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Associations between physical activity, television viewing and postnatal depressive symptoms amongst healthy primiparous mothers

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ABSTRACT

Background: Postnatal depression is a serious illness in new mothers. In the general population, physical activity (PA) has been found to reduce the risk of depression, whilst sedentary behaviour (SB; in particular television viewing) has been linked to higher levels of depressive symptoms, yet little is known regarding associations between PA, SB and postnatal depression. This study aimed to investigate associations between PA, television viewing and postnatal depressive symptoms in healthy primiparous mothers..

Methods: Cross-sectional survey data were provided by 406 first-time mothers (approximately 3-months postpartum) enrolled in the Melbourne InFANT Extend trial (2012/2013). Women self-reported PA (time spent walking for leisure and transport, and other moderate and vigorous PA), television viewing, and depressive symptoms (CES-D 10). Random intercept linear models examined associations between PA, television viewing and depressive symptoms.

Results: In crude models total PA was inversely associated with risk of postnatal depressive symptoms (B = −0.122; 95% CI = −0.24, -0.01). In models adjusted for key sociodemographic and behavioural covariates the association did not remain statistically significant. No other associations between PA, television viewing and postnatal depressive symptoms were evident..

Conclusions: Postnatal depressive symptoms may not be related to PA and television viewing in the same way that these behaviours predict depressive symptoms in the general population. Further investigation of the specific domains of PA, as well as different types/contexts of SB and their respective associations with postnatal depressive symptoms is warranted in order to better inform development of targeted interventions aimed at enhancing postnatal mental health..

It is well-recognised that physical activity plays an important role in enhancing and maintaining women's physical health in the postpartum period (Davenport, Giroux, Sopper, & Mottola, 2011; O'Toole, Sawicki, & Artal, 2003). Currently it is recommended that all adults, including pregnant and postpartum women (without complications) undertake a minimum of 150 min (and up to 300 min) of moderate-intensity physical activity per week for health benefits (Department of Health, 2014). However, a large percentage of adults (43% (Department of Health, 2012)), particularly postpartum women (64% (Albright, Maddock, & Nigg, 2005)) do not achieve these guidelines. In addition to the physical health benefits that physical activity provides (e.g. maintaining healthy weight, reducing the risk of diabetes and cardiovascular disease) (Bauman, 2004), research has shown that physical activity, particularly that which is undertaken in leisure-time, has positive effects on mental health (e.g. reducing the risk of depression) among adults in the general population (Teychenne, Ball, & Salmon, 2008). A small body of evidence has suggested physical activity may also be beneficial for reducing the risk of postnatal depression (Teychenne & York, 2013); however, this research is still in its infancy.

Postnatal depression affects around 13% of new mothers (O'Hara

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& Swain, 1996), although estimates vary between 4 and 73%, dependant on the sample and measure used to assess depression (Leahy-Warren & McCarthy, 2007). Furthermore, incidence rates of postnatal depression have been estimated to be at 14% (Gaynes et al., 2005). Postnatal depression is often associated with decreased enjoyment in interests and activities, social withdrawal, insomnia and poor appetite in new mothers (Lee & Chung, 2007). In some instances it leads to infant-harm thoughts and/or actions (Lee & Chung, 2007). Further, evidence suggests that postnatal depression may impact on infants'/young children's cognitive (NICHD Early Child Care Research Network., 1999), behavioural (Dawson et al., 2003; Goodman et al., 2011; NICHD Early Child Care Research Network, 1999), and social development (NICHD Early Child Care Research Network, 1999), as well as the child's mental health (Goodman et al., 2011). Therefore, it is important to identify strategies to reduce new mothers' risk of this incapacitating illness, which has been associated with a reduced quality of life for both mothers and babies (Lee & Chung, 2007).

Sedentary behaviours, defined as sitting behaviours that expend approximately 1–1.5 METs (Ainsworth et al., 2000) (e.g. sitting watching television, sitting at the computer or whilst driving), have been shown to comprise an independent risk factor for various chronic physical health conditions, such as cardiovascular disease and type 2 diabetes (Proper, Singh, van Mechelen, & Chinapaw, 2011), in the general population. Further, recent research has suggested the existence of a positive association between sedentary behaviour (in particular television viewing) and risk of depression amongst adults in the general population (Teychenne, Ball, & Salmon, 2010). Only two studies have examined the association between sedentary behaviour and postnatal depression (Herring et al., 2008; Vernon, Young-Hyman, & Looney, 2010), with one of those studies showing a positive relationship in new mothers (Vernon et al., 2010), whilst the other showed no association (Herring et al., 2008).

Given the adverse impact postnatal depression can have on the mother, baby and families of those affected, it is imperative that research identifies modifiable behaviours that might assist in reducing the risk of postnatal depression. Thus, this study aimed to investigate the association between physical activity, television viewing and postnatal depressive symptoms in healthy primiparous mothers. It was hypothesised that physical activity would be inversely associated with postnatal depressive symptoms, whilst television viewing would be positively associated with symptoms.

1. Methods

Analyses were based on self-reported, cross-sectional survey data from the InFANT (Infant Feeding, Activity and Nutrition Trial) Extend study (2012/2013), whereby first-time mothers were recruited from seven local government areas (LGA's) across Melbourne of varying levels of socioeconomic disadvantage. Baseline data, completed when mothers were approximately 3-months postpartum, was used for analyses in this study.

1.1. Participants

Participants were recruited from first-time parents groups across Melbourne neighbourhoods of varying socio-economic position in 2012–2013. A total of nine LGAs were approached for recruitment and seven agreed to participate. The SEIFA index (Australian Bureau of Statistics, 2003) was used to categorise each LGA according to area-level disadvantage (low, medium, high). Group eligibility criteria included a minimum of eight consenting participants within mid and high socioeconomic LGAs or six consenting participants within the lower socioeconomic LGAs (in order to compensate for low response rates of low SEP populations). Participating women needed to be English literate. If parents groups declined to participate, another group was then approached to participate. In total, 531 women from 62 parent groups (28 = low, 20 = medium, 14 = high SEP) were approached and 477 women (90%) agreed to participate.

Of the respondents, 15 women were excluded from the analyses as they were not first-time mothers, six were excluded as they had non-singleton pregnancies and six were excluded as they did not provided detail regarding parity. This exclusion criteria was implemented for the following reasons: 1) The InFANT Extend RCT was an intervention targeting specifically first time mothers and their children and therefore women who were not first time mothers yet attended the first time parent groups were not included in the study analyses; 2) Multiparous women are more likely to experience postpartum depression (Mayberry, Horowitz, & Declercq, 2007) and their physical activity levels are more likely to be significantly compromised (Fell, Joseph, Armson, & Dodds, 2009; Ning et al., 2003) compared to primiparous women, 3) Multiparous women are more likely to experience more significant weight gain (Cohen et al., 2009) and complications like preeclampsia (Coonrod, Hickok, Zhu, Easterling, & Daling, 1995), and gestational diabetes (Rauh-Hain et al., 2009) and these may each adversely impact on ability to be active (Durham et al., 2011; Hoedjes et al., 2012; Smith, Cheung, Bauman, Zehle, & McLean, 2005). A further two participants were excluded as their survey data were missing. Furthermore, since severely impaired physical health might impact both physical activity and depression and confound associations, participants who reported only poor/fair perceived health (n = 41) or had missing data on that variable (n = 1) were excluded, leaving a total of 406 with data for inclusion in analyses.

1.2. Procedures

The InFANT Extend trial was approved by the Deakin University Human Research Ethics Committee (2011-029) (2007-175) (11/02/2011) and the Victorian Government Department of Human Services, Office for Children Research Co-ordinating Committee. After women provided written consent, participants completed questionnaires that were distributed at the recruitment visit.

1.3. Measures

1.3.1. Predictor variables

1.3.1.1. Physical activity. Physical activity was assessed using the Active Australia Survey (Australian Institute of Health and Welfare, 2003), a reliable and valid self-report measure of physical activity in adults (Brown, Bauman, Timperio, Salmon, & Trost, 2002). Women estimated the duration of time (i.e. number of times and total hours and minutes) they spent in the last week 1) walking for exercise and to get from place to place (i.e. leisure-time and transport-related physical activity), 2) undertaking other moderate-intensity physical activity (excluding domestic chores/gardening), and 3) undertaking vigorous-intensity physical activity (excluding domestic chores/gardening). Total physical activity time (min/week) was calculated by summing the total time spent walking, time spent in moderate and in vigorous physical activity.

1.3.1.2. Television viewing. Television viewing was assessed using a reliable and valid self-report measure (Salmon, Owen, Crawford, Bauman, & Sallis, 2003). Women estimated the number of hours and minutes they spent sitting down and watching television and DVD's/videos on a usual weekday, as well as weekend day, and the weekly total was then calculated by multiplying the weekday duration by five then adding this to the weekend day duration

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