Effect of a physical activity intervention on antenatal and postnatal depression in women attempting to quit smoking

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Collaborators and funding

The London Exercise And Pregnant smokers (LEAP) study

Collaborators: Tim Coleman, Sarah Lewis, Paul Aveyard, Isaac Manyonda, Robert West, Beth Lewis, Bess Marcus, Muhammad Riaz, Adrian Taylor,

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Antenatal & Postnatal Depression

- Antenatal & postnatal depression in 10-20% pregnancies
- Associated with poor outcomes for mother and child
- Concerns about antidepressants
- Psychological therapies effective
- Alternative interventions needed

Physical activity and Depression

- Physical activity recommended for mental health
- Evidence mixed
- Study limitations
- Depression assessed in LEAP trial
- Smokers at higher risk of depression

Study design

• Two-arm pragmatic randomised controlled trial
• Compares depression scores (EPDS) at end of pregnancy for:
  Behavioural support for smoking cessation 
  versus 
  Behavioural support for smoking cessation plus a physical activity intervention
Interventions

Smoking cessation support
Once a week for 6 weeks

Physical activity intervention
- 14 sessions, 30 mins treadmill walking over 8 weeks
- PA counselling: 9 sessions over 8 weeks
- delivered one-to-one by midwives
- pedometers & DVD
Who was eligible?

- Agree to set a quit date
- Smoking at $\geq 1$ cigarette a day now and $\geq 5$ a day before pregnancy
- Able to walk for at least 15 minutes
- 10-24 weeks gestation
Edinburgh Postnatal Depression Scale
(0=no, not at all  to  3=yes, all the time)

IN PAST 7 DAYS:

1. Laughing and see the funny side of things
2. Looking forward to enjoying things
3. Blaming myself unnecessarily when things go wrong
4. Anxious or worried for no good reason
5. Feeling scared or panicky for no very good reason
6. Things have been getting on top of me
7. So unhappy that having difficulty sleeping
8. Felt sad or miserable
9. So unhappy that I have been crying
10. The thought of harming myself
Main analysis

Linear mixed effect model, adjusted for:
Baseline EPDS score
Marital status
Age at leaving full time education
BMI
Age $\leq$ 20 years
<table>
<thead>
<tr>
<th>Baseline Characteristics</th>
<th>Mean (SD)</th>
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<tbody>
<tr>
<td>Age</td>
<td>27.5 (6.5) years</td>
</tr>
<tr>
<td>Gestation</td>
<td>15.6 (3.3) weeks</td>
</tr>
<tr>
<td>Cigarettes per day (now)</td>
<td>9.8 (5.5)</td>
</tr>
<tr>
<td>Cigarettes per day (before pregnancy)</td>
<td>17.5 (5.1)</td>
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<tr>
<td>EPDS score &gt;15</td>
<td>11%</td>
</tr>
<tr>
<td>&gt;150 mins a week of moderate Intensity Physical Activity (7 day recall interview)</td>
<td>70%</td>
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Attendance at treatment sessions

<table>
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<tr>
<th>Group</th>
<th>Mean number of sessions attended</th>
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<tr>
<td>Exercise</td>
<td>5.2 of 14 sessions (37.4%)</td>
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<tr>
<td>Control</td>
<td>3.5 of 6 sessions (57.8%)</td>
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Significantly greater increase in self-reported moderate-vigorous physical activity from baseline to one week, four weeks and six weeks, for physical activity group, compared with control.
Accelerometers

- 10% wore an Actigraph
- Mixed results for Actigraph data
Follow-up rate for EPDS

- Baseline N=784
- End of pregnancy 383 (49%)
- Six months postnatal 268 (34%) at
- Baseline characteristics of those with EPDS data at follow-up were similar as for the total sample
Main Result

EPDS Score significantly higher for PA vs control group at end of pregnancy

Adjusted $\beta$ for difference between PA and control group (95% CI) = 1.19 (0.15, 1.95)
Effect of physical activity levels

• Evidence that increases in PA between baseline and four weeks post-quit associated with a greater increase in EPDS score at end of pregnancy

• This was not evident for changes in PA between baseline and six weeks or end of pregnancy
Conclusion

• Among pregnant women attempting to quit smoking, physical activity intervention was no more effective than usual care for smoking cessation for reducing depression scores at the end of pregnancy or six months after childbirth.

• Physical activity is recommended for its general health benefits in pregnancy.
Why wasn’t the intervention effective?

- Both groups highly active at baseline and still fairly active at end of pregnancy
- Lack of adherence to intervention
- Challenge of changing multiple health behaviours simultaneously
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