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Public Perceptions of Sustainable Physical Activity and Active Transportation: A Pilot Qualitative Study in Gävle and Maputo

Gloria Macassa

Department of Public Health and Sports Science, Faculty of Occupational and Health Sciences, University of Gävle, Kungsbacksvägen 47, 80176 Gävle, Sweden; gloria.macassa@hig.se; Tel.: +46-72-4651-343

Abstract: Sustainable physical activity and active transportation are important for achieving sustainable societies as well as for achieving the sustainable development goal of health and wellbeing for all. The main objective of this pilot study was to investigate the general public's perceptions of sustainable physical activity and active transportation in the cities of Gävle (Sweden) and Maputo (Mozambique). Twelve semi-structured asynchronous e-mail interviews were subjected to content analysis. Findings indicated that participants knew what physical activity is and that they related it to general health and wellbeing. However, the majority were not familiar with the meaning of "sustainable physical activity" or "active transportation." Furthermore, they did not know about the relationship between sustainable development and physical activity. The few participants who knew about active transportation said that it could contribute to reducing greenhouse gases. They mentioned barriers to active transportation in their respective cities, however, ranging from laziness (in the case of Gävle) to cultural norms and associations such as linking the use of active transportation to lacking the means to buy a motor vehicle (in Maputo). There is a need to integrate sustainability literacy with the already existing health and public health literacies to provide this knowledge to the general population. To this end, rather than creating new educational programmes for the public, the existing materials can be adjusted to include aspects of sustainability and sustainable health behaviours and lifestyles.

Keywords: sustainable behaviours; sustainable physical activity; active transportation; greenhouses; lay people; public health

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1. Introduction

"Sustainable physical activity" is defined as activities that are conducted "with sufficient duration, intensity, and frequency for promoting health, yet without excessive expenditure of energy for food, transportation, training facilities or equipment" [1]. Sustainable physical activity is related to sustainable development and has a low environmental impact. It has been suggested that sustainable physical activity is culturally and economically acceptable, as well as accessible [1]. Moreover, like regular physical activity (which is defined by the WHO as any bodily movement produced by skeletal muscles that requires energy expenditure) [2], sustainable physical activity helps those practicing it maintain a healthy weight; it improves physical and psychological health and wellbeing, prevents several non-communicable chronic conditions, and reduces premature mortality [3,4]. In recent years, and with the sustainable development agenda goals, there has been an increasing interest in physical activity that simultaneously decreases green gas emissions, which are known to have an influence on the ongoing crisis of climate change [1,5,6]. For instance, Glebova and Desbordes argue that sports need to be considered an important part of a healthy lifestyle as well as a part of the smart development of a city's infrastructure, which includes systems, services and goods that enable practicing sports as well as healthy lifestyle and leisure [7].

Sustainable physical activity is mostly achieved through active transportation, which is defined as all human-powered forms of travel, which includes cycling, walking, skateboarding, canoeing, in-line skating, and skiing [8–11]. Among these, cycling and walking are the most common means of active transportation [12].

Recently, a call for active transportation to be promoted in physical activity guidelines to improve both public and planetary health was published [13]. However, it has been argued that if active transportation is to be added to physical activity guidelines it is important to consider other aspects, such as: (1) multimodality in transportation, which is related to the use of multiple modes of transportation during a trip, such as cycling, walking, public transportation and using shared mobility services (i.e., bike sharing or car sharing); (2) cyclability and walkability, which has to do with the quality of the cycling or walking facilities, including the environment and its ability to support and encourage active transportation and; (3) individuals' capabilities and opportunities to access and ultimately use active transportation modes (i.e., accessibility) [14].

Furthermore, in order to achieve sustainable behaviour change (in this case, sustainable physical activity) through active transportation, a new type of literacy would be needed—an integration between public health (and health) literacy and sustainability literacy that would enable societies to be more informed about active transportation [5]. Ansari and Stibbe define "sustainability literacy" as the "knowledge, skills and mindsets that allow individuals to become deeply committed to building a sustainable future and assisting in making informed and effective decisions to this end" [15]. It is argued that sustainability literacy will be central to individuals, communities, and societies adopting behaviours that will contribute to the triple bottom line of sustainability [15].

Although the general population has knowledge of regular physical activity, there is a scarcity of studies that have investigated what the public knows about the potential links between sustainability and physical activity as well as active transportation. Therefore, to close this knowledge gap, this pilot study aimed to explore the perceptions of the public regarding sustainable physical activity and active transportation, as well as their contribution to health and the wellbeing of society.

2. Materials and Methods

2.1. Study Design

This was an explorative and descriptive pilot qualitative study [16]. Exploratory research has been argued to be preferred when there is a need to uncover the full nature of a little-understood phenomenon [17,18]. Reid-Searl and Happel [19] have suggested that an exploratory qualitative design gives researchers the possibility to explore topics with limited coverage across the literature, thus allowing participants to contribute to the development of new knowledge in the specific area [19]. The present study allowed the exploration of the public's perceptions and understanding of sustainable physical activity and active transportation.

2.2. Setting, Participants

This pilot study was conducted in two cities on two different continents and with different economic, social, and environmental development levels. Gävle city, the capital of the region of Gävleborg, is situated in Sweden, a high-income country in Europe. Historically the city had a concentration of factories, but in recent years it has attracted more services and IT companies [20]. In 2022, the city had a total of 103,337 inhabitants [20]. As a country, Sweden has national recommendation guidelines (also implemented at regional and municipal level) on regular physical activity for health across all ages, in pregnancy, in disability and in chronic disease [21]. In addition, the country has a good infrastructure for leisure physical activity as well as for promotion of physical activity at the workplace [21]. Overall, Sweden has an active enabling environment and active policies on walking and cycling [21]. Maputo, on the other hand, is situated in Mozambique, a low-income country in Sub-Saharan Africa, and is Mozambique's largest city. The city had 1,122,607 inhabitants

in 2018 [22] and is the most developed and multicultural of all cities in the country, with people from other provinces usually converging to it to pursue their studies there and find work [22,23]. The country's official language is Portuguese. The country (including its provinces and cities) has a national policy and a surveillance policy on physical activity for adolescents and adults [24]. However, it has no national policy on walking and cycling [24]. Furthermore, the country's streets are not designed for separate walking and cycling, nor do they provide safe pedestrian and cycling crossing facilities [24].

In the present pilot study, a purposive sample of twelve participants (from the general population) was selected, six in Gävle and six in Maputo (see Table 1). The purposive sampling targeted individuals who had lived in the studied cities for at least five years. This ensured that participants had a good knowledge of the developments in their own cities. A total of twenty participants (ten in each city) were contacted via e-mail, but only twelve participants accepted to participate after receiving information about the study's aims and the possibility to withdraw from the study (i.e., not returning the answers to the questions) at any time without giving any reason.

Table 1. Socio-demographic characteristics of the study's participants in the cities of Gävle and Maputo.

	Gävle (n = 6)	Maputo (n = 6)
Sex		
Male	1	3
Female	5	3
Age (years)		
<29	1	0
30–39	1	1
≥40	4	5
Years in formal education		
<12	1	1
≥12	5	5

2.3. Data Collection

Data were collected through in-depth asynchronous e-mail interviews [25–28]. Similar to the traditional interview methods in which the researcher asks questions to a participant they are facing, e-mail interviews allow interaction; however, the questions are presented all at the same time and participants can answer them at their own pace within the timeline provided to them. The researcher provides a series of open-ended questions that the participants have to answer via email. The participants can ask for clarification regarding a question from the researcher. Likewise, the researcher can ask questions for clarification or to obtain additional information from the participants. Asynchronous e-mail interviewing has been described to offer scheduling advantages and increased access for working adults [29].

The study questions sought to understand the general public's perceptions of sustainable physical activity and active transportation as well as of how they can affect general population health and wellbeing.

An interview guide was developed in English and then translated into Portuguese, Swedish, and back translated to ensure accuracy. The guide was pre-tested in each city prior to the final data collection. The interview guide included questions about the participants' background (i.e., age, sex, and place of residence); knowledge about physical activity, sustainable development, and sustainable physical activity; and active transportation in general (i.e., not related to the participants' own health and wellbeing) (see Table 2).

Participants were informed about the confidentiality and anonymity of the study; and that results would be presented as aggregates. The interviews were conducted during April and June 2023 and participants were given a week to return their questions.

Table 2. Topics of discussion for the interview.

1. Do you know what is meant by physical activity?
2. What do you think when you hear about the term "sustainable development"?
3. Have you heard about a relationship between sustainable development and physical activity?
4. What is your understanding of sustainable physical activity and how it relates to health and wellbeing in general?
5. Can you name advantages of/barriers to sustainable physical activity?
6. Can you explain what "active transportation" means and how it relates to health and wellbeing in general?
7. Can you name advantages of and/or barriers to active transportation?

2.4. Data Analysis

Inductive qualitative content analysis was conducted as described by Elo and Kyngås [30], including three phases (preparation, organizing and reporting). During the preparation phase, all interviews were read several times to reach an understanding of the essential meanings in the text. Thereafter, the text that was related to the study aim was marked and divided into meaning units. These were condensed, coded, and analysed by comparing similarities and differences, and then merged into categories that described the manifest content. This was an iterative process that was guided by the author in agreement with another researcher, to ensure accuracy. The intention of the procedures described above was to best achieve categories reflecting the study aim and the obtained data [30]. Quotes are used below to illustrate the participants' viewpoints reflecting the final categories.

2.5. Ethical Aspects

The research followed the ethical guidelines for research involving humans. Prior to sending the interview questions, the researcher informed the participants in writing about the purpose of the study, and their informed consent was obtained in writing. Furthermore, as previously mentioned, participants were assured of the anonymity and confidentiality of their responses, in accordance with the bioethical principles of the Helsinki Declaration [31]. The transcribed data were handled and stored according to the EU General Data Protection Regulation (GDPR) principles of Personal Data Protection and Digital Rights [32]. Moreover, the interview questions never asked the participants about their own physical activity or active transportation behaviour and how it affected their own health and wellbeing. Rather, the questions asked about the participants' knowledge of the meanings of "sustainable physical activity" and "active transportation" in general, as well as their understanding of the advantages of (and barriers to) sustainable physical activity and active transportation use for society's health and wellbeing.

3. Results

The results of this study can be summarized in three main categories capturing the participants' perceptions: (1) physical activity as a bodily movement; (2) lack of knowledge about sustainable physical activity, and (3) active transportation as a means of travel between places.

3.1. Physical Activity as a Bodily Movement

Most of the participants in both cities knew the term "physical activity". They related physical activity to body movement aimed to relax and release daily stresses from work (or other) problems. They also associated physical activity with leisure time and wellbeing.

> *I've heard about physical activity; it is when a person moves the body, it brings relaxation when stressed from work. Also, it can be good to do physical activity outside work. (participant B, Gävle).*

In Maputo, a participant answered, "*Physical activity, to me, is about movement involving muscles movement, which promotes wellbeing*". *(participant G, Maputo)*.

3.2. Lack of Knowledge about Sustainable Physical Activity

In both cities, the participants had an idea of what is meant by "sustainable development," namely, that it is related to the concepts of current and future generations. However, the majority had never heard about sustainable physical activities or about a relation between sustainable development and physical activity. One participant in Gävle reflected: "*Yes, sustainable development means an environment in which people feel safe and which respects climate change . . . But I've never heard of sustainable physical activity, not even in my school . . ." (participant A, Gävle).*

Another participant who did not know the term "sustainable physical activity" gave thoughts about sustainable development:

> *Well, that means that all practices we have to keep us alive and in good health both physically and mentally, also considering future generations.—Hm, I don't know . . . I don't see a relation with physical activity. I have not heard of such a relationship. (participant J, Maputo).*

Participants also said that in their city, people were not aware of a connection between sustainable development and physical activity. However, one participant in Gävle explained:

> *I assume that if physical activity is good for society, sustainable physical activity should be too. Sustainable physical activity can reduce chronic diseases like diabetes, and so on, in the society. It depends on where you live. Like, in Sweden, physical activity is much more practiced by people. One can say that . . . yes. It influences us to conserve our resources as well as have better health. (participant C, Gävle).*

Another participant said "*I don't know anything about sustainable physical activity*". . . *I never heard of it. I suppose, is related to the environment and sustainable development; people do not know here, I never heard people talking about that. . .(participant L, Maputo).*

The majority of participants mentioned that society probably knew very little about sustainable physical activity, which they saw as the main barrier to its implementation in their cities. For instance, a participant in Gävle stated, *"Barriers that I could see are, firstly, making the public understand what sustainable physical activity means. It might be difficult to see the advantage and disadvantage if the notion is not well understood by the people". (participant E, Gävle).*

3.3. Active Transportation as a Means of Travel between Places

The participants associated active transportation with travelling from one place to another, especially when places were located at large distances from one another. However, very few participants associated the term with modes of transport that reduced green gas emissions (i.e., walking, running, and cycling).

> *Yes. I've heard of active transportation from one of my teachers when I was doing my Masters. Like walking, biking; it can have a positive influence in society, especially on environmental sustainability. But I think that people are lazy and don't make many efforts when it comes to active transportation . . . that can be a big barrier to making this a reality. (participant C, Gävle).*

Another participant said, *because of the high level of poverty in my city [Maputo], active transportation can be used as an additional form of sustenance to improve people's health through physical activity. But there is a problem . . . social and cultural norms associated with low education and poverty may attribute negative connotation to active transportation, which can be seen as lacking the financial means for transportation [to have a car]. (participant H, Maputo).*

4. Discussion

The aim of this study was to explore people's perception of and knowledge about sustainable physical activity and active transportation in two cities situated on two different continents. According to the participants, physical activity per se deals with body

movement to release stress from work and enjoy leisure, which could benefit health and wellbeing. This agrees with the results of previous studies. For instance, in a study on the dichotomy of lay people and health professionals' perception of physical activity as a barrier for activity education and promotion in primary health care, Cianciara and colleagues found that lay people appreciated physical activity as an important and controllable health determinant with psychosocial benefits. This contrasted with health professionals who associated physical activity with disease risk reduction [33]. The same study reports that lay persons perceptions of barriers to physical activity were associated with what the authors named "real-life factors" such as having sportswear, access to sport facilities, and job opportunities [33].

In relation to the connection between sustainable development and physical activity, although many participants knew the meaning of "sustainable development" and that it relates to creating an environment where current and future generations can thrive, they did not have knowledge about sustainable physical activity or about its advantages and disadvantages to society. Furthermore, most of the participants were not aware of the benefits of sustainable physical activity for climate change and reduction of greenhouse gas emissions. The above findings are in line with the argument that sustainable physical activity needs to be introduced in society through sustainability literacy [5]. By "sustainability literacy" is meant the knowledge, skills and mindsets that allow individuals to become deeply committed to building a sustainable future and assisting in making informed and effective decisions to that end. This literacy has been absent, especially in health promotion, which is a prevention pillar of public health [1,5]. Furthermore, sustainability literacy can be used as a complement to physical literacy, which is defined as a "disposition to capitalize on our human embodied capability, wherein the individual has: the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for maintaining purposeful physical pursuits/activities throughout the life course" [34–36].

Regarding active transportation, the participants understood this to mean transportation that allows travel from one place to another, but some went further to talk about it being related to walking, running, and bicycling. In addition, one participant associated active transportation with a reduction of greenhouse gases and climate change. However, participants in both cities also pointed out that there was a lack of societal knowledge regarding the term "active transportation." According to the literature, active transportation can reduce greenhouse gas emissions as well as improve physical (preventing chronic diseases) and psychological (reducing stress, anxiety, and depression, and increasing happiness, self-esteem, and cognitive function) health outcomes, increase safety, and save money [37]. Furthermore, active transportation simultaneously reduces carbon dioxide emissions and traffic congestion while increasing levels of physical activity and social interaction [38], thus contributing to sustainable development [39].

The participants in both cities talked about the barriers to active transportation in their cities. In Gävle, one participant saw people's laziness as a potential barrier to using active transportation, while a participant in Maputo suggested that social and cultural norms associated with low education and poverty were likely to give a negative connotation to active transportation as this would be linked with lacking the financial means to have a car.

Those who argue that when designing active transportation policies (i.e., planning cycling routes), it is important to consider cultural practices, which may vary across places [39]. And as Gebova and Desbordes suggest, the availability of services and goods that enable the practice of sport-related activities that impact people's lifestyles needs to be part of the smart development of any city [7].

In developed countries, active transportation is mostly a choice, thus resonating with the notion that is related to people's decisions to embrace this type of transportation [40]. By contrast, in developing (low- and middle-income) countries, active transportation is more of a necessity, and evidence indicates that it is more commonly practiced in rural than in urban areas [41].

The results of this study have several implications for public health, and specifically health promotion within the context of sustainable development. Overall, participants in the studied cities had similar perceptions that there is a general lack of knowledge about both sustainable physical activity and active transportation. This reflects the global lack of integration between public health promotion strategies and the sustainable development goals, specifically goal 3 (health for all at all ages). It also reflects the absence of literacy targeting so-called "sustainable health behaviours" (which include sustainable physical activity and active transportation) [42]. Therefore, from a public health policy perspective, there is a need to integrate sustainability literacy with the already existing health and public health literacies to provide new knowledge across the general population. For instance, instead of creating new educational programmes, the already existing materials for health education could just be modified to include aspects of sustainability and, in this specific case, sustainable behaviours such as physical activity through active transportation. Moreover, public health researchers need to embrace interdisciplinary and transdisciplinary endeavours where they can collaborate with researchers from other fields (i.e., urban planners, transportation researchers and environmental science researchers). This will enable them to better understand which pathways underly the relationship between sustainable physical activity, active transportation and health and wellbeing in different social, economic, environmental, and cultural contexts. For instance, in an empirical study of the health impacts of active transportation (walking and bicycling) in six European cities (Barcelona, Basel, Copenhagen, Paris, Prague and Warsaw), Rojas-Rueda and colleagues concluded that policies aimed at promoting active transportation can produce health benefits. However, they added that these would depend on a city's characteristics and that the collaboration between health practitioners, transport specialists and urban planners was of paramount importance to be able to introduce a health perspective into transport policies and promote active transportation [43].

Strengths and Limitations

This study's main strength is its explorative nature regarding a subject that has been less studied from a public health/health promotion perspective in the two cities. In addition, the study interviewed the public regarding their perceptions. The study did not explore the perceptions of specialists who are already knowledgeable about issues related to sustainable physical activity and active transportation. In addition, this was a pilot study that was intended to be the first step for a much larger mixed-methods study about sustainable physical activity (and active transportation) across several cities. For instance, it is argued that pilot studies help to detect any potential flaws or issues during the early stage of a research project to identify potential problems and areas that may require adjustments or changes, especially with the research instruments (i.e., interview guide) and respondents, before embarking on the actual research [44–48]. This pilot study was conducted on a relatively unexplored topic in the two included cities. Nevertheless, the study has limitations. Firstly, the study included only a small sample of participants (a total of twelve, six per city). This does not allow us to generalize the results to the general population of the two cities. Furthermore, the study used asynchronous e-mail interviewing. Although this is considered a cost-effective, important, and accurate method, which has gained importance especially since the COVID-19 pandemic [49], this type of interviewing has some drawbacks that should be considered. Firstly, delay in reply by participants can affect data collection. Secondly, problems may arise when participants experience a poor internet connection or other technological difficulties. Thirdly, asynchronous e-mail interviewing does not capture non-verbal and paralinguistic cues [2,25]. Despite the above potential limitations, it is unlikely that they will have affected the results of this study. All participants returned their answers within the allocated time, and their responses to the interview questions were complete.

5. Conclusions

This pilot study found that the participants knew the concept of physical activity and that physical activity is related to health and wellbeing. However, the majority were not familiar with the concepts of "sustainable physical activity" and "active transportation," and most did not know about the relationship between sustainable development and physical activity. The few participants who knew about active transportation, though indicating that it could contribute to reducing greenhouse gases, mentioned barriers to active transportation in their city. However, results need to be interpreted with caution due to the small sample size. Nevertheless, the pilot study findings suggest that there, is a need to integrate sustainability literacy with the already existing health and public health literacies to provide new knowledge across the general population. To this end, instead of creating new educational programmes for the public, the existing health education materials can be extended to accommodate aspects of sustainability and sustainable health behaviours and lifestyles. Future qualitative research is needed using larger samples in the studied cities (or other cities) as well as quantitative studies to gather information on the general public knowledge, attitudes, and practices (KAP studies) regarding sustainable physical activity and active transportation.

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Institutional Review Board Statement: All study participants consented to participate in the study, and procedures used were approved by the Swedish Ethics Committee (approval number 2020-05278). Furthermore, participants were never asked about their own sustainable physical activity or active transportation behaviour as well as their own health or wellbeing. Instead, participants were asked only about their perceptions (in general) of the meanings of sustainable development, sustainable physical activity, and active transportation and health and wellbeing for society in general.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: This is a multi-country explorative study and other cities are currently collecting data using the same interview guide to conduct country-based studies, therefore the interview guide cannot be published as supplement.

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