

RESEARCH

Open Access



Perceived barriers to physical activity behaviour among patients with diabetes and hypertension in Kosovo: a qualitative study

Ariana Bytyci Katanolli^{1,2}, Nicole Probst-Hensch^{1,2}, Katrina Ann Obas^{1,2}, Jana Gerold^{2,3}, Manfred Zahorka^{2,3}, Naim Jerliu^{4,5}, Qamile Ramadani⁶, Nicu Fota⁶ and Sonja Merten^{1,2*}

Abstract

Background: In a cohort of primary health care users across Kosovo (KOSCO cohort), high rates and poor control of diabetes and hypertension were observed. These conditions can be prevented and better controlled by adapting to a healthy lifestyle. Physical activity is an important target, as inactivity and related obesity were very prevalent in the KOSCO cohort. This qualitative study aims to identify individual and structural barriers to physical activity perceived by patients with diabetes and/or hypertension so as to inform health care providers and policy-makers in Kosovo on strategies for promoting physical activity.

Methods: Interviews were conducted from July to October 2020 with 26 public primary health care users from five municipalities of Kosovo (Mitrovica, Vushtrri, Fushe Kosova, Gjakova, and Malisheva). The qualitative study was nested into the KOSCO cohort. KOSCO was implemented in 2019 and recruited consecutive patients visiting the public primary health care centres in these municipalities. Participants of this qualitative sub-study were selected if they had a doctor's diagnosis of diabetes and/or hypertension. The interview guide consisted of questions related to physical activity barriers these patients are facing, despite having received motivational counselling sessions in primary health-care centres. Data were analysed using a framework methodology.

Results: Three main themes moderating physical activity behaviour were identified: 1) neighbourhood built environment, 2) health-related problems, and 3) social support. The barriers to physical activity related to the first theme were structural features of the neighbourhoods such as: crowded sidewalks, lack of green spaces, lack of proper lighting in public spaces, as well as dense traffic. In regards to the second theme, the main health reasons for study participants to delay physical activity were related to: physical discomfort as well as stress, worry, and lack of energy. An additional barrier to exercise was lack of social support specifically from friends.

Conclusion: The study identifies structural and individual targets for integrated and inter-sectoral physical activity promotion efforts.

Keywords: Barriers, Physical activity, Diabetes, Hypertension, Kosovo

Introduction

Non-communicable Diseases (NCDs) are becoming increasingly more prevalent in low- and middle-income countries (LMICs). The burden of NCDs is different between LMICs and high-income countries (HICs) considering the drivers like promotion of healthier lifestyles

*Correspondence: sonja.merten@swisstph.ch

¹ Department of Epidemiology and Public Health, Swiss Tropical and Public Health Institute, Allschwil, Switzerland

Full list of author information is available at the end of the article



© The Author(s) 2022. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

as well as providing relevant government policies [1]. A systematic review of NCD policy in LMICs demonstrated that countries are not well prepared to address the NCD epidemic. National policies to reduce NCDs were developed by only a few LMICs, and physical activity was rarely included in these policies [2].

Data from the Global Burden of Disease (GBD) study identified physical inactivity as a risk factor which accounted for approximately 1.3 million deaths (17 deaths per 100,000 inhabitants) in individuals aged 25 years and over [3]. There is a plethora of evidence showing that physical activity is protective for several chronic diseases. People with type 2 diabetes have the greatest benefit, since physical activity reduces the risk of type 2 diabetes by 33–50% [4].

The increasing prevalence of physical inactivity in LMICs [5] has been identified as an important driver of the increase in age-standardized diabetes incidence and disability-adjusted life years (DALYs) in LMICs over the past decade [6]. Physical inactivity is an important risk factor in the aetiology of cardiovascular diseases and diabetes [7], and a target for supporting the control of glycaemia and blood pressure in patients with diabetes and hypertension [8, 9]. In addition, previous research has shown that usually individuals with diabetes undertake less physical activity than individuals without diabetes [10]. Thus, it is essential to understand what barriers to physical activity patients with diabetes and hypertension face.

Some of the reported barriers to physical activity more evident in the cities are related to urbanization, more specifically built environment, overcrowding, sedentary occupation as well as safety issues, which contribute towards a sedentary lifestyle [11]. In addition, individuals with chronic conditions and multi-morbidity have additional barriers due to higher levels of depression, mobility difficulties or pain, or due to limited respiratory function or cardiovascular fitness, among others [12].

In order to inform public health policy and design efficient interventions that aim to increase the levels of physical activity in specific populations in LMICs, it is important to identify country- and context-specific obstacles [13]. Barriers are not restricted to the level of individual behaviour. In recent years, the role of the structural built environment has been a focus in understanding the causes of physical activity behaviour [14]. The built environment consists of designed spaces that support activities, the infrastructure for transportation systems, such as roads, sidewalks, and bike paths as well as urban design [15]. Walkability, green spaces, as well as perceived safety or aesthetics of the residential neighbourhood have all been associated with physical activity levels in different domains (e.g. cycling; leisure walking)

[16]. To create an environment that enables people to live healthier lifestyles, the interaction and integration of factors within and across all levels are addressed through individual, interpersonal, community, organizational and governmental levels [17]. Furthermore, another study highlighted the important role of health care professionals in providing social-environmental support for people with type 2 diabetes [18].

In Kosovo, where the Health Information System (HIS) is under development [19], the country needs reliable data for efficient policy-making toward NCD prevention and control. Therefore the objectives of this study are:

- a) To identify individual and structural barriers to physical activity perceived by patients with diabetes and hypertension in Kosovo.
- b) To propose strategies for addressing physical activity barriers in patients with diabetes and hypertension in Kosovo.

Materials and methods

Study setting

The study was conducted in the primary health care (PHC) centres in five municipalities of Kosovo (Mitrovica, Vushtrri, Fushe Kosova, Gjakova and Malisheva), where motivational counselling sessions on lifestyle behaviours including physical activity promotion are offered. The counselling sessions were introduced through the Accessible Quality Healthcare Project (AQH) which offered several training sessions on motivational interviewing to nurses working in PHC. This approach of delivering counselling sessions by PHC nurses based on motivational interviewing approach is a way of providing one-on-one sessions to patients through empathic listening, eliciting self-motivating statements, and responding to resistance [20]. Motivational counselling based on motivational interviewing techniques for health behaviour change was shown to be effective in physical activity self-management in people with chronic conditions [21] such as type 2 diabetes [22] and hypertension [23].

AQH is a project of the Swiss Agency for Development and Cooperation (SDC), implemented by the Swiss Tropical and Public Health Institute (Swiss TPH). Its aim is to work with local stakeholders to improve the quality of PHC in the public health sector, with a focus on the prevention of NCDs, and in particular diabetes and hypertension. The reason for focusing on those two conditions is that motivational counselling is delivered to tackle physical inactivity, smoking, unhealthy diet and alcohol consumption which are common risk factors for diabetes and hypertension. To evaluate the performance of certain areas of the AQH project, as for example the

counselling sessions, the Kosovo Non-Communicable Disease Cohort (KOSCO) was designed. KOSCO was initiated in 2019 by recruiting consecutive PHC patients aged 40 years or older for interview and health assessment, as described elsewhere [24].

Study design

With an embedded design, a qualitative descriptive study was nested in the KOSCO study, applying a framework approach to data analysis.

Study population

The participants were identified through purposive sampling. All patients who received at least one motivational counseling session and who had a diagnosis of diabetes and/or hypertension were considered eligible for this qualitative study. In all 5 Municipalities, we selected the first eligible participant from the KOSCO database. We then selected the next person with matching the criteria and chronologically advanced through the database list. Interviews started simultaneously in all 5 Municipalities. Initially, we intended to do 30 interviews but after the 26th interview, we decided to stop as no new themes were emerging.

Data collection

In-depth interviews were conducted with 26 KOSCO participants between July and October 2020. The recruitment of study participants was stopped once data saturation [25] was achieved. A semi-structured interview guide was developed in English and translated into the Albanian language for pilot-testing and adaptation. The interview guide consisted of questions related to specific barriers to physical activity behaviour that patients may face after having received motivational counselling sessions. The questions also focused on healthy nutrition, non-smoking, obesity prevention, and physical inactivity (Supplementary file 1: Interview Guide). The first author (ABK), a female researcher with a background in public health, conducted the interviews in the Albanian language. ABK was referred to a published guide "Interviewing as qualitative research" [26] to conduct the interviews based on scientific methodology. Due to the COVID-19 pandemic, telephone instead of in-person interviews were conducted in order to avoid participants' risk of potential infection. The interviews lasted between 30 and 40 min, were audio-recorded through Open Data Kit (ODK) software and uploaded to a secure server at Swiss TPH. The interviews were transcribed verbatim in Albanian and the first ten transcripts were translated into the English language to share with the senior author (SM).

Data analysis

Framework analysis as outlined by Gale et al. [27] was used to extract themes and sub-themes from verbatim-transcribed interviews. Data collection and analysis took place iteratively. Initial open coding was conducted by the first author fluent in Albanian. The senior author read the 10 translated interviews and reviewed the initial coding, and together the first author and senior author agreed on a working analytical framework after coding the first ten transcripts and grouping the codes into categories. The remaining transcripts were indexed by applying and expanding the initially developed codes and categories; additional codes evolved after a detailed re-reading of all transcripts. This way, themes related to perceived barriers toward physical activity in patients with diabetes and hypertension were retrieved. Previous research has shown that the analysis of qualitative data could be used as an effective way to inform policy decision-making by taking into account patient experiences [28]. The involvement of patients can also guide healthcare priorities, which may improve community health [29].

Ethical considerations

Ethical approvals for the study were obtained from Ethics Committee Northwest and Central Switzerland (Ref. 2018–00994) and the Kosovo Doctors Chamber (Ref. 11/2019). Prior to data collection, verbal informed consent was obtained before the phone interviews, whereas after COVID-19 lockdown measures were released, written informed consent forms were obtained from all the participants that were interviewed.

Results

Description of study participants

Table 1 shows socio-demographic characteristics of the interviewed participants. Participants were mainly from urban areas, and there was a similar distribution of men and women. The mean age was 57 and the majority were married. In regards to education, the majority have completed high school, and there was no significant difference in the educational level between men and women. Concerning employment, out of 26 participants, only 9 were employed, 4 participants were in retirement age (65 years or older), and 13 participants were not employed. Eleven study participants self-assessed to have a moderate socio-economic status (SES), 8 reported to have good SES, and 7 stated to have poor SES.

Table 2 summarizes the sub-themes identified in each main theme. Qualitative findings are presented based on emerging themes and sub-themes from in-depth interviews with study participants. The main themes related

Table 1 Socio-demographic characteristics of interviewed participants by municipality ($n = 26$)

Socio-demographic characteristics	
Municipality	
Mitrovica	5
Vushtrri	6
Fushe Kosova	5
Gjakova	5
Malisheva	5
Residence	
Urban	16
Rural	10
Age [years]	
Mean (SD)	57 (5.9)
Range	41–66
Sex	
Men	14
Women	12
Marital status	
Married	24
Widowed	2
Education	
Primary school	9
High school	16
University degree	1
Employment status	
Not in employment	13
Retirement age	4
Employed	9
Socio-economic status (SES)	
Good	8
Moderate	11
Poor	7

Table 2 Main themes and sub-themes arising from transcript analysis

Main themes	Sub-themes
Neighbourhood built environment	Neighbourhood infrastructure Lack of green spaces Dense traffic
Health-related problems	Physical discomfort and pain Lack of energy, stress, and worry
Social support	Lack of support from friends

to barriers for physical activity were: neighbourhood built environment, health-related problems, and social support.

Theme 1: Neighbourhood built environment

Study participants expressed that neighbourhood built environment was one of the main reasons which limited them to be physically active. Issues were related to the road infrastructure, lack of green spaces, and dense traffic in the neighbourhoods.

a) Neighbourhood infrastructure

Since study participants were affected by diabetes and/or hypertension, the first choice of physical exercise reported by these study participants was walking in their immediate neighbourhood. Most participants described various barriers as pedestrians they were facing when they went walking. Crowded sidewalks in the neighbourhoods was one of the main concerns perceived by study participants that prevented them to be engaged in exercise such as walking.

“Well it’s a problem, you don’t have places where to walk since there are no free sidewalks and because there are lots of cars that park on sidewalks and they are usually not free” (55 years old, male, Mitrovica).

Mainly, the sidewalks were either crowded with cars or they were not properly maintained:

“When I want to go to walk in my neighbourhood it’s not good because on some roads the sidewalks are cracked ... and you can’t walk freely, that’s why I have to go somewhere far in the mountains during the day, and I need more time for that” (59 years old, male, Malisheva).

The lack of proper street lighting was another issue for individuals that wanted to walk after working hours, which required them to go further away to exercise:

“In the area where I live we don’t have proper lights, and I can’t go after work to walk. They also said that they will make a walking trail but still, they didn’t do it. But during weekends I try to go with the family somewhere further away from where we live and we can all walk around and play soccer” (55 years old, male, Mitrovica).

These respondents also mentioned the inconvenience of having to go further away from home to exercise due to poorly maintained infrastructure. Such a thing required more time and effort, and physical activity was likely constrained to the weekends. To be engaged in physical activity during the week was especially challenging for individuals who work since they would need to make time when there is still daylight outside.

b) Lack of green spaces

Another identified barrier was the lack of green spaces close to the neighbourhoods; participants have to walk a long time until they would arrive at the parks/green areas or they would need to take their cars to go for a walk or do exercise.

“..... there is a problem to go out and walk in the neighbourhoods as we don't have a park close by. We usually go away from where we live to find more quiet and green areas, which is far away and we can't walk there, so we have to take our car” (61 year old, male, Vushtrri).

The lack of green spaces and parks close to neighbourhoods was also highlighted by participants with families who would like to have playgrounds for children and at the same time areas for playing or walking together.

“Where I live in my neighbourhood there is no park or place for children to play. We need somewhere nice to go out with our families to play or to walk together. I am with diabetes and it is very difficult for me to do what my doctor said, like to go to walk, it is not easy when there is no park close to where you live” (50 year old, female, Malisheva).

c) Dense traffic

In addition to constrained space for pedestrians, dense traffic further inhibited physical activity in people's neighbourhoods. First, due to high traffic flow, walking was not safe in some neighbourhoods. Second, the overcrowded sidewalks with parked cars obstructed these patients from walking freely in their communities.

“Well I have a place to walk here in Shupkocv, it's half an hour away and there are no cars there. But in my neighbourhood where I live it's dangerous to walk, they drive very bad and people need to be really careful, also they park everywhere and there is no free space for us who want to walk” (54 year old, male, Mitrovica).

Theme 2: health-related problems

The second theme that emerged was related to health problems due to diabetes and hypertension. Most of the participants reported that one of the main reasons why they did not exercise was that they had some sort of health-related issue. Two sub-themes were identified: physical discomfort and pain; as well as lack of energy, stress and worry.

a) Physical discomfort and pain

Physical discomfort was reported to cause difficulties to begin and do any kind of exercise, such as numbed feet and back problems.

“I sometimes have problems with my feet and they hurt me, and sometimes can't go to walk because of that” (59 year old, male, Malisheve).

Some participants did not even walk or do any other type of exercise because they were afraid that exercise would aggravate their health problems.

“I walk slowly, but to do exercises I can't because I have a problem with the heart, I have diabetes and also my back hurts, so I just do something light. Sometimes my feet get numb and because of these health problems I can't walk or do any exercise” (54 year old, female, Vushtrri).

Furthermore, an important point outlined by study participants was that they were not knowledgeable about the types of exercises they could perform due to their health conditions. One participant stated that they are concerned and expressed fear that they could hurt themselves if they would exercise without somebody else's help.

“I have a lot of back pain, and try to exercise at home but I only do it sometimes, I don't know if I am allowed to do exercises alone without somebody telling me what to do....I am scared that my back will hurt more” (64 year old, female, Gjakova).

A recurring problem for several participants seemed to be not knowing what type of exercises they could do without compromising their particular health condition or triggering more pain.

b) Lack of energy, stress and worry

Several participants outlined the problems related to lack of energy, stress and other worries, which prevented them from making the move to exercise. Some participants mentioned that even going outside for a walk was not enjoyable for them, and preferred to stay inside their houses.

“I am very stressed and I can't go to walk and do anything, I don't like it, I just stay inside” (52 year old, male, Malisheve).

Low levels of energy were specifically demotivating in regards to physical exercise.

“Sometimes I have low energy and don't feel like going to do exercise. Some days I have no energy at

all and some days it gets better” (59 year old, female, Fushe Kosova).

Another participant mentioned worries related to family issues which influence the decision to start exercising. The aspects of stress, worry, hopelessness, and lack of energy could be linked to mental health problems, which these participants might have but are not aware of.

“When I go out to walk I get tired very fast, I don’t have a lot of energy and I don’t enjoy it as much because I think about all the things. For example, my son is not working, my daughter has finished only her high school, we did not have the money to send her to finish her university, and I think about all of these things” (65 year old, female, Gjakova).

Theme 3: social support

The study findings show that social support has a role in motivating the study participants to exercise. The main support mentioned by participants was the importance of their peers to do activities together and how there is a lack of engagement with them for physical activity.

Lack of social support from friends

Some participants expressed that lack of continuous support and contact with friends to engage in physical activity was another barrier to physical activity. It was stated that participants would mainly go out with friends to socialize or to drink coffee, but not to exercise.

“My friends can’t help me for exercising. When we meet we only go to drink coffee and get together for socializing. Probably to go together with other people I would go and exercise more” (54 year old, male, Mitrovice).

Study participants reflected that changes they do specifically for physical activity behaviours are initiated by themselves and/or get help from family members, but friends were not part of it. Also, participants noted that they would prefer to exercise with a friend since it could motivate them.

“Friends do not have time to help me, sometimes my family does help me, but it would be nice to go and walk with a friend or to go and exercise together with a group. By myself I can’t go” (56 year old, female, Mitrovice).

Furthermore, it was outlined that some participants do not have social interactions and would actually prefer to go walking with other people.

“I don’t really have that many friends. I mainly stay by myself, maybe if there would be someone else to go

out with I can go out and walk together with them. It is better when there are more people you do everything easier” (64 year old, female, Gjakova).

Discussion

This study investigated the perceived barriers to physical activity behaviour in patients with diabetes and hypertension. Even though these patients had received one-on-one motivational counselling sessions, several structural and individual barriers prevent these patients from being physically active.

The first derived theme from our study is related to the neighbourhood built environment, which encompasses structural barriers to physical activity. Many structural aspects in the neighbourhoods, such as lack of proper lighting, crowded sidewalks, lack of green spaces, and dense traffic were mentioned by the study participants. This is in line with previous research, which equally highlighted the negative effect of poor infrastructure, such as irregular roads and pavements [30], neighbourhood insecurity [31], or the lack of recreational facilities on physical activity of patients with type 2 diabetes [32]. A higher neighbourhood walkability supports physical activity also in overweight and obese adults with metabolic syndrome [33]. Global review and meta-analysis further found that neighbourhood walkability and access to green space is associated with a reduced risk/prevalence of type 2 diabetes, thus also playing a key role in primary prevention of this disease [34]. A qualitative systematic review equally confirmed the importance of access to recreational facilities, green open spaces, and rest areas as the most relevant environmental factors enabling older adults to be physically active [35].

The second emerging theme of perceived barriers to physical activity in our study was health-related problems, which are individual barriers to physical activity. Study participants reported that the main health-related reasons for not exercising were physical discomfort, pain, stress as well as lack of energy, and other worries related to mental health problems. Our results confirm findings from an earlier study that identified pain, poor health, depression, and tiredness as common internal barriers to exercise among persons with type 2 diabetes or persons at high risk for diabetes [36]. Fatigue is also considered as a barrier for diabetes self-management [37] which influences levels of physical activity in these patients. Pain and physical discomfort as outlined by our study participants were additional individually perceived barriers to physical activity. These findings are consistent with the literature on barriers to physical activity in adults with type 2 diabetes mellitus such as muscle and joint pain [38, 39], physical discomfort and tiredness, [40] and fear of

injury [41]. Likewise, in people with obesity, barriers to physical activity that were established in previous studies included pain or physical discomfort, low capability of self-management, lack of time, and fear of injuries [42, 43]. For the special group of adults with morbid obesity, a qualitative systematic review on experiences with physical activity interventions highlighted the importance of addressing experiences of suffering and well-being, the capability of doing physical exercise, and the dimension of belonging with others, when intervening. The experiences of suffering or well-being during physical activity affected the identity of these individuals, which could be either positive or negative; furthermore the authors point to the relevance of a language of dignity when promoting change [44]. Another qualitative meta-ethnography which looked at ageing as a life phase with its own challenges, equally assigned physical activity an important role in helping to regain feelings of purpose and self-esteem, and having a positive effect on identity [45]. Physical inactivity has an effect in the development of comorbidities and is associated with increased mortality [46]. Our study participants reported that health-related problems, as well as neighborhood infrastructure such as lighting, cracked and congested pavements, were barriers to physical activity. Considering the present study's results, it would be reasonable to expect that walking on pavements that are not well maintained or easily accessible might be even more difficult for people experiencing health problems such as pain.

The third theme focused on the importance of social support; as our study participants reported a lack of social support specifically from friends as an important individual barrier to physical activity. Several study participants outlined that during the times they exercised, they would do it by themselves, but if they would go with a friend, they would probably exercise more. Previous research already pointed to the importance of social support for sustainable behaviour change. Among middle-aged and older adults, social influences are important facilitators of physical activity [47]. It was shown that if middle-aged and older adults exercised alone, physical activity was discontinued over time; therefore, exercising alone is an independent risk factor for physical inactivity [48]. Low social support was also associated with low physical activity among patients with type 2 diabetes [49], and social support from friends was less common compared to that from family members [50]. In the same line, our study participants mentioned that they had support from family to initiate their physical activity behaviour but there was a lack of support from friends. Considering that family ties are strong in the Kosovo social environment, it is expected to have strong family support, but this may not replace a strong social network of friends.

Indeed, the importance of social support cannot be overstated. Low social support also impacts the risk of chronic disease through pathways other than physical activity. For example, low social support was an important factor in the development of type 2 diabetes: participants who perceive themselves as having little social support had significantly poorer blood glucose control in stressful situations [51].

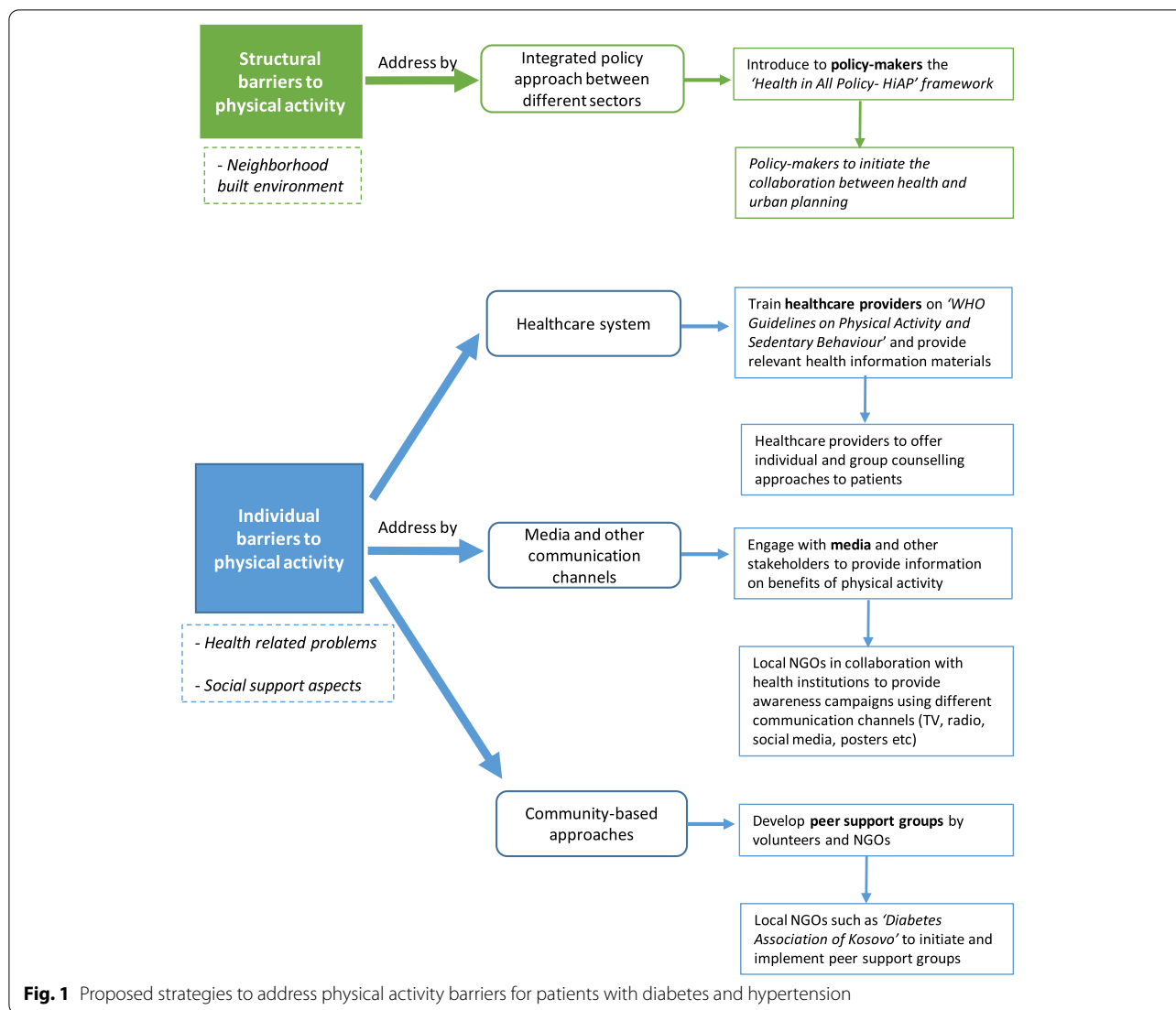
Proposed strategies to address physical activity barriers

Based on scientific literature and referring to the study findings, we report and explain trans-sectoral strategies that might be found useful to address structural and individual barriers in order to improve physical activity among patients with diabetes and hypertension in Kosovo. An integrated policy approach between different sectors in line with the Health in All Policies (HiAP) framework by the World Health Organization [52] could best address structural barriers such as the neighbourhood built environment. As a complement, individual and group counselling approaches through the health-care system could best tackle individual barriers such as health-related problems. In addition, media and other communication channels, as well as community-based approaches play a role in addressing social support aspects. Figure 1 illustrates the ways how perceived barriers to physical activity among these patients could be addressed.

a) Implications for urban planning

As outlined in the HiAP framework, physical activity behavior for communities could be facilitated by using a collaborative trans-sectoral approach. The HiAP framework takes into account the health implications of public policies and decisions in order to avoid negative health impacts [53]. In the context of urban policies to promote public health interventions, considering the HiAP framework is key to local decision-making processes [54]. Additionally, it must be considered how the already built environment plays a role in modifying or worsening health inequities [55].

The coordination between health and urban planning was shown to be important in improving the health of populations through the Healthy Urban Planning Initiative, where the importance of urban planning for health was recognized by WHO [56]. The design of urban environments is likely to contribute significantly to physical activity in general [57] and for patients with type 2 diabetes in particular [34]. Interventions that were designed to influence active transport equally showed a high impact on physical activity [58]. Yet, more evidence is still needed specifically on the influence of urban space on physical activity in specific patient groups.



b) Implications for healthcare providers

Study participants described health-related problems as an important aspect that hindered their physical activity behaviour. This is in line with previous research highlighting the importance of physical co-morbidities and related cognitive problems, sleep/energy problems, or depression, which are all known barriers to physical activity [12]. Our findings further found that lack of energy was a barrier to physical activity for patients with diabetes and hypertension. Furthermore, study participants expressed fears that they could injure themselves since they did not know what kind of exercise they could do in view of their health condition.

First, in order to improve the practice of physical activity among patients with diabetes and hypertension, it is important for healthcare providers to offer tailored information on types of exercises that these patients can

perform regardless of their health condition, and to provide advice on how best to overcome low energy levels. By receiving respective training, healthcare providers will have greater confidence in discussing physical activity and exercise with patients, as well as give tailored information to patients [59]. According to 'WHO Guidelines on Physical Activity and Sedentary Behaviour' for adults living with chronic conditions, physical activity can be undertaken as part of recreation and leisure (games, play, sports, or planned exercise), transportation (walking, cycling), as well as work or household chores [60]. Second, it is suggested for healthcare providers to offer counselling on physical activity that patients with chronic diseases are encouraged to do according to WHO guidelines. In order to reach as many healthcare providers as possible and train them to be competent in offering counselling on physical activity, an online platform can

be used to improve their knowledge. The Cambridge Diabetes Education Program, an online platform tested among healthcare providers in Australia, showed that the addition of online education increased the training uptake among nursing staff [61]. An additional barrier which could be addressed by healthcare providers is the lack of social support for involvement in physical activity. Healthcare providers within PHC centres can organize group physical activity sessions and set goals for doing physical activity together with their social circle. Reduced risk of cardiovascular events was observed when healthcare providers enhanced positive social support by encouraging patients to set goals with family members to do physical activity at a greater level [62]. In medical practice, physical activity counselling and support for the prevention and treatment of chronic diseases should be delivered by the health care systems [63], where healthcare providers at PHC level have a crucial role in addressing individual perceived barriers for physical activity, which are patients' health-related problems and aspects of social support.

c) Implications for local NGOs

Based on WHO Global Action Plan on Physical Activity 2018–2030, it has been proposed to implement sustained public education, and awareness campaigns using traditional, social, and digital mass reach communication channels, combined with community initiatives [64]. In the Kosovo context, to reach patients with diabetes and hypertension through media, it is recommended for local Non-governmental Organizations (NGOs) in collaboration with health institutions to provide awareness campaigns using different communication channels (such as TVs, radio, social media etc).

Support is characterised by receiving empathy which in turn increases the well-being of the patients. Furthermore, an approach that shares practical aspects of managing diabetes in day-to-day life i.e. the 'how to do' rather than the 'what to do' is preferable. Peer support can involve individual or group approaches with face-to-face, telephone, and internet contacts [65]. Therefore, we propose community-based approaches to address the social support aspects as outlined by the study participants. The peer support groups can be developed and implemented through local NGOs, such as "Diabetes Association of Kosovo". Past literature has demonstrated that reciprocal peer support holds promise as a method for diabetes care management [66].

Conclusion

In conclusion, physical activity promotion in people living with diabetes and hypertension can be achieved by addressing individual and structural barriers through

integration of multiple sectors such as the health care system, urban planning, communication, and community-based approaches.

Strengths and limitations

One of the main strengths that this study provides is insights on barriers to physical activity that patients with diabetes and hypertension in Kosovo are faced with daily. Furthermore, this study proposes ways on how these barriers could be tackled through different strategies, more specifically through policy-making as well as the healthcare system.

One of the study's limitations is that in-depth interviews were conducted by telephone due to the coronavirus pandemic. During telephone interviews, non-verbal cues and body language from study participants could not be observed. On the other hand, evidence shows that telephone interviews are a good medium for data collection [67]. Another limitation is that in this study we only present the barriers to physical activity of the patients that received motivational counselling sessions. Therefore, we did not capture the barriers to physical activity of people that did not receive the intervention. To have a broader overview of barriers to physical activity among patients with diabetes and hypertension, more research is needed on participants that do not seek motivational counselling sessions at PHCs. The participants were recruited from a small number of health facilities. Therefore, further research in other health facilities in the country is needed to complement the barriers to physical activity among people living with diabetes and hypertension identified in this study.

Abbreviations

AQH: Accessible Quality Healthcare; HiAP: Health in All Policy; HIS: Health Information System; KOSCO: Kosovo Non-Communicable Disease Cohort; LMIC: Low Middle Income Country; NCDs: Non-communicable Diseases; ODK: Open Data Kit; PHC: Primary Health Care; SDC: Swiss Agency for Development and Cooperation; SES: Socio-economic status; Swiss TPH: Swiss Tropical and Public Health Institute; WHO: World Health Organization.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12875-022-01866-w>.

Additional file 1.

Acknowledgements

The authors would like to thank the study participants that agreed to participate in the qualitative study and share their experiences. Furthermore, we are grateful for the contributions of AQH project team, specifically the members of logistics and administration for their continuous involvement during the implementation of the study. Finally, the authors are thankful to Dr. Aurelio Di Pasquale for his continuous support in data collection by ODK software.

Authors' contributions

ABK wrote the first draft of the manuscript; conducted in-depth interviews, transcribed, analysed and interpreted the study results. SM contributed on the framework and objectives of the manuscript and provided supervision during data collection and analysis of the study results. NPH developed the KOSCO study protocol and provided thorough feedback in the framework of the current manuscript. KO contributed on the development, design, and implementation of the KOSCO study, read and revised the manuscript. JG, MZ, QR and NF contributed to align the study objectives within AQH framework. NJ ensured to align the study within the National Health Strategies in Kosovo. The authors read and approved the final manuscript.

Funding

All the expenses of the study are being funded by Swiss Agency for Development and Cooperation (SDC). In addition, this project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant.

Availability of data and materials

The datasets used and analysed in this study are available upon reasonable request by e-mailing the corresponding author.

Declarations

Ethics approval and consent to participate

Ethical approvals for the study were obtained from Ethics Committee Northwest and Central Switzerland (Ref. 2018–00994) and the Kosovo Doctors Chamber (Ref. 11/2019). Prior to data collection, verbal informed consent was obtained before the phone interviews, whereas after COVID-19 lockdown measures were released, written informed consent forms were obtained from all the participants that were interviewed. In addition, all research methods were performed in accordance with the relevant guidelines and regulations as stated in the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Author details

¹Department of Epidemiology and Public Health, Swiss Tropical and Public Health Institute, Allschwil, Switzerland. ²University of Basel, Basel, Switzerland. ³Swiss Centre for International Health, Swiss Tropical and Public Health Institute, Allschwil, Switzerland. ⁴National Institute of Public Health Kosovo, Prishtina, Kosovo. ⁵Medical Faculty, University of Prishtina, Prishtina, Kosovo. ⁶Accessible Quality Healthcare Project, Prishtina, Kosovo.

Received: 7 March 2022 Accepted: 31 August 2022

Published online: 30 September 2022

References

- Asogwa OA, Boateng D, Marzà-Florensa A, Peters S, Levitt N, van Olmen J, et al. Multimorbidity of non-communicable diseases in low-income and middle-income countries: a systematic review and meta-analysis. *BMJ Open*. 2022;12(1):e049133.
- Lachat C, Otchere S, Roberfroid D, Abdulai A, Seret FMA, Milesevic J, et al. Diet and physical activity for the prevention of noncommunicable diseases in low-and middle-income countries: a systematic policy review 2013;10(6):e1001465.
- Collaborators GRF. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2015: a systematic analysis for the global burden of disease study 2015. *Lancet (London, England)*. 2016;388(10053):1659.
- Miles L. Physical activity and health. *Nutr Bull*. 2007;32(4):314–63.
- Guthold R, Stevens GA, Riley LM, Bull FC. Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1·9 million participants. *Lancet Glob Health*. 2018;6(10):e1077–e86.
- Yu M, Zhan X, Yang Z, Huang Y. Measuring the global, regional, and national burden of type 2 diabetes and the attributable risk factors in all 194 countries. *J Diabetes*. 2021.
- Wahid A, Manek N, Nichols M, Kelly P, Foster C, Webster P, et al. Quantifying the association between physical activity and cardiovascular disease and diabetes: a systematic review and meta-analysis. *J Am Heart Assoc*. 2016;5(9):e002495.
- Rosenqvist TF, Urban. Walking for exercise? Immediate effect on blood glucose levels in type 2 diabetes. *Scand J Prim Health Care*. 2001;19(1):31–3.
- Stewart KJ, Bacher AC, Turner KL, Fleg JL, Hees PS, Shapiro EP, et al. Effect of exercise on blood pressure in older persons: a randomized controlled trial. *Arch Intern Med*. 2005;165(7):756–62.
- Lawton J, Ahmad N, Hanna L, Douglas M, Hallowell N. 'I can't do any serious exercise': barriers to physical activity amongst people of Pakistani and Indian origin with type 2 diabetes. *Health Educ Res*. 2006;21(1):43–54.
- Perera M, Arambepola C, Gillison F, Peacock O, Thompson D. Perceived barriers and facilitators of physical activity in adults living in activity-friendly urban environments: a qualitative study in Sri Lanka. *PLoS One*. 2022;17(6):e0268817.
- Vancampfort D, Koyanagi A, Ward PB, Rosenbaum S, Schuch FB, Mugisha J, et al. Chronic physical conditions, multimorbidity and physical activity across 46 low-and middle-income countries. 2017;14(1):6.
- Spinney J, Millward H. Time and money: a new look at poverty and the barriers to physical activity in Canada. *Soc Indic Res*. 2010;99(2):341–56.
- Engelgau MM, Sampson UK, Rabadan-Diehl C, Smith R, Miranda J, Bloomfield GS, et al. Tackling NCD in LMIC: achievements and lessons learned from the NHLBI–UnitedHealth Global Health centers of excellence program. *Glob Heart*. 2016;11(1):5–15.
- Saelens BE, Handy SL. Built environment correlates of walking: a review. *Med Sci Sports Exerc*. 2008;40(7 Suppl):S550.
- Salvo G, Lashewicz BM, Doyle-Baker PK, McCormack GR. Neighbourhood built environment influences on physical activity among adults: a systematized review of qualitative evidence. *Int J Environ Res Public Health*. 2018;15(5):897.
- Baker EA, Brennan LK, Brownson R, Houseman RA. Measuring the determinants of physical activity in the community: current and future directions. *Res Q Exerc Sport*. 2000;71(sup2):146–58.
- J. G-K. Social support and physical activity in type 2 diabetes a social-ecologic approach. *The Diabetes Educator*. 2008;34(6):1037–44.
- World Health Organization. Primary health care in Kosovo: rapid assessment; 2019.
- Rollnick S, Miller WR. What is motivational interviewing? *Behav Cogn Psychother*. 1995;23(4):325–34.
- O'Halloran PD, Blackstock F, Shields N, Holland A, Iles R, Kingsley M, et al. Motivational interviewing to increase physical activity in people with chronic health conditions: a systematic review and meta-analysis. *Clin Rehabil*. 2014;28(12):1159–71.
- Soderlund PD. Effectiveness of motivational interviewing for improving physical activity self-management for adults with type 2 diabetes: a review. *Chronic Illness*. 2018;14(1):54–68.
- Sjöling M, Lundberg K, Englund E, Westman A, Jong MC. Effectiveness of motivational interviewing and physical activity on prescription on leisure exercise time in subjects suffering from mild to moderate hypertension. *BMC research notes*. 2011;4(1):1–7.
- Obas KA, Gerold J, Bytyçi-Katanolli A, Jerliu N, Kwiatkowski M, Ramadani Q, et al. Study protocol: a prospective cohort on non-communicable diseases among primary healthcare users living in Kosovo (KOSCO). *BMJ Open*. 2020;10(9):e038889.
- Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. *Field Methods*. 2006;18(1):59–82.
- Seidman I. Interviewing as qualitative research: a guide for researchers in education and the social sciences: Teachers college press; 2006.
- Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol*. 2013;13(1):1–8.

28. Ziebland S, Hunt K. Using secondary analysis of qualitative data of patient experiences of health care to inform health services research and policy. *J Health Serv Res Pol.* 2014;19(3):177–82.
29. Boivin A, Lehoux P, Lacombe R, Burgers J, Grol R. Involving patients in setting priorities for healthcare improvement: a cluster randomized trial. *Implement Sci.* 2014;9(1):1–10.
30. Medagama A, Galgomuwa M. Lack of infrastructure, social and cultural factors limit physical activity among patients with type 2 diabetes in rural Sri Lanka, a qualitative study. *PLoS One.* 2018;13(2):e0192679.
31. Park S, Zachary WW, Gittelsohn J, Quinn CC, Surkan PJ. Neighborhood influences on physical activity among low-income African American adults with type 2 diabetes mellitus. *Diabetes Educ.* 2020;46(2):181–90.
32. Heiss V, Petosa R. Correlates of physical activity among adults with type 2 diabetes: a systematic literature review. *Am J Health Educ.* 2014;45(5):278–87.
33. Colom A, Mavoa S, Ruiz M, Wärnberg J, Muncunill J, Konieczna J, et al. Neighbourhood walkability and physical activity: moderating role of a physical activity intervention in overweight and obese older adults with metabolic syndrome. *Age Ageing.* 2021;50(3):963–8.
34. Den Braver N, Lakerveld J, Rutterts F, Schoonmade L, Brug J, Beulens J. Built environmental characteristics and diabetes: a systematic review and meta-analysis. *BMC Med.* 2018;16(1):1–26.
35. Moran M, Van Cauwenberg J, Hercy-Linnewiel R, Cerin E, Deforche B, Plaut P. Understanding the relationships between the physical environment and physical activity in older adults: a systematic review of qualitative studies. *Int J Behav Nutr Phys Act.* 2014;11(1):1–12.
36. Korkiakangas EE, Alahuhta MA, Laitinen JH. Barriers to regular exercise among adults at high risk or diagnosed with type 2 diabetes: a systematic review. *Health Promot Int.* 2009;24(4):416–27.
37. Kuo HJ, Huang YC, García AA. An integrative review of fatigue in adults with type 2 diabetes mellitus: implications for self-management and quality of life. *J Clin Nurs.* 2021.
38. Vilafranca Cartagena M, Tort-Nasarre G, Rubinat AE. Barriers and facilitators for physical activity in adults with type 2 diabetes mellitus: a scoping review. *Int J Environ Res Public Health.* 2021;18(10):5359.
39. Kanavaki AM, Rushton A, Efstathiou N, Alrushud A, Klocke R, Abhishek A, et al. Barriers and facilitators of physical activity in knee and hip osteoarthritis: a systematic review of qualitative evidence. *BMJ Open.* 2017;7(12):e017042.
40. Egan A, Mahmood W, Fenton R, Redziniak N, Kyaw Tun T, Sreenan S, et al. Barriers to exercise in obese patients with type 2 diabetes. *QJM: An International Journal of Medicine.* 2013;106(7):635–8.
41. Duclos M, Dejager S, Postel-Vinay N, di Nicola S, Quéré S, Fiquet B. Physical activity in patients with type 2 diabetes and hypertension—insights into motivations and barriers from the MOBILE study. *Vasc Health Risk Manag.* 2015;11:361.
42. Baillot A, Chenail S, Polita NB, Simoneau M, Libourel M, Nazon E, et al. Physical activity motives, barriers, and preferences in people with obesity: a systematic review. *PLoS One.* 2021;16(6):e0253114.
43. Hamer O, Larkin D, Relph N, Dey P. Fear-related barriers to physical activity among adults with overweight and obesity: a narrative synthesis scoping review. *Obes Rev.* 2021;22(11):e13307.
44. Toft BS, Uhrenfeldt L. The lived experiences of being physically active when morbidly obese: a qualitative systematic review. *Int J Qual Stud Health Well Being.* 2015;10(1):28577.
45. Morgan GS, Willmott M, Ben-Shlomo Y, Haase AM, Campbell RM. A life fulfilled: positively influencing physical activity in older adults—a systematic review and meta-ethnography. *BMC Public Health.* 2019;19(1):1–13.
46. Wen CP, Wai JPM, Tsai MK, Yang YC, Cheng TYD, Lee M-C, et al. Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study. *Lancet.* 2011;378(9798):1244–53.
47. Spiteri K, Broom D, Bekhet AH, de Caro JX, Laventure B, Grafton K. Barriers and motivators of physical activity participation in middle-aged and older adults—a systematic review. *J Aging Phys Act.* 2019;27(6):929–44.
48. Hawkey LC, Thisted RA, Cacioppo JT. Loneliness predicts reduced physical activity: cross-sectional & longitudinal analyses. *Health Psychol.* 2009;28(3):354.
49. Adeniyi A, Idowu O, Ogwumike O, Adeniyi C. Comparative influence of self-efficacy, social support and perceived barriers on low physical activity development in patients with type 2 diabetes, hypertension or stroke. *Ethiop J Health Sci.* 2012;22(2).
50. Morowatisharifabad MA, Abdolkarimi M, Asadpour M, Fathollahi MS, Balaei P. Study on social support for exercise and its impact on the level of physical activity of patients with type 2 diabetes. *Open access Macedonian J Med Sci.* 2019;7(1):143.
51. Aragão EIS, Portugal FB, Campos MR, Lopes CS, Fortes SLCL. Different patterns of social support perceived and their association with physical (hypertension, diabetes) or mental diseases in the context of primary health care. *Ciencia & saude coletiva.* 2017;22:2367–74.
52. World Health Organization. Health in all policies: Helsinki statement. Framework for country action 2014.
53. Global Conference on Health Promotion. Health in All Policies (HiAP): framework for country action. *Health Promot Int.* 2016;S19–28.
54. Ramirez-Rubio O, Daher C, Fanjul G, Gascon M, Mueller N, Pajín L, et al. Urban health: an example of a “health in all policies” approach in the context of SDGs implementation. *Glob Health.* 2019;15(1):1–21.
55. Arthurson K, Lawless A, Hammet K. Urban planning and health: revitalising the alliance. *Urban Policy Res.* 2016;34(1):4–16.
56. Barton H, Tsourou C. *Healthy urban planning*: Routledge; 2013.
57. Sallis JF, Cerin E, Conway TL, Adams MA, Frank LD, Pratt M, et al. Physical activity in relation to urban environments in 14 cities worldwide: a cross-sectional study. *Lancet.* 2016;387(10034):2207–17.
58. Mayne SL, Auchincloss AH, Michael YL. Impact of policy and built environment changes on obesity-related outcomes: a systematic review of naturally occurring experiments. *Obes Rev.* 2015;16(5):362–75.
59. Wattanapisit A, Wattanapisit S, Wongsiri S. Overview of physical activity counseling in primary care. *Kor J Fam Med.* 2021;42(4):260.
60. World Health Organization. WHO guidelines on physical activity and sedentary behaviour: web annex: evidence profiles. 2020.
61. Piya MK, Fletcher T, Myint KP, Zarora R, Yu D, Simmons D. The impact of nursing staff education on diabetes inpatient glucose management: a pilot cluster randomised controlled trial. *BMC Endocr Disord.* 2022;22(1):1–10.
62. Aggarwal BAF, Liao M, Mosca L. Physical activity as a potential mechanism through which social support may reduce cardiovascular disease risk. *J Cardiovasc Nurs.* 2008;23(2):90.
63. Reis RS, Salvo D, Ogilvie D, Lambert EV, Goenka S, Brownson RC, et al. Scaling up physical activity interventions worldwide: stepping up to larger and smarter approaches to get people moving. 2016;388(10051):1337–48.
64. World Health Organization. Global action plan on physical activity 2018–2030: more active people for a healthier world: World Health Organization; 2019.
65. Simmons D, Prevost AT, Bunn C, Holman D, Parker RA, Cohn S, et al. Impact of community based peer support in type 2 diabetes: a cluster randomised controlled trial of individual and/or group approaches. *PLoS One.* 2015;10(3):e0120277.
66. Heisler M, Vijan S, Makki F, Piette JD. Diabetes control with reciprocal peer support versus nurse care management: a randomized trial. *Ann Intern Med.* 2010;153(8):507–15.
67. Block ES, Erskine L. Interviewing by telephone: specific considerations, opportunities, and challenges. *Int J Qual Methods.* 2012;11(4):428–45.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.