

# Women with type 1 diabetes during pregnancy and postpartum

## Well-being and diabetes management

Akademisk avhandling

Som för avläggande av filosofie doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i hörsal Arvid Carlsson, Academicum, Medicinargatan 3, Göteborg, fredagen den 16 mars, klockan 13.00

av Karolina Linden

Fakultetsopponent:

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### Avhandlingen baseras på följande delarbeten

- I. Linden, K., Sparud-Lundin, C., Adolfsson, A. & Berg, M. Well-Being and Diabetes Management in Early Pregnant Women with Type 1 Diabetes Mellitus. *International Journal of Environmental Research and Public Health* 2016; 13: 836.
- II. Linden, K., Berg, M., Adolfsson, A. & Sparud-Lundin, C. Person-centred web-based support in pregnancy and early motherhood for women with Type 1 Diabetes Mellitus – a randomized controlled trial. *Diabetic Medicine* 2018; 35: 234-243.
- III. Linden, K., Berg, M., Adolfsson, A. & Sparud-Lundin, C. Well-being, diabetes management and breastfeeding in mothers with type 1 diabetes – an explorative analysis. *Sexual & Reproductive Healthcare* 2018; 15: 77-82.
- IV. Berg, M.\*, Linden, K.\*, Adolfsson, A., Sparud-Lundin, C. & Ranerup, A. A critical analysis of adherence to technological elements and study design – based on a web-based intervention for women with type 1 diabetes in pregnancy and early motherhood.

\*The first authorship is shared between Berg and Linden. *Submitted.*

**SAHLGRENKA AKADEMIN**  
**INSTITUTIONEN FÖR VÅRDVETENSKAP OCH HÄLSA**



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### **Abstract**

Type 1 diabetes mellitus (T1DM) is associated with increased medical risks during pregnancy and birth. To minimize the risks and increase the possibility of a healthy offspring, blood glucose levels near normal are required. This puts women with T1DM in a vulnerable situation in relation to pregnancy and childbirth, as it demands high levels of diabetes management.

The overall aim was to investigate well-being and diabetes management in women with T1DM during pregnancy and in the first six months postpartum.

Studies I, II and III mainly report on patient-reported outcome measures in terms of questionnaires. Studies I and III have an observational design and Study II was a randomized controlled trial. Study IV used a case study design and analysed data with both quantitative and qualitative methods.

In Study I, well-being and diabetes management in early pregnancy was explored. A higher degree of diabetes management correlated positively with self-perceived health and well-being and with less worry about diabetes distress and hypoglycemia. In Study II, a web-based support program during pregnancy and up to six months after childbirth was evaluated. The findings suggest that the web-based support and standard care was not superior to standard care alone in terms of general well-being or self-efficacy of diabetes management at six months postpartum and that few participants had a high activity level. In Study III, associations between well-being, diabetes management and breastfeeding postpartum were investigated. Participants with lower scores of general well-being and sense of coherence expressed a need for more professional support to manage their diabetes than they were offered. In Study IV, adherence to technological elements and study design in a web-based intervention were critically analysed. The results highlight that technology and study design matter and might mutually influence each other.

The findings confirm that well-being and diabetes management are closely linked during the childbearing period. Means of identifying a more vulnerable group of women with T1DM during pregnancy and new approaches to professional support after childbirth are needed.

**Keywords:** well-being, self-management, type 1 diabetes mellitus, pregnancy, postpartum, patient-reported outcome measurement, eHealth