



Communication and Marketing Department
Isebe loThungelwano neNtengiso
Kommunikasie en Bemerkingsdepartement

Private Bag X3, Rondebosch 7701, South Africa
Welgelegen House, Chapel Road Extension, Rosebank, Cape Town
Tel: +27 (0) 21 650 5427/5428/5674 Fax: +27 (0) 21 650 5628

www.uct.ac.za

13 March 2023

Study finds obesity in pregnant women could increase risk of poor health for mother and baby

Maternal obesity changes the structure of the placenta (a vital organ that nourishes the baby during pregnancy) more than gestational diabetes mellitus (GDM), a form of diabetes first occurring in pregnancy. The new insight, published in [*The Journal of Physiology*](#), adds to the understanding about the mechanisms underlying poor pregnancy outcomes and the subsequent greater risk of poor neonatal and offspring health.

The identification of specific changes in the placenta could lead to the potential development of future placenta-targeted treatments or screening tests that may improve the health outcomes of the mother and offspring, particularly in low-middle income countries.

The research conducted by Professors Naomi Levitt and Mushi Matjila from the University of Cape Town (UCT) formed the doctoral work of Dr Ezekiel Musa and was a collaboration with the University of Cambridge. This is the first study to investigate the effects of maternal obesity and GDM simultaneously and to be carried out in a low-middle income country, where obesity and GDM during pregnancy have a substantial health and economic impact. Previous studies have investigated obesity and GDM separately and have only been carried out in high-income countries.

The rates of obesity and GDM are increasing worldwide, and both are linked to multiple maternal and foetal complications, such as increased risk of foetal death, stillbirth, infant death and higher infant birth weight. It is not known how these complications arise.

The researchers found that maternal obesity more than GDM reduced the formation of the placenta, its blood vessel density and surface area, and its capacity to exchange nutrients between the mother and developing child. Both obesity and GDM impact placental hormone production and inflammation markers, suggesting that the placenta is indeed functioning abnormally.

Lead co-author and head of UCT's Department of Obstetrics and Gynaecology, Professor Matjila, said: "South Africa is faced with a quadruple disease burden of communicable and non-communicable disease, along with high maternal and child morbidity and mortality, and deaths related to violence and injuries. Additionally, we have one of the highest rates of female obesity globally, which undoubtedly fuels the non-communicable disease burden and contributes to maternal, neonatal and child morbidity. As obesity and GDM often co-exist,

the study highlights the importance of obesity over GDM in modulating placental structure and function, and begins to piece together how these placental changes may explain observed complications (e.g. intrauterine death and stillbirths) and increased future non-communicable disease risk for both mother and baby.”

The study looked at 71 women, 52 of whom were obese and 38 had developed GDM. The researchers conducted the study using clinical profiling, deep structural examination and molecular analysis of the placenta, and biochemical measurements of maternal and infant cord blood to examine the effect of obesity and GDM in this group of expectant women.

“For the first time we have looked at the effects of both obesity and GDM on the placenta in woman from the African continent, who are an understudied group, and what effect that these conditions might have on them and their children. It was important to discover that obesity has more of an influence than GDM on pregnancy outcomes for both the mother and the child,” said Professor Amanda Sferruzzi-Perri from the University of Cambridge, who is lead author of the research.

The study limitation is that with a small sample size of 71 women, it was not possible to determine what impact the sex of the foetus has on these placental changes. The non-obese group of women also included women who would be termed overweight. The researchers would like to carry out further research in obese, overweight and lean women with and without GDM, and explore the impact of the sex of the foetus. They would then like to study how obesity, GDM and treatments, like metformin, a drug that lowers blood glucose levels, interact to determine pregnancy outcomes and the long-term health of the child.

ENDS

Issued by: UCT Communication and Marketing Department

Ridovhona Mbulaheni

Media Liaison Assistant
Communication and Marketing Department
University of Cape Town
Rondebosch
Tel: (021) 650 2333
Cell: (064) 905 3807
Email: ridovhona.mbulaheni@uct.ac.za
Website: www.uct.ac.za