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Parental barriers to active commuting to school in children: does parental gender matter?

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ABSTRACT

Background: Children's active commuting to school (ACS) is influenced by parental attitudes, values and beliefs. Mothers and fathers may have different roles in family. This study compared mothers' and fathers' barriers to ACS in a sample of Spanish children.

Methods: Data from 463 families (child (age: 9 to 12 years, 50.5% boys), mother and father) were analyzed. Children completed a questionnaire about socio-demographic characteristics and the mode of commuting to school. Both parents completed a questionnaire about their perceived barriers to ACS. Distance from home to school was calculated using Google Maps. Data were analysed using multivariate binary logistic regression models with separate models for mothers and fathers.

Results: Overall, 71.7% of children used ACS. Distance, parental mode of commuting to work and perceived convenience of driving children to school emerged as significant barriers to ACS for both mothers and fathers. Child's extra-curricular activities and child's lack of interest in walking to school were also significant correlates of ACS in mothers only, but not in families that lived within a walkable distance to school.

Conclusions: Although some barriers to ACS were similar for both parents (distance, convenience of driving and parental mode of commuting to work), other barriers were specific to mothers (children's extra-curricular activities organization and lack of children's interest in walking to school). Interventions strategies for promoting ACS in children focusing on parents should be gender-specific.

1. Introduction

Active commuting has potential to increase physical activity (PA) and improve public health by preventing common non-communicable diseases in adults (Andersen, 2017) and should be politically promoted. The likely effects of policies supporting active commuting include important environmental and economical implications such as significant reductions in traffic-related air pollution, level of noise or even climate change mitigation (Nieuwenhuijsen and Khreis, 2016). Nevertheless, the main benefits of shifting from passive to active modes of transport are related to the health benefits associated with an increased PA (Rabl and de

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Nazelle, 2012).

Engaging children in PA during childhood is important as physical inactivity has been associated with cardiovascular risk factors including obesity in this age group (Ekelund et al., 2012). Childhood is considered a period of life when establishment of habits and positive attitudes towards PA plays an essential role for maintaining those habits throughout life. In terms of active commuting, childhood deserves special attention as high rates of active commuting might persist into adulthood and consequently provide long-term health benefits (Beige and Axhausen, 2012).

Promoting active commuting is one of the solutions for integrating PA into children's daily life (Faulkner et al., 2009). Children who walk or cycle to school have higher daily levels of PA (Davison et al., 2008; Pabayo et al., 2012) and better cardiovascular fitness compared to children who use passive (i.e., motorized) modes of transport (Cooper et al., 2006). Active commuting to school (ACS) may also contribute to preventing overweight and obesity (Pabayo et al., 2010). However, rates of ACS in children have declined over the last decades in the most developed countries (Buliung et al., 2009; Chillon et al., 2013; Grize et al., 2010; Pavelka et al., 2017).

Based on the recently published PASTA conceptual framework of active travel behaviour (Götschi et al., 2017), individual, physical and social determinants have an important impact on individual's behaviour, including individual's preference to engage in PA (Lake and Townshend, 2013). ACS is susceptible to environmental and social influences. For example, characteristics of the school surroundings (Lovasi et al., 2011) and family influences on children's choice (Leung et al., 2016) are also influencing ACS. To reverse the declining trend of ACS in children, barriers that may prevent children from walking or cycling to school should be further examined in diverse geographical, cultural and political environments such as those that characterize European cities (Lu et al., 2014).

Given the strong influence of family on children's behaviours, ACS in children is also influenced by parental attitudes, values and beliefs (Pont et al., 2009). For instance, parental concerns for safety (Carver et al., 2010) or parental perceived convenience of driving (Trapp et al., 2011) are significant predictors of ACS in children. Furthermore, other factors related to households, such as distance from home to school (Merom et al., 2006), or parental mode of commuting to work (Henne et al., 2014) also significantly influence how children commute to school. Therefore, family factors and parental support represent important social environmental factors that influence children's mode of transport to school (Mah et al., 2017).

Most previous studies that examined parental barriers to ACS in children did not differentiate the findings based on whether the questionnaire was completed by a mother or a father (Lu et al., 2014; Pont et al., 2009). However, empirical findings show that mothers and fathers play different roles in a family life. For instance, compared to fathers, mothers are more engaged in child care (Chesley & Flood, 2017). With respect to PA, previous findings have shown that father and mother may influence their child's PA by different processes (Bois et al., 2005; Edwarson & Gorely, 2010). Mothers seem to offer more logistic support to their children whereas fathers are more prone to provide higher levels of explicit modelling, intentionally using their behaviour to encourage their child to be physically active (Davison et al., 2003). Moreover, cultural values and social norms may also support and promote gender-specific behaviours (Deaner, Balish and Lombardo, 2016) and therefore influence mothers' and fathers' perceptions of and hence barriers to different modes of transport to school. Hence, it could be hypothesized that mothers and fathers have different perceptions of barriers to ACS and therefore may have different influence on the actual commuting to school behaviours in children.

The primary objective of this study was to compare mothers' and fathers' perceived barriers to ACS in a sample of Spanish children. The secondary objective was to determine correlates of ACS from mothers' and fathers' perspective. The third objective was to compare acceptable distances for children's walking and cycling to school from mothers' and fathers' perspectives. To the best of our knowledge, this is the first study in which attention has turned to study mothers' and fathers' perspective on ACS in children. Understanding potential differences in mothers' and fathers' barriers to ACS in children will provide valuable knowledge for designing future ACS interventions which could successfully address gender-specific parental barriers.

2. Methods

2.1. Study design

Data were collected as part of the CAPAS-City project (Centre for the Promotion of PA and Health) in Huesca (Spain) in 2017. One of the main aims of this cross-cultural project between Spain and France deals with the analysis of children's ACS patterns and the implementation of context-based strategies to promote ACS. Huesca is a mid-sized Spanish city placed in the north-east of Spain with a population of 52,399 inhabitants who live in an urban area of 6.75 km² (4.21 km² when excluding an industrial area) with 7762.8 inhabitants/km². The research project was approved by the Ethics Committee on Clinical Research of Aragon.

2.2. Participants

All 12 primary schools in Huesca were invited to participate in this study through a personal meeting of researchers with the headmaster of each school. Participating schools were asked to allow researchers to invite children from grades 4 to 6 (age: 9 to 12 years) and their parents to participate in this study. One school declined to participate. Thus, the final sample included 11 schools (92% school participation rate; 7 state and 4 state-integrated schools), with a total population of 1,560 potential children participants.

Researchers sent a letter to all potential children participants and their fathers and mothers to inform them about the project and to invite them to participate in this study. Parents were given 3 to 4 days to consider the invitation and sign parental consent. Overall, 1,263 parents signed consent (80.96% participation rate). Children also signed their own consent before completing the

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