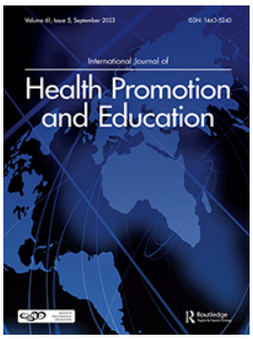

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The feasibility of cycling as a form of active commuting among children from a parental perspective: a qualitative study

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ABSTRACT

The way children commute to and from school has been described in the literature as passive or active commuting. Active commuting among children in England is low, with the most recent evidence available indicating that between 2% and 8% of children cycle to school. Encouraging active commuting by bicycle among children may be a particular way to increase participation in cycling. Evidence reports that parents influence their children's attitudes and interests both directly and indirectly; levels of physical activity of a child, for instance, can be shaped via socialisation. Therefore, the aim of the present study was to explore the barriers to children cycling as a means of active commuting. The study used qualitative methods for collecting and analysing data with a diagnostic perspective. A total of eighteen parents, ten mothers and eight fathers, participated in the interviews. Children, eleven girls and seven boys, were aged eight to twelve years. Children's mean age was 10.2 ± 1.6 years. Children's primary modes of transport to school were by car (55.6%), walking (33.3%) and by bus (5.6%). Overall, a series of factors seem to prevent parents from supporting their children to actively commute to school. Parents fear their children being exposed to crime and bad weather conditions while actively commuting to school. The absence of cycling lanes and long or short distances from school are further issues preventing parents from supporting their children to cycle to school.

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Barriers and facilitators; parents; childhood obesity; parent perception; obesity management

Introduction

The number of children who actively commute appears to have declined over the past decades. Reports from 2016, 2017 and 2019 show that 53, 44 and 41% of children, respectively, walked or cycled to school in England (Department for Transport 2020, 2018b, 2018a). There is evidence in the literature that active commuting (AC), that is

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walking or cycling, can increase daily physical activity (PA) (Aparicio-Ugarriza et al. 2020). AC in children also seems to be an effective strategy to increase physical fitness in youth, with cycling generating more benefits than walking (Henriques-Neto et al. 2020).

AC should be encouraged in order to increase current low levels of PA in children (Wilkie et al. 2016) and improve body composition (Martin-Moraleda et al. 2022). In the UK, the National Cycle Proficiency Scheme, currently known as *Bikeability* (Goodman, van Sluijs, and Ogilvie 2015), was introduced to support bicycling and safe attitudes in children (Goodman, van Sluijs, and Ogilvie 2016; Teyhan et al. 2016). However, wider factors may influence if a child cycles to school. Evidence recommends that investigations aiming to comprehend mediators and moderators in AC to school among children are needed (Richard et al. 2018; Aranda-Balboa et al. 2020).

Recent investigations identified barriers preventing children from walking to school while some factors seem to facilitate active transportation or AC in children (Aranda-Balboa et al. 2020). A systematic review showed walkability was associated with AC in children (D'Haese et al. 2015). Factors can differ from country to country as a systematic review found that overall safety and traffic safety were associated with AC in Australia and North America only and not Europe (D'Haese et al. 2015). An investigation found that parents identified more barriers to AC than children (Katherine, Clark, and Gilliland 2018). Distance, for instance, has been reported as an environmental determinant for children to actively commute to school (Aranda-Balboa et al. 2020).

An understanding of barriers children face related to AC on a bicycle has been urged (Carver, Timperio, and Crawford 2015) as interventions in this area can increase AC to school rates (Jones et al. 2019). To the best of our knowledge no study has previously explored this topic in Greater London. Parents influence their children's attitudes and interests both directly and indirectly. Thus, developing a framework to classify parental awareness can help identify barriers regarding their children actively commuting to school. The aim of the present study was to explore barriers to children cycling as a means of AC.

Methods

Study approach

The study used qualitative methods for collecting and analysing data with a diagnostic perspective. Qualitative data collection occurs by exploring points of views from participants (Clark and Creswell 2014). The diagnostic perspective examines reasons or causes regarding a context, i.e. why certain decisions are being taken or why this behaviour is being adopted (Ritchie and Spencer 1994).

Participant identification

The study took place in the London Borough of Hillingdon, England. Eligibility criteria to take part in the investigation were: being a father or a mother of a student, aged 8–12 years, attending a primary or secondary school. It was not mandatory for a household to possess a bicycle to be able to participate in the study. A combination of convenience sampling and snowball sampling (Goodman 1961) was used in the study. This study was

approved by the College of Health and Life Sciences Research Ethics Committee at Brunel University London.

Data of participants were anonymised. Semi-structured interviews were recorded using a Dictaphone over the telephone. Parents reported their children's attitude towards cycling and PA in general. According to the interview guide, each interview followed 12 central questions. The mean length of all interviews was 22 minutes and 05 seconds (SD 9 min 21 s).

Topic guide

Deductive questions related to AC and variables related to this behaviour in children were developed. Questions were compared to data in the literature to develop a framework and interview guide. According to the literature, high parental concern has been reported as a barrier for children to actively commuting to school (Aranda-Balboa et al. 2020). Parental perspectives at the *environment* level were included in the topic guide as parental concern has been related to safety issues and traffic of vehicles (Aranda-Balboa et al. 2020). These factors provided insights for asking about parental views in this area. The *social environment* and individual sections emerged as evidence in the literature suggests that research is needed to understand parental perceptions and increase social support. these aspects seem to prevent children from actively commuting (Aranda-Balboa et al. 2020).

Data analysis

The Framework approach was used to analyse the data from interviews (Ritchie and Spencer 1994). This analytical process involves different stages, where it is possible to revise ideas due to its analytical procedures. The approach involves sifting, mapping and organising data according to main problems and themes (Ritchie and Spencer 1994).

Results

Descriptive

Eighteen parents participated in the interviews with eleven girls and seven boys aged eight to twelve years. Table 1 describes participants' sex, mean age of children, and ways of commuting to school. Children's mean age was 10.2 ± 1.6 years. Table 2 describes the absolute and relative frequencies of how children commute to school. Children's primary modes of transport to school were by car (55.6%), walking (33.3%) and by bus (5.6%). No child used their bicycle as a primary mode of transport. Regarding secondary modes of transport i.e. a mode that was ever used but used less frequently than their primary mode, two children (11.1%) walked and only one child (5.6%) cycled to school.

Table 1. Sex, mean age and ways that children commute to school.

Participant	Mother	Father	Daughter	Son	Mean age (SD)	Primary mode of transport	Secondary mode of transport
1	X		X		11	Bus	None
2	X			X	12	Car	Bicycle
3		X	X		11	Car	None
4	X		X		12	Walk	None
5	X			X	12	Walk	None
6	X		X		10	Walk	None
7		X	X		8	Walk	None
8		X	X		11	Train	None
9	X			X	8	Car	None
10		X		X	10	Car	None
11		X	X		8	Car	None
12	X			X	12	Walk	None
13	X		X		11	Walk	None
14		X	X		9	Car	None
15	X		X		9	Car	Walk
16		X		X	8	Car	None
17		X	X		9	Car	None
18	X			X	12	Car	Walk
Total	10	8	11	7	10.2 (1.6)		

Note: Age of children in years. SD = standard deviation.

Table 2. Descriptive data for ways of commuting.

	Primary mode	Secondary mode
Car	10 (55.6%)	0 (0%)
Walk	6 (33.3%)	2 (11.1%)
Bus	1 (5.6%)	0 (0%)
Train	1 (5.6%)	0 (0%)
Bicycle	0 (0%)	1 (5.6%)

Themes

Analyses yielded six themes that cover factors influencing decisions parents make towards the way their children commute: *resources*, *safety*, *environment*, *social*, *infrastructure* and *perceived benefits of cycling*.

Resources

Participants related their decisions for not cycling to lack of resources. Not having a vehicle was a reason for using public transportation. A mother reported that such an issue was a reason for not allowing her child to actively commute.

> *So she didn't go riding, which she was very upset about but, I couldn't help it. I'm not just going to buy a bike just for that. Yeah, so, she has a bike, she loves riding, but her bike now is too small for her now. So she has no way, she needs to get a new bike. But, because, well, we cannot afford to buy one now anyhow so she has to deal with that. (Kristen, mother of a girl).*

High costs of *Bikeability* programmes prevent parents from enrolling their children.

> *. . . it was fairly expensive that course, I mean, no kidding I think it was like £50 or something and really just for two hours or so. Then they were going a bit on the school yard I think and then they just went a bit outside on the road. I mean, £50 [giggle] so, but it was actually quite*

popular . . . and it was fully booked, within I don't know two weeks or so, so obviously parents here do like the idea that children get road safety with the bicycles. (Cara, mother of a girl).

Safety

Weather can increase parents concern regarding their children's safety.

I would not really, he is actually off the road. I wouldn't really want [him] to cycle while [it] is really tipping down or snowy or anything like that, I wouldn't want him to . . . just that slight little bump up the curve could slip the tire, yeah, and then I'm not there to help him, so I wouldn't want him to be in that situation. (Madeline, mother of a boy).

In general, parents seemed to be concerned about their children being targeted by criminals on the streets.

I would be a bit less concerned if I see that there are more security officials walking on the street around the area that my daughter uses on her way to school. If I would see a lot of police officers around, if I see some security officials walking around, who might intervene in case something happens to my daughter, if I see that the UK has decided to let a lot of police officers walk around the town. (Ludwig, father of a girl).

Environment

Parents reported that distance was a consideration, however distance alone may not be a barrier to cycling to school when adequate infrastructure was provided.

"It would be fine as long as we live at a reasonable distance and there is a safe way for him to cycle and there is some kind of cycle paths". (Bob, father of a boy).

Although living too far from school was discussed by parents, it was primarily discussed in the context of walking to school. Living close to schools seemed to prevent children from cycling.

Because it is literally five minutes away [giggle]. No, we live very close so, it would not be worth it, really, she has to cross just one road. Where we live now, I could drop her with the car in under a minute maybe [laugh]. It takes longer for me to take the car and drive than to get there. So, before that we were walking to the school and sometimes, I would pick her up with the car. (Cara, mother of a girl).

Social

Children may be more likely to get distracted in a group of friends, which could potentially make them less aware of road traffic and lead to an accident.

If she is going with friends, I would say, that would make a difference, yes. But I would still need to keep an eye on her because it all depends on the type of friends that she will be going to school with. So yes, if she goes with friends, that would make a slight difference in my mind but, with that being said, I would still need to keep an eye on her moves. (Ludwig, father of a girl).

While travelling with friends may facilitate AC, commonly children have friends in school who live in neighbourhoods that are far from their homes.

> *. . . he doesn't have any friends in the neighbourhood, his friends are all spread out from school, so we don't really mix with our neighbours. So there is . . . no, I don't know how would that really work. Really, and we have a big garden, we go to the park a lot so, there wouldn't be any need for him to spend time outside, you know, he can play in the garden, or he can go to other places. (Bob, father of a boy).*

Infrastructure

Access to resources was a barrier that children faced.

> *. . . we tried the bicycle first and, because he has to put his bicycle into the school, he can't park his bike outside the school into the gates. They said he is not allowed to do that. So, he has to go inside the school, put it in a special place, lock it up, put his helmet and etc. You know, even though it is much quicker to go with a bike, if you add, you know you have to get out of the house, get dressed, put the whole thing on, cycle and put it away. (Julie, mother of a boy).*

Pavements are usually busy during peak hours when commuting to school.

> *I guess cycle routes would be very useful, because some of the roads, especially at the school that she is going to now, are major roads going out of the city. So the general speed is high and there are not enough lanes to go from one lane to others. So cycling routes would be certainly important, both in terms of safety, general safety and driving safety. (Jason, father of a girl).*

Perceived benefits

Parents reported that getting to school would be faster than walking and more enjoyable by bicycle.

> *Positive things are, your blood circulation is slightly more while cycling, I think it is more enjoyable, and obviously get there quicker and I think you're using more senses and it is a bit more fun riding to school, so overall, riding is probably more fun and more stimulating in all aspects than walking. (Trevor, father of a girl).*

Parents reported that cycling can be good for well-being.

> *I can relate to the advantages of cycling, both in terms of being healthy and also especially at the end of the day. It would be a very good way of cooling off, I can see advantages. But this is really for going to school in case of, like, making yourself tired. But certainly, in case of coming back from school, then yes, [for general health] it would be very useful. (Jason, father of a girl).*

Discussion

This study explored parental perspectives and concerns regarding cycling to school in children. To the best of our knowledge, this is the first study that used qualitative methods to investigate this topic in Greater London. Although findings show that parents have positive perspectives towards AC, parents voiced different issues that can prevent

their children from actively commuting. As none of the children used cycling as a primary mode of commuting, some parents discussed walking and its barriers.

A systematic review (Aranda-Balboa et al. 2020) found the main barriers reported by parents were built environment, distance to school, safety in traffic and others related to physical and motivational aspects. Main barriers reported were built environment, safety in traffic, distance, safety related to crime and social support. We interviewed parents to explore their perspectives and concerns regarding cycling to school and found barriers that were not reported in the literature. Specifically, the themes resources and infrastructure detail barriers that children face. Parents must afford an appropriate bicycle for the age of their children. Additionally, parents reported issues with bicycle parking and cycle lanes.

Similar findings to the results of this study such as traffic accidents, lack of sidewalks and bad weather are consistent with previous research (Katherine, Clark, and Gilliland 2018; Ahlport et al. 2008). Sisson et al. (2006) reported varying policies for students using bicycles to actively commute, e.g. some schools had designated cycling routes, and others did not permit students to commute by bicycle without parental permission. These findings might not be applicable to England. In the US, policies to use school buses, for instance can differ according to the school or the state the child resides in (Ahlport et al. 2008; Sisson et al. 2006). Thus, the present study adds parental perspectives on children cycling to school in England to the literature.

Parents reported not having an appropriate bicycle size or not attending a *Bikeability* programme can prevent cycling to school. There is evidence in the literature that cycle training designed for children or *Bikeability* programmes can support children with AC to school (Johnson, Frearson, and Hewson 2015; Goodman, van Sluijs, and Ogilvie 2016). Indeed, quantitative data have been reported where results demonstrated that a short cycle training programme, i.e. three training sessions, was enough to increase children's skills ($F = 46.9$; $P < 0.001$) (Ducheyne et al. 2013). On the other hand, our findings demonstrate that some parents may have financial limitations when supporting their children with AC, as appropriate bicycle size or outdated equipment has been reported.

Some parents reported no concern regarding letting their children actively commute with their bicycles after concluding a *Bikeability* course. Preoccupation with the weather, the traffic or the school were issues reported. Some parents reported that carrying a mobile phone exposes their children to hazards as they can get distracted. Nevertheless, some parents believed that a mobile phone is useful when considering AC. Our results are in line with findings from Ahlport et al. (2008) where personal safety barriers reported were fear of kidnapping, fear of walking alone, fear of getting involved in an accident and bullying.

Parents reported that cycling was impractical. For instance, some parents reported that the school did not have a suitable place to park bicycles. Concerns about the lack of cycling lanes on the way to school were reported and that most roads are not appropriate. Similarly, Ahlport et al. (2008) heard from parents that the lack of infrastructure was one of the major barriers. Walking or cycling to school was often not an option as they lived too far from school. Furthermore, weather-related barriers, such as rain and cold temperatures, were reported by parents in the US. Similarly to our study, parents in the US mentioned that short distance was a barrier as distances from school were under one and a half miles (Ahlport et al. 2008).

A social aspect reported was lack of friends in the neighbourhood. There is evidence in the literature that demonstrates that children seem to be more likely to walk to school

with friends or with parents/adult than alone (Zhu and Lee 2009). More specifically, comprehensive data show that AC in children seems to be connected with social interactions (Panter, Jones, and van Sluijs 2008; Katherine, Clark, and Gilliland 2018). For instance, particularly among girls, the awareness of living in a neighbourhood where positive social interactions are likely to occur can facilitate their engagement in AC (Carver et al. 2005). Thus, the lack of friends in the neighbourhood can indirectly prevent children from actively commuting as it could reduce social interactions and perception of safety as they are less likely to actively commuting alone (Zhu and Lee 2009).

Parents reported that cycling not only leads to health benefits and improved well-being but can also be a fast option to reach school and can improve cognitive skills and coordination. Similar thoughts were reported in the study conducted by Ahlport et al. (2008), as parents of children who actively commuted saw AC as a form of exercise. Thus, they were more willing to support their children to actively commute. Some parents moved closer to school in order to motivate their children to actively commute to promote independence (Ahlport et al. 2008). Overall, this study showed that parents were aware of cycling benefits.

Overall, results demonstrate a basis for parental concern and fear regarding traffic. There were concerns about the lack of cycling lanes and busy traffic.Parents believed that children can be skilled cyclists to overcome challenges. Conversely, though there are regions where children can enrol with the *Bikeability* course, at the age range of 8 to 12 years it is unlikely that parents would judge their children as experienced cyclists. Furthermore, parents reported that although their children concluded the course, they would not trust motorists.

Schönbach et al. (2019) concluded that high-quality interventions are needed in the area of AC to school. Based on our findings, we can make recommendations for interventions aiming to increase AC in children. First, bicycle and equipment prices for children are not accessible for all parents. Therefore, affordability should be considered when designing interventions. Second, school and neighbourhood infrastructures seem to be incompatible for some children to cycle to school. These barriers seem to be related, as even for parents that can afford to buy safety equipment, they would have to consider whether the route to school has safe cycle lanes and schools are providing safe places to park bicycles. We thus advise that future interventions should include socioeconomic status of neighbourhoods.

There are limitations in this study. Analysis did not include number of parents whose children were active commuters and non-active commuters. The present study did not include demographic information of participants. Although this analysis considered methods for enhancing credibility (Nowell et al. 2017), it is possible the inclusion of demographic information could increase transferability. Issues related to using the telephone to perform interviews should be considered as this method can limit rapport.

In conclusion, a series of factors prevent parents from supporting their children to actively commute to school. Parents fear their children being exposed to crime and bad weather conditions while actively commuting to school. Absence of cycling lanes and distance from school are further issues preventing parents from supporting their children to cycle to school.

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