Evidence Assessment: Summary of a Systematic Review

Who is this summary for?
For Doctors and Health Personnel, Administrators and Managers of health facilities and partners involved in mother and child health.

Exercise for pregnant women with gestational diabetes for improving maternal and fetal outcomes

Key findings

- Evidence of a difference for the risk of pre-eclampsia, birth by caesarean section, the risk of induction of labour or maternal body mass index at follow-up was not clear.
- No clear evidence of a difference for a composite outcome of neonatal mortality and morbidity or neonatal hypoglycaemia was found. There were no events of perinatal mortality reported. There were no data reported for large for gestational age, adiposity, diabetes or neurosensory disability in childhood.
- There was a wide variation in the components of the exercise intervention, the duration of the intervention and whether the intervention was supervised or unsupervised. Short- and long-term outcomes of interest for this review for the mother and for the infant/child were poorly reported.

Background

Gestational diabetes mellitus (GDM) is associated with both short- and long-term complications for the mother and her baby. Exercise interventions may be useful in helping with glycaemic control and improve maternal and infant outcomes.

The original review on Exercise for diabetic pregnant women has been split into two new review titles reflecting the role of exercise for pregnant women with gestational diabetes and for pregnant women with pre-existing diabetes.

Questions

What are the effects of exercise interventions for improving maternal and fetal outcomes in women with gestational diabetes mellitus (GDM)?

Exercise for pregnant women with gestational diabetes for improving maternal and fetal outcomes in Cameroon: The prevalence of gestational diabetes in Cameroon as well as the rest of sub-Saharan Africa is not known, but it is likely to be considerable due to high rates of obesity. Although access to health care is limited in Cameroon especially outside the main urban areas, the majority of women attend an antenatal clinic during their pregnancy. However, awareness of gestational diabetes is lacking among the pregnant women and the health care workers.

Table 1: Summary of the systematic review		
	What the review authors searched for	**What the review authors found**
Studies	Published or unpublished randomised controlled trials in full-text or abstract format. Cluster-randomised trials were eligible. Quasi-randomised and cross-over trials were not eligible for inclusion.	11 parallel randomised controlled trials (RCTs) were included.
Participants	Pregnant women diagnosed with gestational diabetes mellitus (GDM) (as defined by trialist). Women with known pre-gestational diabetes (type1 or type 2 diabetes) were excluded as this will be covered in a different Cochrane review.	All trials recruited pregnant women with a diagnosis of gestational diabetes mellitus (GDM).
Interventions	We included any type of exercise programme (+/- standard care) targeted at women with GDM at any stage of pregnancy.	1. A supervised, individualised follow-up with a kinesiologist 2. Exercise using a cycle ergometer for 30 minutes duration, three to four times per week including both supervised and unsupervised sessions 3. Aerobic activity (30 minutes brisk walking) or resistance exercises (30-minutes circuit workout with elastic-band exercises). 4 An Individually prescribed diet 5. A progressive physical conditioning program involving three supervised introductory sessions, and weekly contact with supervisor. 6. Dietary advice and instructed to conduct a non-sedentary lifestyle, and attend the exercise laboratory three times a week to exercise under medical supervision 7. Dietary advice from a nutritionist. The program consisted of a circuit of eight resistance training exercises using an elastic band to work the main muscle groups 8. in five sessions per week of a home-based exercise program (three supervised and two unsupervised) on an upright stationary cycle ergometer. 9. Exercise program that consisted of 20 minutes of supervised aerobic training on an arm ergometer, sufficient to maintain target heart rate in a training range. 10. A 10-week program of regular aerobic exercise of three 50- minute sessions per week (no further details). 11. Training in mindfulness eating, and yoga exercise in two 50-minute sessions.
Controls	Standard care or another intervention.	Standard care or another intervention.
Outcomes	**Primary outcomes** ***Mother*** 1. Hypertensive disorders of pregnancy (as reported by trialists, including pre-eclampsia, pregnancy-induced hypertension, eclampsia) 2. Caesarean section 3. Development of type 2 diabetes ***Neonatal/infant*** 1. Large-for-gestational age (≥ 4 kg) 2. Perinatal mortality (stillbirth and neonatal mortality) 3. Mortality or morbidity composite (variously defined by trials, e.g. perinatal or infant death, shoulder dystocia, bone fracture or nerve palsy) 4. Neurosensory disability **Secondary outcomes** Many additional maternal, infant and health service use outcomes were sought for.	**For the mother:** pre-eclampsia, birth by caesarean section, the risk of induction of labour or maternal body mass index **For the infant/child:** A composite outcome of neonatal mortality and morbidity or neonatal hypoglycaemia. of perinatal mortality
Date of the most recent search: 31 March 2015.		
Limitations: This is a moderate systematic review**, AMSTAR = 9/11**		
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Table 2: Summary of findings

Exercise compared to control for pregnant women with gestational diabetes for improving maternal outcomes					
Patient or population: pregnant women with gestational diabetes **Setting:** USA, Italy, Brazil, Australia **Intervention:** exercise **Comparison:** control					
Outcomes	**Anticipated absolute effects*(95%CI**		**Relative effect (95% CI)**	**No of Participants (studies)**	**Quality of the evidence (GRADE)**
	Risk with control	**Risk with exercise**			
Hypertensive disorders of pregnancy (pre- eclampsia)	43 per 1000	13 per 1000 (0 to 308)	RR0.31 (0.01to7.09)	48 (2RCTs)	Low
Caesarean section	319 per 1000	274 per 1000 (201 to 370)	RR0.86 (0.63to1.16)	316 (5RCTs)	Moderate
Postnatal weight retention or return to pre- pregnancy weight(maternal BMI (follow-up) kg/m2)	The mean maternal BMI (follow up)kg/m2was 0	MD0.11 higher (1.04 lower to 1.26 higher	/	254 (3RCTs)	High
Induction of labour	400 per 1000	552 per 1000 (284 to 1000)	RR1.38 (0.71to2.68)	40 (1RCT)	Low

Additional Summary of findings

Exercise compared to control for pregnant women with gestational diabetes for improving maternal and fetal outcomes					
Patient or population: pregnant women with gestational diabetes **Setting:** USA, Italy **Intervention:** exercise **Comparison:** control					
Perinatal mortality(stillbirth and neonatal mortality)	0 per 10000	0 per 1000 (0 to 0)	Not estimated	9 (1RCT)	Low
Mortality and morbidity composite(variously defined by trials, e.g. perinatal or infant death, should erdystocia, bone fracture or nerve palsy)	65 per 1000	36 per 1000 (8 to 169)	RR0.56 (0.12 to 2.61)	169 (2RCTs)	Moderate
Neonatal hypoglycaemia	59 per 1000	118 per 1000 (12 to 1,000)	/	/	/

Applicability

All of the included studies were conducted in middle-or high-income countries. Three trials were conducted in the USA and in Brazil. Two trials in Canada, and one trial each in Italy, Australia and Thailand. The applicability of these interventions in a low income country like Cameroon is questionable.

Conclusions

There is currently insufficient evidence to support or refute enrolling pregnant women with gestational diabetes into exercise programmes. However, even if exercise is not beneficial during pregnancy, this change in lifestyle may persist after birth and may help prevent the onset of type 2 diabetes and its long-term complications. Pregnant women with gestational diabetes who wish to enrol in an exercise programme may wish to discuss their choice with a health professional.

Prepared by

M. Vouking, C.D. Evina, L. Mbuagbaw, P. Ongolo Zogo: Centre for the Development of Best Practices in Health, Yaoundé, Cameroon.

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Contact:

Email: camer.cdbpsh@gmail.com / Site web: www.cdbph.org /Télephone: +237 242 08 19 19