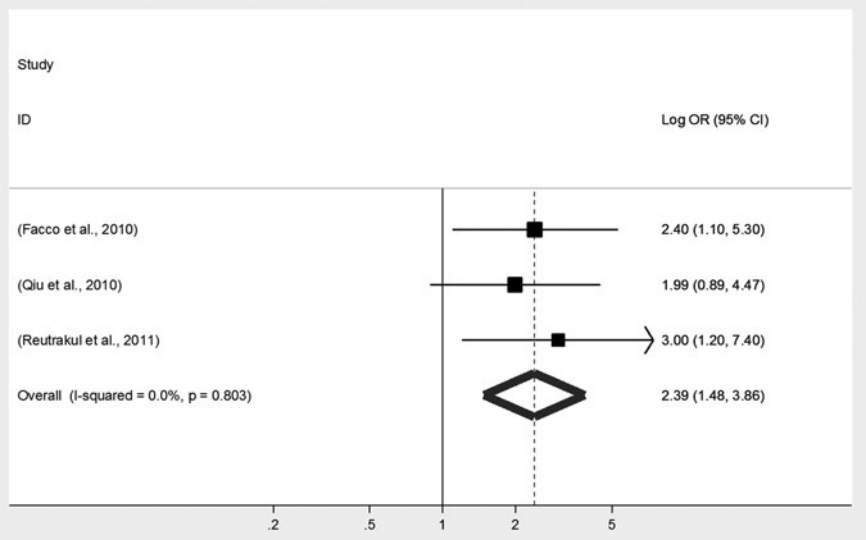

Fig. 1. Meta analysis forest plot.

The literature contains evidence that SSD is associated with an increased risk of developing GDM, though the volume, quality and consistency of published studies undermine the precision of the pooled estimates of association and indicate the need for more research in this area.

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2. Qiu C, Enquobahrie D, Frederick IO *et al.* Glucose intolerance and gestational diabetes risk in relation to sleep duration and snoring during pregnancy: a pilot study. *BMC Women's Health*. Puplished online: 14 May 2010. doi:10.1186/1472-6874-10-17
3. Reutrakul S, Zaidi N, Wroblewski K *et al.* (2011) Sleep disturbances and their relationship to glucose tolerance in pregnancy. *Diabetes Care* **34**, 2454–7.