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ORIGINAL RESEARCH

Exploring children's perceptions of barriers and facilitators to physical activity in rural Northwestern Ontario, Canada

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ABSTRACT:

Introduction: Low levels of physical activity among children are a significant public health concern in several industrialized nations. The current research body has failed to gather adequate information on various geographic regions. Understanding barriers and facilitators in different rural regions is imperative for creating successful physical activity interventions for children in rural areas. The purpose of this study is to explore rural children's perspectives on physical activity and to discuss barriers or facilitators to physical activity participation in rural Northwestern Ontario, Canada.

Methods: Children ($n=84$) in Grades 4–8 (ages 8–14 years) in rural Northwestern Ontario participated in focus groups to discuss barriers and facilitators to physical activity. Twenty focus groups were conducted in schools. The focus groups were audio-recorded and transcribed verbatim. Transcripts were analyzed using thematic analysis. Subthemes were created based on the explicit content of the data and grouped to form broader themes.

Results: Three key themes were identified: environment, social environment, and perceptions of safety. Environmental features

include weather and the built environment. Social environment includes the role of friends and adults to either facilitate or restrict children's play. The fear of wildlife was pervasive across all focus groups and resulted in restricted independent mobility and physical activity.

Conclusion: Rural children are typically under-represented in physical activity research. The findings of this study reveal that

Keywords:

Canada, children, focus group, Northwestern Ontario, physical activity.

FULL ARTICLE:

Introduction

Low levels of physical activity among children are a major public health concern, as physical activity has physical^{1,2}, cognitive³, and emotional^{4,5} benefits. Previous research has identified a wide range of correlates of children's physical activity, ranging from individual-level variables, such as age^{6,7}, to interpersonal variables such as relationships with others^{6,7}, to physical environmental variables such as living in close proximity to a park⁸⁻¹¹. Much of the research about the determinants of children's physical activity is based on research in urban and suburban settings. There is a scarcity of evidence on the factors that influence physical activity among rural children, and even less is known about children in rural Northwestern Ontario communities¹².

Understanding the correlates of physical activity can be challenging, but one model that has become more accepted is the socioecological model. This model posits that a child's behaviour is influenced by their individual characteristics (eg age, gender), factors in their immediate environment (eg friends, family), and their physical environment (eg distance to school, availability of recreation opportunities)¹³. This model allows researchers to conceptualize the connections between the multiple variables within the model, ranging from the individual characteristics to the immediate and physical environment, including the specific factors inherent to this rural region.

Previous quantitative research examining variables at different levels of the socioecological model has shown that less than half of the children in four rural Northwestern Ontario communities were meeting the recommended 60 minutes of moderate-to-vigorous physical activity per day, as objectively measured using accelerometry¹⁴. An analysis based on a regression revealed that weather, gender, maternal education level, and day type (weekday/weekend) had the most significant impact on moderate-to-vigorous physical activity levels. Children were more active on weekdays, when temperatures were warmer, and on days without rain; additionally, boys were more active than girls. In this study of children from rural Northwestern Ontario, the usual correlates at the interpersonal level (ie parental encouragement, perceptions of barriers related to safety, neighbourhood, or social features) and physical environment level (ie living in a settled area with a higher population density, better access to recreation facilities and schools, when compared with living in a dispersed area with lower population density, decreased access to recreation facilities and schools) did not have a significant influence on moderate-to-

rural children experience some barriers to physical activity that are distinct from those of urban children. The findings suggest that researchers need to understand contextual nuances of the rural environment. Specific to the setting of Northwestern Ontario, these rural children could benefit from the addition of a skate park, indoor places to play, and more wildlife education.

vigorous physical activity¹⁴. Despite the important findings of that quantitative analysis, researchers are still lacking a comprehensive understanding of the barriers and facilitators to children's physical activity in this rural setting.

Qualitative research with rural children using an ecologic systems theory has highlighted common barriers to physical activity, such as lack of opportunities, distance, school policies, programs, and procedure, and other safety concerns^{15,16}. For example, researchers in the USA held six focus groups with 84 rural adolescents and identified that a shortage of outdoor amenities, inadequate transportation, and distance to large shopping centres with large retail stores were all barriers to physical activity¹⁵. Additionally, Moore et al (2010) held three focus groups with 22 rural youth and found that certain barriers prevented children from being active. Examples of these barriers included children in Grade 8 no longer having recess, perceived danger related to hunting (eg fearing gunshots in the backyard), and neighbourhood disorder. Facilitators of physical activity in this study were built environment features such as having access to sports equipment and fields during recess and gym class¹⁶. These studies provide valuable information, but the rural research body is limited, as the combination of studies only provides a very narrow perspective on children's physical activity in rural environments, and research is not necessarily transferable given the diverse composition of rural areas^{12,17}. Furthermore, research suggests that greater attention needs to be paid to local circumstances when discussing children's physical activity in rural environments¹⁸.

The purpose of this study is to use children's perspectives to provide contextual information on the facilitators and barriers of rural children's physical activity in small rural Northwestern Ontario communities.

Methods

Study area

The term *rural* is highly contested, and no definition adequately captures the heterogeneity of all rural environments^{19,20}. Rather than simply use a definition of *rural* based on population thresholds, which has been done in previous rural research^{16,21}, in this article the researchers describe the geographic context of the study areas, enabling future researchers to determine the applicability and context of the research.

Situated in Northwestern Ontario, the study area has a mixture of

rugged boreal forests, plentiful lakes, and a diverse range of animals (eg bear, moose, deer, lynx, and a variety of birds). The area is ideal for hunting, fishing, and birding. Living in proximity to the wilderness comes at a cost to safety, however, as dangerous wild animals often travel into town, with many sightings of black bears occurring on city streets and playgrounds.

During data collection in 2016, there were three distinct townships (Nipigon, Red Rock, and Dorion), one dispersed rural community (Hurkett), and one First Nation reserve (Lake Helen Reserve). These communities were selected because they represent a distinct region where children would have similar facilitators of and barriers to physical activity, and children from these communities would play on the same sports teams or attend community events in neighboring towns. Nipigon (population 1642) and Red Rock (population 895) are similar in that they both have distinct settled areas, a few parks, one major sports field, one splash pad (water playground), recreation trails, and an arena. Nipigon has two elementary schools and a seasonal outdoor pool (June–August). Red Rock has one elementary school and one high school serving approximately 250 students from the entire district, with some children travelling by bus from up to 45 minutes away. During the winter, ice hockey is offered in Nipigon and, depending on interest, Red Rock also offers hockey to boys and girls. However, in certain years, girls have not had a team of their own and played with the boys or travelled to the nearest major city, about 100 km (62 mi) away. Hockey season typically runs from early October to early April. In the past, and based on registration, figure skating and curling have been offered. During the spring, age-appropriate baseball and soccer leagues are offered for about 6 weeks if enough children are registered.

In comparison, Dorion (population 316) has one school, and almost all students take the bus to attend. The school doubles as a community centre and has a typical school playground, a basketball court, and a baseball field. Children in these communities must travel to either Nipigon, Red Rock, or Thunder Bay to partake in organized sport. Just outside Nipigon sits the Lake Helen Reserve (population 303). The reserve has a community centre, outdoor hockey rink, park, and baseball field. All the reserve's students travel by bus into Nipigon to attend one of the elementary schools. Hurkett (population 236) is a dispersed rural community with no amenities, and children travel by bus to Dorion for school.

The climate in the region is cold and temperate. The average annual temperature in this region is 1.8°C (35°F), with an average temperature in January (winter) of –16.4°C (2.5°F), and an average temperature in July (summer) of 17.1°C (63°F). The average annual rainfall is 770 mm (30 inches), and it snows, on average, 80 days per year²².

Methodological approach

This study used focus groups to encourage children to voice their thoughts and perspectives without being confined by preselected survey options. This child-centered approach gives children an opportunity to explore their own ideas and perceptions of the

factors acting as barriers and facilitators of their own physical activity participation in a free-flowing environment^{23,24}. It is important to recognize that the goal of a focus group is not to gain a consensus from children. Therefore, saturation was not the goal, and focus groups were conducted with all children who had parental consent and gave their own assent. However, code saturation was reached after the 14th focus group²⁵.

As suggested by Barker and Weller (2003), researchers must consider the existing power dynamics between themselves and the participants²⁶. In the present study, several steps were taken to address the power imbalance. A local resident was deliberately selected to moderate all focus groups as he was a community insider with a strong understanding of regional customs and norms. This individual was a well-known teacher and recreation programmer who had experience working with children of all ages. He understood the ethics of working with children, knew all the children by name, and encouraged the children to refer to him using his first name, fostering a conversational tone. While these efforts and precautions were taken to reduce the power imbalance perceived by the children, it is acknowledged that he still possessed a level of authority.

Another potential concern in focus groups is social desirability bias, as children could provide answers that reflect what they think the moderator or their peers want to hear rather than their true thoughts and feelings²⁴. To reduce the risk of social desirability bias, the children were randomly assigned groups within specific age ranges, and the moderator took a few moments to explain to them that there were no wrong answers; everyone is entitled to an opinion and the researchers were interested in hearing everyone's opinions.

Data collection

Data were collected as part of a larger project called the Spatial Temporal Environmental and Activity Monitoring (STEAM) project, the details of which can be found elsewhere²⁷⁻²⁹. The focus group data for the present study were collected from a subset of this larger study. Data were collected from October to December 2016 from students in four elementary schools in rural Northwestern Ontario. A member of the research team gave a presentation to Grades 4–8 (ages 8–14 years) from all participating schools. Prior to participation in the study, the parents and the children provided consent and assent to participate in focus groups that included audio-recording, and permission to use anonymous direct quotes in any presentation of the results. The final recruitment included 194 students from the four regional elementary schools, with 84 of those students obtaining parental consent and providing child assent to participate in the focus groups. These 84 students represent just below 50% of all Grades 4–8 students in the entire study area. Twenty focus groups, with three to seven participants per group, were held during nutrition breaks of about 30–45 minutes through six weeks in the fall (October–December) of 2016.

A semi-structured focus group guide was developed to prompt discussion about children's health behaviours. The guide was

based on a combination of a literature review, findings from previous STEAM focus groups, and local area knowledge. For this article, only the questions regarding physical activity were analyzed. These questions represent 12–15 minutes of the entire focus group, which lasted around 30–45 minutes depending on student participation. The questions specifically related to physical activity were designed to obtain a deeper understanding of the facilitators and barriers for physical activity and were broadly based on the socioecological model¹³. Questions included, 'Are there places that make you want to be active (play)? What do they look like? Are there places you don't want to play?' The moderator followed the focus group guide, but also allowed flexibility in the students' interpretation of and responses to the questions. All focus groups were audio-recorded, transcribed verbatim, and verified for accuracy. The original moderator listened and read through each transcript simultaneously to ensure accurate transcriptions. When the transcripts had been verified, they were anonymized. Immediately after each focus group, the moderator made field notes describing his initial reactions, quality of data, and other general feelings. These notes helped contextualize some of the responses and discussion. For example, in one case, a child said, 'we can't go over there' and pointed outside, so the moderator made notes that the child pointed to parts of the outdoor equipment.

Analysis

A thematic analysis was conducted based on the six-phase process suggested by Braun and Clarke (2006). These steps are familiarization, coding, searching for themes, reviewing themes, defining and naming themes, and writing a report³⁰. During familiarization, the researcher, who was also the moderator, listened to and read every transcript, not just to become familiar with the data, but also to obtain in-depth knowledge of the focus groups as a complete dataset. For coding, researchers used NVivo Pro v11 (QSR International; <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>) to categorize data as either facilitators or barriers relevant to the overarching research question. After separation, the lead author proceeded to develop semantic codes and subthemes through the individual datasets. The moderator is also the lead author, a local male, in his early 30s, and he interpreted the results based on a combination of his memories growing up in similar circumstances, working in these communities, and via discussions with parents, teachers, and principals.

During steps 1–5, another researcher familiar with the rural area, but a community outsider who grew up in an urban area, confirmed the codes and final themes. During this process, the researchers used the technique of critical friends, in which each researcher challenges the other to encourage reflexivity on the data³¹. Several measures (credibility, transferability, dependability, and confirmability) were taken to enhance the rigour and trustworthiness of the codes and themes³² (Table 1).

Table 1: Study measures to ensure data analysis trustworthiness³³⁻³⁵

Criterion	Description
Credibility	The moderator had lived and taught in all schools in the study area, had experience conducting focus groups, took accurate field notes, and when any thought or answer was presented the moderator ensured that he understood the answer provided. For example, when a child mentioned they liked to ride a trike, the moderator confirmed this was a three-wheeled, all-terrain vehicle.
Confirmability	Another coder that had spent a significant amount of time in the rural study location and was familiar to the local context reviewed the initial and confirmed final codes to ensure nothing was missed in the primary analysis.
Transferability	The data is unique as the sample was everyone willing to participate. The study had almost the same characteristics as the larger Spatial Temporal Environmental and Activity Monitoring project sample. The community was described in detail allowing, researchers to determine if results would transfer to similar communities.
Dependability	The lead author practiced reflexivity on how the analysis was shaped by his views on what it was like growing up in a rural community and how he determined meaningfulness of data as someone who had similar experiences as the children in the community and working as a teacher in the community. Completing the work with another author who understands but is not from the area helped confer dependability.

Adapted from Tucker P, Gilliland J, Irwin JD. Splashpads, swings, and shade: parents' preferences for neighbourhood parks. *Canadian Journal of Public Health* 2007; **98**(3): 198-202; Tucker P, Irwin JD, Gilliland J, He M. Adolescents' perspectives of home, school and neighborhood environmental influences on physical activity and dietary behaviors. *Children, Youth and Environments* 2008; **18**(2): 12-35; Irwin JD, He M, Bouck LMS, Tucker P, Pollett GL. Preschoolers' physical activity behaviours. *Canadian Journal of Public Health* 2005; **96**(4): 299-303.

Ethics approval

Ethics approval was granted by Western University's Non-Medical Research Ethics Board (NM-REB #108029) and the two regional school boards in compliance with the Helsinki Declaration. The research team is familiar with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans: *Research involving the First Nations, Inuit and Metis Peoples of Canada*. Although this

study did not have an a priori purpose of comparing Indigenous and non-Indigenous children, the researchers recognized that a large part of the study population would include Indigenous children. The researchers formally engaged with the Red Rock Indian Band, and they examined all research protocols and tools and were invited to participate in the study. The researchers offered to help collect any data that the Red Rock Indian Band thought would be helpful as long as it fitted within the general

theme of the research project.

It is important to note that this study included other elements (eg surveys, photos, diaries, drawings, GPS units, and accelerometry). Hence, the researchers were open to other methods that are potentially more specific to Indigenous children's way of knowing. The Red Rock Indian Band respectfully declined the invitation but gave their full support in conducting the study.

Results

Table 2 presents the demographic characteristics of the children in

the focus groups. There were slightly more girls (51.2%) compared to boys (48.8%). The largest grade group was Grade 4, making up about 26% of the sample. Caucasian children made up a little over half of the focus groups (51.2%), while Indigenous children made up around 43%, and the remaining 6% were of other ethnicities.

Most of the children's conversations were centered on barriers to physical activity as compared to facilitators. Three themes were identified: environment (eg distance, skate parks, splash pads, indoor facilities, and weather), social environment (eg relationship with peers, teachers, and adults), and perceptions of safety (eg water, forest, and animals).

Table 2: Demographic characteristics of Spatial Temporal Environmental and Activity Monitoring project focus groups

Characteristic	n	%
Gender		
Female	43	51.2
Male	41	48.8
Grade		
4	22	26.2
5	20	23.8
6	17	20.2
7	16	19.0
8	9	10.7
Ethnicity		
Caucasian	43	51.2
Indigenous	36	42.9
Other	5	6.0

Environment

The environment theme was based on features of the environment that were acting as facilitators or barriers. It was largely centered on four built environment codes (distance, skate parks, splash pads, and indoor facilities) and weather.

Barrier: Children described feeling confined by distance; as one girl in Grade 8 said, 'Your parents usually don't want to drive you cause my friend lives, like, a long way's away'. Similar sentiments were discussed in relation to travel to and from school or extracurricular activities. One boy in Grade 5 stated, 'Well I don't walk to school because it takes me, like, 30 minutes'. A Grade 6 girl who had to travel more than 100 km (62 mi) just to play competitive hockey said, 'Um, I play hockey in Thunder Bay, too, so I'm not going to walk'.

Children's perceptions of the built environment barriers seemed focused on splash pads and weather. The older children in Grades 6 and 7 discussed how they thought the splash pad was intended for younger children:

Well, it's [the splash pad] kind of, I don't know how to say this, but it's kind of, like, kiddy. (girl, Grade 7)

I like swimming so whenever I'm hot, I'll either, I'm, I've probably gone to the splash pad twice, but I've – don't think I've gone in either times, but if it's hot, I'll either ask my mom to take me to Loftquist [Lake], or I'll just sit inside. (girl, Grade 6)

One environmental variable that is understudied but of growing

interest in children's physical activity literature is the influence of weather. When students were asked about active transportation, one boy in Grade 7 mentioned he took the bus and walked. When probed further, he said, 'I walk like after school that's why I said both because in the morning it's too cold'. Another boy shared his feelings about walking in the winter and the lack of properly maintained sidewalks or sidewalks in general:

When it's winter, and you're trying to walk around, and you don't got no sidewalks you have to walk up snowbanks sometimes you're in slush from the vehicles driving by sometimes you're too close, and it's just a hassle. (boy, Grade 8)

Facilitator: Children discussed wanting a place to go and do activities after school as a facilitator with both the environment and social environment components. As one Grade 4 boy explained, 'There should be like more stuff to do like people just coming and doing activities there'. Another child expanded on the idea:

I guess what I was thinking a club where like any sports could be played there so like if you want to play volleyball or basketball you can go over there and it can be like local, you just grab your stuff and go play that sport for an hour. (boy, Grade 7)

Another potential facilitator were skate parks. They were mentioned in every focus group and the conversations were succinct, as a boy in Grade 4 said: 'maybe like a skate park would be pretty cool'. A boy in a Grade 7 said, 'I wish, I wish there was a

skate park and more people’.

Social environment

Children’s social environment refers to immediate context where a child lives and the relationships they have with other people in these contexts. In this study, the focus was on relationships with adults and peers.

Barrier: Children described how adults were responsible for creating barriers to physical activity. It was most frequently discussed in the context of the school environment. For example, one boy in Grade 5 expressed his frustration with school rules, which he felt were inhibiting physical activity, ‘We can’t play football now because people were fighting and [pause], and, like, nothing to do’. Students acknowledged that rules were in place for a reason, but continued to emphasize how rules prevented them from being active:

So, like you could probably bring back foursquare [competitive schoolyard ball game that involves bouncing a ball between quadrants to opposing players], even though there are some poor sports, umm, but, there are poor sports in life, so you need to deal with it. (girl, Grade 5)

Another student stated:

We have pretty much not very many options to do in winter because we can’t throw snowballs, can’t slide on ice, and I can see why but maybe more wintery activities. (girl, Grade 5)

Facilitator: When children were asked what would make them more active after school, many kids reported that having better access to their friends or having more people would make them more active. One girl said:

If there was, like, more people because, cause like, when I was, like, younger, me and my brother’s friends would play, like, capture the flag or something, but they’re like, all live in Thunder Bay or most of them really, don’t really do anything anymore, so, yeah, more people. (girl, Grade 6)

Another girl in the same grade living in a different part of the community had similar sentiments:

Say if there was more people, like, living on my street then yeah, I’d go outside because there’s like, mostly old people. (girl, Grade 6)

Another important facilitator that came up was the role of adults in organizing activities at school. One Grade 6 girl explained that intramurals (sports within one institution or community) were fun, and she wanted more: ‘Mr [X] should start it [intramurals] right at the start of the year so that we could play more sports’. A Grade 6 girl in a different school thought that adults or even peers could facilitate activities: ‘If maybe the soccer games were organized, and we had teams beforehand we wouldn’t waste so much of our recess picking teams’.

Perceptions of safety

An important theme that came up through all focus groups was children’s perception of safety. Children’s fears stemmed from living in proximity to large bodies of water, and dense and hilly forests, but mostly they were about animals.

Barrier: Across all focus groups, children consistently identified wildlife as a barrier to physical activity. In some cases, wildlife referred to common domestic/household dogs running around, but the most common fear came from bears. One Grade 4 boy explained quite simply, ‘There’s a lot of bears everywhere’, a reality that prevented him from playing in certain areas of the community. The fear of bears was mentioned as something parents were fearful of, as a girl in Grade 6 said: ‘I don’t think my mom would want me to go in the bush later [in the day], like at six, seven, or eight because there’s been a bear around’. The fear of bears was also mentioned without reference to a parent: one girl in Grade 4 said she cannot go in her backyard, ‘Because there’s been lots of bears’. Regardless of where the fear stemmed from, wildlife seemed to act as a potential barrier.

Discussion

The purpose of this study was to explore children’s perceptions of the facilitators and barriers of physical activity in rural Northwestern Ontario communities. Rural children identified and provided contextual information on numerous barriers and some facilitators to their physical activity. These facilitators and barriers were grouped into three themes: environment, social environment, and perceptions of safety. The contextual understanding and applied nature of these themes can help create more successful interventions in similar rural areas.

Similar to other research in rural settings, the children mentioned distance as a barrier to being active¹⁶. Friends’ houses, schools, and/or recreation facilities were too far from the children’s houses, meaning they needed transport by parents. This similar finding across rural areas suggests that there is some generalizability from heterogeneous rural contexts^{15,16}. Distance is an accepted part of rural living. To counteract this barrier to physical activity, children should be taught games or activities during school to facilitate their own physical activity when confined to their homes.

Two built environment features that were prominently discussed were skate parks and splash pads. The children mentioned that a skate park would be a ‘cool’ feature as they are common in the closest major city, but all the communities lacked anything resembling a skate park, and local streets are difficult to skateboard on. The other feature that the children mentioned and discussed was the splash pad. Two of the towns recently had these built, and they were the most recent built environment additions in these communities. The older children criticized these facilities and they sometimes suggested that there was nothing age appropriate for them. In a more urban area, a study based on interviews with parents indicated that parents were willing to travel for features such as splash pads³⁵. This information suggests that park design needs to accommodate children of all ages, as differently aged children and parents have different perspectives on what is important in a park.

The problem of declining park usage by age is not isolated to rural areas – other urban studies have found a decrease in park usage in adolescence³⁶. Nevertheless, designing parks for children of all ages is critical in rural areas because these children only have one or two parks in their entire community. If older children feel that such features are 'kiddy', and that space is no longer a recreational opportunity for them, they will hang out in areas that are potentially less conducive to physical activity. Research on older adolescents has found that children placed importance on long, steep slides, absence of graffiti, presence of swings, walking/cycling paths, and BMX tracks and skate bowls³⁷. These features could be explored in this rural area.

Another common environmental feature discussed was the impact of the weather. Because a single moderator conducted all the focus groups, the period for focus groups was almost 6 weeks, starting in late October (mean temperature 15°C (59°F)) and ending in early December (mean temperature -10°C (14°F), with snow covering the ground)³⁸. When examining the focus groups chronologically, a temporal pattern exists – the barriers related to the environment become more pronounced as the seasons change. Some children mentioned that they would get rides rather than walk because of the cold. The subtle difference between active and inactive transportation can impact children's overall physical activity³⁹. In one focus group, a child noted that, in winter, there are no sidewalks because the snow covers them. This finding demonstrates that the weather changes how children interact with their environment. This is an important finding because weather could be acting as a moderator of the relationship between built environment and physical activity. Further research is necessary to understand this complex relationship between the built environment, weather, and physical activity⁴⁰.

The children who participated in this study wanted access to more scheduled, or at least loosely organized, activities. In autumn in these rural areas, there are no community or club-organized physical activity opportunities for children; in the winter months, children can either play on a hockey team, with practice three or four times a week, or participate in a curling program that runs about once a week. Previous research has suggested that after-school programs can be beneficial for increasing children's moderate-to-vigorous activity⁴¹. A potential solution for increasing moderate-to-vigorous physical activity is creating an after-school drop-in program with an adult to help organize different games on some days and free play on others, as children discussed the desire for both structured and unstructured play. This type of program could also help prevent weather-related declines in physical activity as children are given the opportunity to play indoors. In rural areas, other community groups might need to be targeted to take a more active role in promoting physical activity, as most rural areas lack the resources to employ a recreation programmer to run after-school programs.

Research has found that children's social environments are important for physical activity⁴². In this study, children mentioned the social environment at school, specifically discussing teacher-led or organized activities as potential facilitators to physical

activity, and school rules as barriers. In rural areas, the school environment is an important place to understand because children have access to friends, equipment, and other built environment features that they might not have access to during other parts of the day¹⁷. With rural children having more limited access to physical activity facilitators, it is important that factors that influence their school-based physical activity are understood and maximized. However, schools are complex environments with diverse stakeholders, including principals, teachers, educational support staff, parents, and students. Collaborative partnerships between these stakeholders are necessary to create child-friendly physical activity environments in which all stakeholders feel safe and comfortable. One way in which these environments can be achieved is through strong collaborations between student-led school councils that include teachers and principals. Such councils need to discuss ways they can work together to promote physical activity in the school community⁴³.

In all the focus groups, the children discussed perceptions of safety. Previous rural research has discussed this issue, but researchers need to pay close attention to the codes for these themes¹⁶. In the researched area, the fear of wildlife was a factor that prevented children from being active by limiting areas they can explore. This threat is visual – one school had recently installed a fence to keep wild animals out. It is difficult to disentangle the legitimacy of these fears as wild animals do come into the community searching for food, but rarely have they ever attacked a human in this area. This threat has a major implication for rural children as fear can shape their 'mental maps', negatively influencing their independent mobility and environmental competence. Children may avoid playing in certain areas that are perceived as threatening or they have been told are threatening by adults or friends⁴⁴. Understanding where this culture of fear stems from is crucial as it could be combated with wildlife education.

Limitations

One key limitation of this study is that, like other studies, it is context specific. The research team argues that most previous studies offer limited understanding of the determinants of rural children's physical activity because they have largely taken place in urban settings. However, as this article focused on a particular type of rural environment (in Northwestern Ontario), some of the findings may not be relevant to other rural settings, particularly those with higher population densities and in greater proximity to major urban centers. Finally, the terms 'play' and 'active' became conflated as it was easier for some children to understand the former. Future research needs to disentangle these two terms to improve the understanding of each variable.

Conclusion

The findings from this study suggest that physical activity is a complex behaviour that is influenced by many factors, including region-specific variables. Researchers need to continually examine and understand different nuances between regions to create more accurate socioecological models, which can lead to more successful interventions.

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