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REVIEW

Identifying Barriers and Facilitators to Active Travel Infrastructure Usage Amongst Under-Represented Population Groups in the United Kingdom: A Rapid Systematic Review

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Utilising active travel has the potential to positively impact health. Research shows that certain members of society may be less likely to undertake active travel than others, particularly individuals belonging to marginalised population groups such as ethnic minorities and people with disabilities. The aim of this rapid systematic review was to assess the barriers and facilitators to active travel amongst marginalised groups in the United Kingdom. Electronic databases were searched from inception to October 2022. All primary study designs were deemed eligible for inclusion if they investigated either barriers or facilitators to active travel amongst a marginalised population group within the UK. Twelve studies met inclusion criteria encompassing participants from an ethnic minority background, physical disability or a learning disability. Safety concerns were identified as a barrier for each group. Infrastructural barriers were apparent for people with a physical disability. Bike ownership or lack of bike-riding knowledge was a barrier for ethnic minorities. Facilitators identified were provision of recourses in the form of bicycles and training for ethnic minorities, while improved independence and perceived health benefits facilitated active travel amongst people with disabilities. Overall, the included studies were deemed to be of a high risk of bias. There is a lack of high-quality research in this area in the UK context, and future studies should aim to identify ways to improve access to active travel for ethnic minorities, people with disabilities, in addition to other marginalised groups who are currently not represented in the existing literature.

Keywords: active travel; ethnic minorities; disability; barrier; facilitator

1 Introduction

Promoting active travel, such as walking, wheeling and cycling, is a major urban planning and public health objective in many cities (Winters et al, 2017). Participation in active travel offers a wide range of health and wellbeing benefits, including the promotion of physical activity (Van Wee and Ettema, 2016; Cavill and Davis, 2019). Promoting physical activity is of particular importance amidst increasing global concerns regarding non-communicable diseases and sedentary behaviour (Ding et al, 2016). Promoting active travel can also promote healthy urban environments and result in a wide variety of environmental benefits (Brand et al, 2021). For example, reduced car usage leads to improvements in urban air quality and reductions in noise pollution (Lalive et al, 2018). Active travel infrastructure, such as greenways or green corridors can also offer opportunities to promote biodiversity and reverse habitat fragmentation (Angelstam et al, 2017). These environmental and public health benefits are associated with significant economic savings for businesses and society associated with illness and absence (Cavill and Davis, 2019), whilst encouraging walking and cycling in urban areas can lead to greater expenditure and stimulate local economies (Mindell, 2015).

While active travel can provide numerous benefits to public health and the environment, these benefits may not be equally accessible to all members of society. Under-represented groups, such as people experiencing homelessness, individuals with disabilities, older adults, and ethnic minority groups, are often neglected in urban planning and public health policies (Northridge and Freeman, 2011; Steinbach et al, 2011). Recent evidence indicates that some under-represented groups face specific barriers to participating in active travel, but these challenges are frequently overlooked in research on the topic. For example, recent research demonstrates that individuals with a disability face systematic barriers to participation in cycling (Cox and Bartle, 2020; Inckle, 2020). It is essential to ensure that active travel opportunities are available to all individuals, regardless of background or ability. Examining the barriers and obstacles faced by under-represented groups in accessing active travel can assist policymakers in creating more equitable urban systems that promote health, the environment and local economies (Aldred et al, 2021). However, there remains a lack of consensus within both academic and grey literature about the key issues facing under-represented groups in relation to active travel and how best to address these issues. This review aims to identify barriers and facilitators to active travel infrastructure usage amongst under-represented population groups in the United Kingdom (UK). The specific objectives are to: (1) establish the context-specific barriers and facilitators that exist with regards to accessing/using active travel infrastructures for different under-represented population groups within the UK; and (2) determine the overall quality of evidence, and where further research is needed in this topic area.

2 Methods

This rapid systematic review was conducted in accordance with the guidelines on rapid reviews from the Cochrane Collaboration (Garritty et al, 2021). A rapid review methodology was adopted as it allows for more robust elements of a formal systematic review to be followed, while accommodating a shorter project timeframe. This review was prospectively registered on PROSPERO (available at: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42022365316).

2.1 Literature searches

In order to identify relevant published literature, two health-related electronic databases (MEDLINE and PsychINFO) were searched from inception to October 2022. Searches were limited to English language, adult populations and primary research. The search strategy

was guided by the SPIDER framework (Sample, Phenomenon of interest, Design, Evaluation, Research type) (Cooke et al, 2012) and aimed to identify primary studies that reported on the barriers and facilitators to active travel amongst marginalised population groups in the United Kingdom. Both keywords and MeSH terms (Medical Subject Headings) were used where applicable, supplemented with the necessary truncation and Boolean operators.

In addition to published research, grey literature was also eligible for inclusion in this review. Therefore, the OPENGrey database was also searched in the same fashion as described above. Additionally, key organisations who are recognised for their contributions to active travel policy and practice had their websites manually searched for relevant publications (specifically Sustrans, Active Travel England, Cycling Scotland, Paths for All).

2.2 Inclusion criteria

In order to identify relevant studies that would answer the review aims, the following inclusion criteria were applied to the identified studies:

- Primary studies of any design
- Studies reporting on barriers and/or facilitators of active travel infrastructure usage
- Studies with participants who could be classified as an under-represented population group (see definitions below)
- Studies conducted within the United Kingdom with UK-based participants

Editorials, opinion pieces, literature/systematic reviews, case reports, protocols and n-of-1 studies were excluded. Studies that also included the general population (i.e., groups not considered under-represented by our inclusion criteria) were included if they also included data specifically on barriers and facilitators of an eligible under-represented group which could be extracted.

There is no clear definition of "under-represented" population groups in the literature. However, it can be characterised as certain groups of the population/community who face specific challenges based on their ethnicity, religion, gender identity, sexuality, living conditions or disability status (Page et al, 2013). For the purposes of this review, we considered studies that included the following population groups as eligible for inclusion:

- Ethnic minorities
- Religious minorities
- LGBTQ+ communities
- People experiencing homelessness
- Refugees/immigrants/asylum seekers
- People with physical disabilities (including sight and hearing impairments)
- People with learning/cognitive disabilities

2.3 Outcomes

The outcomes of interest to this rapid review were barriers and/or facilitators to active travel participation or infrastructure usage in the UK amongst under-represented groups. For the purposes of this review, active travel was defined as walking, cycling, skating, skateboarding, jogging/running or non-motorised scooter use. Barriers were defined as any reporting of phenomena which made accessing active travel more difficult for an individual participant who was classified as a member one of the above under-represented groups. Conversely, facilitators were defined as any phenomena perceived to enhance one's ability to access active travel amongst individuals from an under-represented group.

2.4 Screening and data extraction

Study screening was facilitated by Covidence systematic review management software. Two reviewers independently screened 20% of identified titles/abstracts, before discussing and rectifying any discrepancies in screening procedures. Following this, one reviewer then screened the remaining 80% of identified abstracts. Full text articles were screened for inclusion by two reviewers independently, with any conflicts in eligibility discussed and agreed upon. Data extraction was facilitated by a pre-specified data extraction template, for which one reviewer extracted the following: study ID (author and year), study design, publication type, geographical location, population type, number of participants, active travel components, identified barriers, identified facilitators, other results, other comments (limitations, etc.). Prior to use of the data extraction tool, it was piloted on two studies by both reviewers independently to assess its ability to adequately capture the required data for the review.

2.5 Data synthesis

The extracted data was collated and synthesised narratively using thematic synthesis (Thomas and Harden, 2008). Quotes from individual primary studies were extracted into Nvivo qualitative data analysis software and re-coded using thematic analysis in the context of barriers and facilitators to active travel usage. Where quantitative data was included, these were also summarised narratively. As the aim of the review was to identify and assess barriers and/or facilitators to active travel for under-represented groups, these primarily guided the synthesis, whereby different types of barriers and facilitators identified in primary studies were grouped based on the specific mechanisms or characteristics of the phenomena.

2.6 Risk of bias

In order to assess the quality of published studies included in the review, the Mixed Methods Appraisal Tool (MMAT) was used (Hong et al, 2018). This tool has been designed for use on quantitative, qualitative and mixed methods studies. For unpublished studies/grey literature, the AACODS checklist (Authority, Accuracy, Coverage, Objectivity, Date, Significance) was used (Tyndall and Tyndall, 2010). This tool allows for the assessment of quality of studies which may not provide the typical information required in published literature by considering other factors. One reviewer conducted the quality assessment, and a second reviewer checked the ratings for accuracy.

3 Results

Following database searches and manual searching of active travel resources, a total of 714 articles were identified, for which 12 individual studies were deemed eligible for inclusion after screening **(Figure 1)**. From these, the majority were from peer-reviewed publications (n = 8), while four were from grey literature sources. The majority of studies were set in England (n = 8), followed by Scotland (n = 2), with one study based in Ireland (including Northern Ireland) and one study sampling from all four nations of the UK. Despite keeping the inclusion criteria and definition of under-represented groups fairly wide, only studies including people from an ethnic minority background (n = 5), people with physical disabilities (including visual impairments, n = 8), and people with a learning disability (n = 3) were identified; a number of studies included more than one under-represented group. No studies investigating barriers/facilitators to active travel in other under-represented groups met eligibility criteria for this review. Further details on study characteristics of the included publications can be viewed in **Table 1**. A total of seven distinct barriers were identified in this review, while six facilitators were evident from the included papers with regards to active travel amongst under-represented groups within the UK. Most of these barriers were present for all groups included in this review; however, the underlying mechanisms which cause these barriers appear different between each group. Results from the included studies are summarised below for each under-represented group.

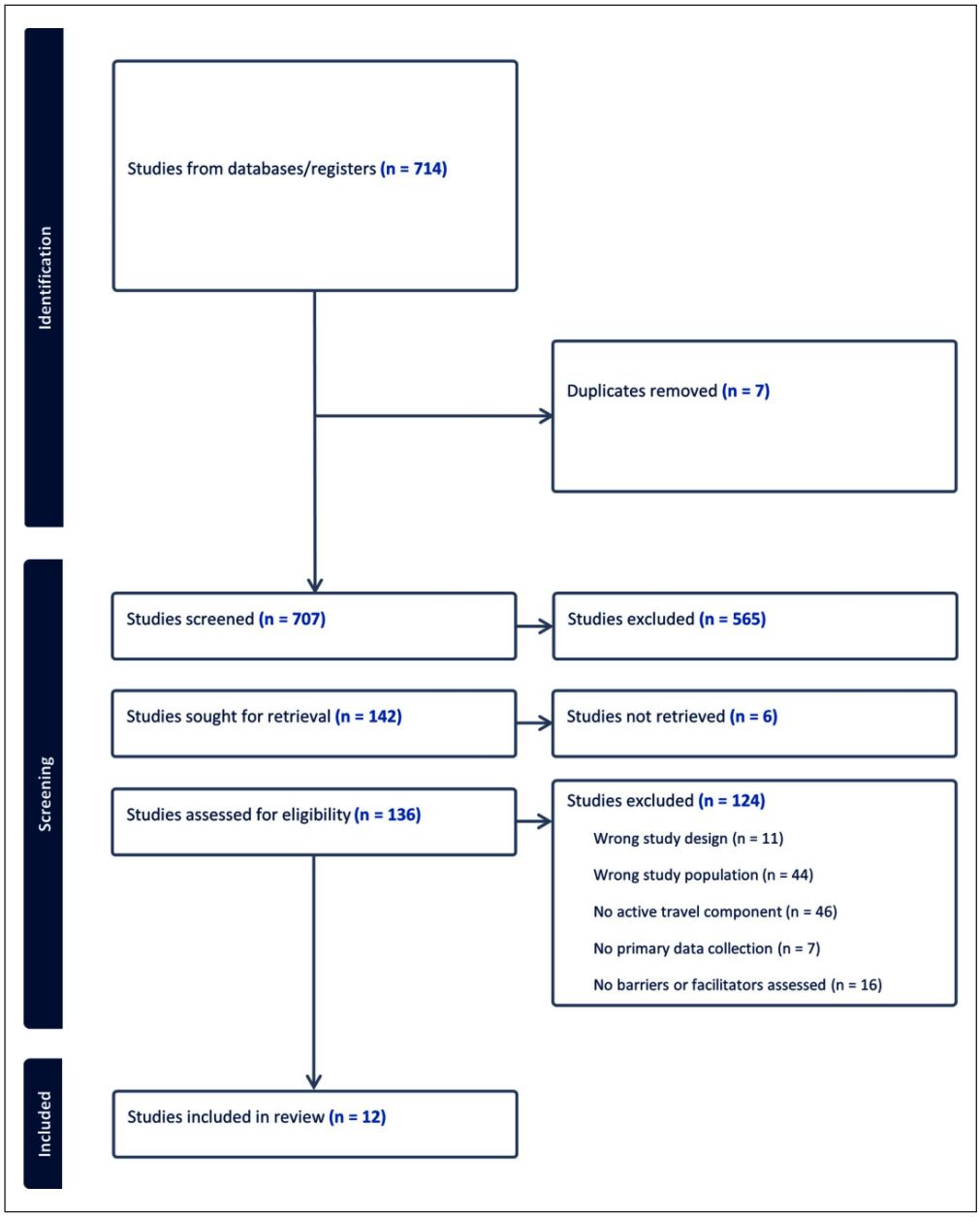

Figure 1: PRISMA flow diagram outlining study selection.

3.1 Barriers to active travel amongst ethnic minority groups in the UK

Five studies investigated active travel barriers and facilitators amongst people from an ethnic minority background (Burns et al, 2020; Jepson et al, 2008; Mason et al, 2013; Patterson et al, 2018; Sen and Patel, 2021). Of these, three were quantitative studies (Mason et al, 2013; Patterson et al, 2018; Sen and Patel, 2021), which offered descriptive findings regarding barriers to active travel, without contextual explanations. Two studies used qualitative methods, which did offer further explanations as to the context in which the barriers exist (Burns et al, 2020; Jepson et al, 2008).

Table 1: Study description table.

Study ID	Publication status	Country	Study design/ methods	Participants	Population group	Active travel component	Barriers identified	Facilitators identified
Sen & Patel (2021)	Grey literature	England	Mixed methods (surveys and qualitative interviews)	Survey respondents: 772 responses over 5 phases. Qualitative interviews: 17 participants	Ethnic minorities and people with disabilities	Walking and cycling	Cycling physically challenging for people with disabilities: r = –0.011	Frequency of racial slurs in neighbourhood associated with increased bike usage by ethnic minorities: r = 0.025
Inckle (2020)	Peer-reviewed	England	Qualitative interview study	Seven interview participants (7 women, three men)	People with a physical disability	Cycling	lack of knowledge that cycling is possibly for disabled people	perceived health benefits; easier mode of travel than walking; perceived mental health benefits; improved independence
Jepson et al (2008)	Grey literature	Scotland	Qualitative interview and focus group study	nine focus groups = 59 participants	Ethnic minorities (people of south Asian descent)	Walking	fear/safety- specifically racial abuse; cultural issues such as dogs viewed as unclean	None
Lee (2016)	Grey literature	England	Qualitative interview and focus group study	Four focus groups = 39 participants (24 women, 15 men)	People with physical disabilities; people with learning disabilities, people with visual impairment	Walking		Planning with disabilities in mind

(Contd.)

Study ID	Publication status	Country	Study design/ methods	Participants	Population group	Active travel component	Barriers identified	Facilitators identified
Mason et al (2013)	Peer reviewed	Scotland	Cross sectional study	3824 British citizens living in socioeconomically deprived area (7.7% ethnic minorities)	Ethnic minorities	Walking	no significant association between racial abuse and walking frequency: 0.861 (0.687–1.079)	None
McClimens et al (2014)	Peer reviewed	England	Qualitative focus group study	18 participants	People with learning disabilities	Walking	Safety concerns: unsolicited interactions with street vendors (big issue sellers); dark streets at night; lack of support.	Support
Patterson et al (2018)	Peer reviewed	England	Cross sectional study	33,344 participants. Ethnic group – White (32,030) South Asian (557) Black (403) and other (354	Ethnic minorities	Walking and cycling	No bus pass	Bus passes appear to increase the likelihood of having stages of active travel in a bus journey among all ethnicities. The odds of having any active travel are higher in those with a bus pass then those without for all ethnicities.
Stathi et al (2012)	Peer reviewed	England	Mixed methods study (questionnaire and interviews)	25 older people (10 women)	People with physical disabilities	Walking	Safety fears; functional limitations, perceived lack of ability, fear of going out alone;	None

(Contd.)

Study ID	Publication status	Country	Study design/ methods	Participants	Population group	Active travel component	Barriers identified	Facilitators identified
Cox & Bartle (2017)	Peer reviewed	England	Qualitative focus groups and interview study	16 participants	People with a physical disability	Cycling	Challenging infrastructure; financial cost; judgemental attitudes	Healthy way to manage condition; easier way to travel than walking; adopting "cyclist" as part of their identity
Clayton et al (2017)	Peer reviewed	England	Qualitative focus group study	8 participants	People with physical disabilities	Cycling	Infrastructure, social conflict, costs of adapted cycles, risk of loss, and risk of breakdown	None
Gallagher et al (2011)	Peer reviewed	Northern Ireland and Rep. of Ireland	Qualitative focus group study	121 participants, 48 Northern Ireland, 73 Rep. of Ireland, across 6 focus groups	People with visual impairments	Walking	Obstacles, poor infrastructure	None
Burns et al (2020)	Grey literature	UK-wide	Mixed methods study (Focus groups and surveys)	Undisclosed number of participants across UK	Ethnic minorities, people with physical and/or learning disabilities	Cycling	Judgemental attitudes towards disabled cyclists; infrastructural barriers; fear of falling; lack of light at night. Ethnic minorities: Lack of knowledge of how to ride a bike, challenging infrastructure for inexperienced cyclists	None

Fear/safety concerns

Only one study identified fear/safety concerns as an explicit barrier in participants of South Asian background (Jepson et al, 2008). Specifically, concerns around suffering racial abuse while walking was the main reason cited by participants in this qualitative study:

> Myself, my sister and another friend and neighbour – she's Muslim as well – we were out for a walk. It was about the same time, about half past 9, 10 o'clock, and my sister wears her headscarf and there was two young boys, youths, walking past and when we were walking up towards them we didn't even think, we just thought they're going to walk past, and then they just kind of like pushed my sister. Not me or my other friend because we don't wear headscarves. Just my sister because she had a headscarf on her head. (Jepson et al, 2008).

In contrast to this, one cross-sectional study found no association between racial abuse and walking frequency (0.861 [0.687–1.079]) (Mason et al, 2013) while another observed a weak correlation between frequency of racial slurs in the neighbourhood and bike usage by Black and Minority Ethnic (BME) participants (r = 0.025) (Sen and Patel, 2021).

Lack of ability to ride a bike

One study highlighted that people from some ethnic groups do not learn to ride a bike due to cultural or accessibility reasons (Burns et al, 2020) and this therefore prevents them in engaging in this active travel behaviour:

> Cycling is not for people like me. (Burns et al, 2020)

3.2 Facilitators to active travel amongst ethnic minority groups UK

Provision of resources

Only one of the included studies identified a facilitator to active travel amongst people of an ethnic minority background. Specifically, provision of an older persons' bus pass increased active travel, both as part of a bus journey and in general, amongst all ethnic groups, including minorities in a large cross-sectional study (Patterson et al, 2018).

3.3 Barriers to active travel amongst people with physical disabilities (PPD)

A total of eight identified studies reported on barriers to active travel amongst people with some form of physical disability (including visual and hearing impairments). Of these, five were of a qualitative design (Burns et al, 2020; Clayton et al, 2017; Cox and Bartle, 2020; Gallagher et al, 2011; Inckle, 2020; Lee, 2016), with the remaining two studies using a mixed-methods approach combining surveys with interviews and focus groups (Sen and Patel, 2021; Stathi et al, 2012).

Fear/safety

Aligning with people from ethnic minority backgrounds, fear and safety concerns around walking and cycling were identified as a key barrier amongst people with physical disabilities (PPD). However, the mechanisms causing these barriers were considerably different, with safety concerns among PPD mainly centring on personal safety because of their disability (such as a fear of falling, not being able to see properly when it gets dark, etc.) as opposed to fear of abuse form others:

> I'm not very keen on going through there because there's like high fencing, and there's nobody about, and well … I mean, it's not a walk for a really elderly person to do on their own. (Stathi et al, 2012)

Infrastructural barriers

Infrastructural barriers such as high kerbs, bins in the street, uneven road surfaces were the most widely cited barrier identified in this review with regards to active travel in PPD (Burns et al, 2020; Clayton et al, 2017; Cox and Bartle, 2020; Gallagher et al, 2011). Specifically, poor road/footpath design or maintenance, coupled with non-wheelchair-friendly gate/entrance designs to public greenspaces restricted PPD from using these spaces for active travel purposes. PPD also feared that using their adapted cycles on badly maintained roads would lead to damage, which in turn would increase financial cost:

> What gets in my way is what used to get in my way for ordinary cyclists, you just shrug your shoulders about it, but if you're disabled, the ride around isn't so easy or just puts you off, full stop. (Cox and Bartle, 2020)
> As individuals [service users] couldn't afford to buy them [adapted cycles]. […] These bikes are expensive, you know, and as soon as you specialise them the pound signs [d] keep ticking away… (Clayton et al, 2017)

Perceived lack of ability/physically challenging

Several studies identified a perceived lack of ability as a barrier to active travel for PPD, particularly regarding cycling. Many PPD felt that cycling was not possible due to their disability and were unaware of the benefits of adapted cycles. In relation to this, two studies identified a stigma attached to PPD who cycle as others could be judgemental towards their ability to cycle and that it somehow diminished their disabled status:

> It made me more confident of there is much more out there that I can do, because I didn't know about that [e.g. cycling] before, [so] then I was like, gosh, what else is out there that is inclusive that I didn't know about. … (Inckle, 2020)

3.4 Facilitators to active travel amongst people with physical disabilities (PPD)

Perceived health benefits

A major facilitator of active travel, in particular cycling amongst PPD, was the perceived health benefits. Three of the included studies highlighted that individuals felt that the moderate-vigorous activity they get from cycling was beneficial for their health (Clayton et al, 2017; Cox and Bartle, 2020; Inckle, 2020). Mental wellbeing benefits were also mentioned by several participants:

> What physio never did was actually exercise my heart because I didn't do it for that I did it for a knee or I did it for a hip or I did it for- and then you work on that particular thing but then it's not effort. Well, it is effort, but it's not sustained effort. So, actually, I think that's the main difference, is that it gets my lungs and my heart really pumping and exercising. (Inckle, 2020)

Sense of improved independence

Cycling was perceived by PPD as a means of improving independence, particularly as it allowed them to travel further unaided than they could typically by wheelchair or walking. Participants also stated that once cycling became a habit, it became easier than walking and, therefore, would encourage them to use it as a mode of transport:

> It's the independence, which I haven't said. I think that's the other thing, you're not relying on transport you are relying on your own transport: you are relying on yourself and I think that is a big boost to anybody with a disability. You rely on yourself, and wherever you are when you are on your bicycle, you rely on yourself. And wherever you are you can dictate what you do, no one's dictating to you what you can do. (Inckle, 2020)

3.5 Barriers to active travel amongst people with learning disabilities (PLD)

Fear/safety concerns

Three studies reported on barriers to active travel in people with learning disabilities (PLD) (Burns et al, 2020; Lee, 2016; McClimens et al, 2014), one of which also finding safety concerns as a barrier to walking. Specifically, unsolicited interactions with other people on the street was a factor which would prevent walking in the city centre, particularly if a response was required (for example, to someone promoting/selling goods or asking for change). Similarly, fear of walking or cycling at night when it was dark was a barrier, as was a lack of support when walking alone as it generally increased feelings of unease in participants (McClimens et al, 2014).

3.6 Risk of bias within included studies

Risk of bias was assessed in all peer-reviewed studies using the MMAT quality assessment tool. Generally, qualitative studies did not adequately demonstrate how their findings were derived from the data presented, which in turn led to potential biases in the interpretation of the findings. The two mixed-methods studies (Sen and Patel, 2021; Stathi et al, 2012) differed considerably in risk of bias. One lacked coherence/integration between the qualitative and quantitative elements, which impacted the overall interpretation of the findings (Sen and Patel, 2021), while the other did attempt to triangulate quantitative and qualitative findings and consider these when interpreting findings (Stathi et al, 2012). Overall, the two cross sectional studies included in this review were of low risk of bias (Mason et al, 2013; Patterson et al, 2018). Risk of bias in unpublished (grey literature) studies was assessed using the AACODS checklist. Generally, the three unpublished studies were from reputable sources. Two studies were unpublished health research projects (both being commissioned health policy studies: Jepson et al, 2008; Lee, 2016). These both had detailed methodologies that allowed for the assessment of typical biases. However, the third grey literature source (Burns et al, 2020) did not provide sufficient detail on the methods used to collect and analyse the data their findings were based on, thereby making it difficult to judge its risk of bias.

4 Discussion

This rapid systematic review has identified several barriers and facilitators to active travel amongst ethnic minorities, PPD and PLD that previously had not been synthesised in a review for the UK context. Safety was identified as a barrier for all three under-represented groups; however, the underlying mechanisms differed for each group. Specifically, BME individuals feared racial abuse while walking or cycling, while PPD were concerned of falling while travelling or exacerbating conditions through exertion and not having assistance. Interestingly, two quantitative studies which investigated associations between racial abuse and travel behaviour in BME individuals did not find an association between walking frequency and racial abuse (Mason et al, 2013), while the other in fact found that frequency of racial slurs was correlated with a slight increase in bike usage (Sen and Patel, 2021). However, the results of these studies should be interpreted with caution as they do not take into account that lower car ownership rate among certain BME groups in UK (Kelaher et al, 2009); therefore, walking

and/or cycling may be a necessity in some cases for this population group, which would consequently maintain or increase active travel behaviour despite the risk of being racially abused. This highlights the need for more robust qualitative or mixed-methods studies in this area to not only identify patterns of behaviour, but also to understand the context and drivers of such behaviours.

Several barriers were specific to individual groups; for example, infrastructural barriers were a major issue for PPD only. This is consistent with the wider literature in the area, which has identified poorly designed streets, uneven/damaged road surfaces and obstacles such as bins as barriers to wheelchair users or for people with other physical disabilities (Eisenberg et al, 2020). Interestingly, a facilitator of active travel amongst both PPD and PLD in this review was designing outdoor environments using co-design approaches or with disabilities in mind. The use of inclusive design has become increasingly recommended from both public health and town planning perspectives (Burton and Mitchell, 2006) and should be considered when attempting to remove infrastructural barriers from active travel routes that may prevent PPD and PLD from using them. While this review focused exclusively on the UK active travel context, it is interesting to note that similar barriers have been reported in the international literature for underrepresented population groups (Buttazzoni et al, 2023; Dabelko-Schoeny et al, 2021). Specifically, Vietinghoff (2021) found that some participants from an ethnic minority background in Grenoble (France), identified fear of bike theft or harassment as a barrier to cycling participation, particularly amongst BME women (Vietinghoff, 2021). Additionally, in the US context, a number of cross-sectional studies have demonstrated that active travel participation is socially pattered, with uptake generally lower for specific ethnic minority groups (Quinn et al, 2017; Sadeghvaziri et al, 2024; Sims and Bopp, 2018). However, the potential influence of inequitable policy and infrastructure to support active travel amongst ethnic minority groups in the US has been cited as a contributing factor to this observation (Barajas and Braun, 2021; Vojnovic et al, 2013). These findings are of note, as when socioeconomic status is considered, a number of studies find people living in more socioeconomically deprived neighbourhoods in fact report higher levels of active travel; particularly in Australia and the UK (Olsen et al, 2017; Turrell et al, 2013). Considering BME groups are disproportionately represented in low SES neighbourhoods in the USA (Iceland and Wilkes, 2006), this further reinforces that there are context-specific barriers beyond class to active travel participation for this under-represented population. This highlights the importance of assessing equitable access to opportunities for active travel at the systems level (Aldred et al, 2021; Iroz-Elardo et al, 2020), it is not yet clear whether such an approach has been taken in the UK context, which may hinder developments in policy change.

In general, the studies included in this review were of moderate to low quality of evidence, mainly limited by small sample sizes and unclear methodological reporting practices. Only twelve studies were identified, three of which were unpublished grey literature. This lack of research, coupled with the relatively high risk of bias identified, highlights a significant gap in the active travel literature pertaining to under-represented groups in the UK. It is well-documented that under-represented groups, such as those of interest in this review, are typically considered "hard-to-reach" (Brackertz, 2007) and, therefore, recruiting members of these groups can be difficult. Additionally, as they represent a smaller proportion of the population, consultation fatigue can be a factor that either prevents participation or can impact on the trustworthiness of the findings obtained (Attree et al, 2011). It is also important to acknowledge that the term "under-represented" which this review has used, may not fully accommodate for the different, complex experiences of individuals who may be categorised as under-represented, and the sub-groups within this term are not likely comparable.

Specifically, experiences may differ significantly for individuals within and between particular under-represented groups based on geography, income, peer/familial support and other variables. However, given the relative sparsity of the research in this area, in depth synthesis of such findings was not possible in this review. This also highlights the difficulties faced by policymakers working in urban planning and active travel, who have a limited evidence base to work with when looking to address inequalities in access to active travel.

There are limitations to this rapid systematic review which must be considered when interpreting the findings. Firstly, our decision to conduct a rapid review, may lead to the introduction of both selection bias and information bias. Firstly, while we followed established guidelines on conducting rapid reviews, it is possible that this streamlined approach may have led to some studies not being detected by literature searches. We chose to include grey literature in addition to peer-reviewed studies in this review, as while the published research is sparse, there are a number of organisations which have worked extensively with these population groups to improve accessibility to active travel. Despite this, we only identified three grey literature sources which met our inclusion criteria. This may have been due to our search strategy or may also have been due to methodological or reporting factors that are common in grey literature sources, which often leads to their exclusion from systematic reviews (Adams et al, 2017). Additionally, although dual screening and extraction was conducted for a proportion of studies, rapid reviews do carry an increased risk of information bias due to extraction errors, or misclassification. Despite these limitations, we feel our decision to search two electronic databases, in addition to grey literature sources will have mitigated the effects of selection bias, while using proportional checks at each stage of the screening and extraction stage will have mitigated some misclassification biases.

Overall, the barriers and facilitators to active travel for under-represented groups identified in this review are similar to those of the general population but may be more pronounced due to various context-specific factors which may make engaging in active travel difficult for BME, PPL, and PLD groups. If active travel is to be made more accessible for these population groups, proactive steps need to be taken to identify and implement important facilitators which can improve uptake and maintenance of active travel behaviours (Batool and Pangbourne, 2024). The lack of high-quality research in the UK context in this area should not also be ignored. While the barriers are now well-established, more research pertaining to how barriers can be overcome for these and other under-represented population groups (in addition to robust evaluation of any interventions) should now be undertaken.

Data Accessibility Statement

As this is a secondary study, no primary data is included in this review. However, additional data relating to excluded studies and extracted data from primary studies is available from the corresponding author upon reasonable request.

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Competing Interests

The authors have no competing interests to declare.

Author Contributions

RJ conceptualised the study. SM drafted the protocol and conducted the literature searches. CM and SM conducted title and abstract screening. SM, CM, CWN and ECM conducted full text screening. SM and CWN conducted data synthesis. SM wrote the first draft of the manuscript. All authors contributed to and approved the final draft of the manuscript.

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