“I mean, we live on an island and need to be self-sufficient, even with research” Patients' and healthcare professionals' views on participation in clinical studies in primary health care in a sparsely populated region: a qualitative study

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Abstract

Background: A recently published study in Finland, Norway, and Sweden found that mortality rates are higher in rural areas compared to urban regions, with this difference increasing over time. The goal is to foster a dynamic research culture in healthcare that specifically targets improving health outcomes in rural populations. This entails addressing the unique health challenges faced by these areas and increasing research efforts, which are often neglected by larger research centers. A strong research culture requires established networks, funding, technology use, and collaborative methodologies. Challenges include a lack of understanding of the factors that contribute to success and under representation of rural populations in research.

Objective: The overall aim of the study is, through focus group interviews, to get the views of patients with type 2 diabetes, physicians, and nurses on participation in clinical trials in primary care in a sparsely populated region.

Methods: Design A qualitative descriptive study conducted between the dates March 2022 to March 2023 using a semi-structured interview format for focus groups interviews. The study employed inductive qualitative content analysis to analyse transcribed audio recordings from the interviews.
Setting Primary care on the island of Gotland, Sweden.
Participants We consecutively invited patients with type 2 diabetes who participate in the primary care-based clinical drug trial SMARTEST and live in a rural, sparsely populated area. In this sub study, nineteen patients and, in addition, one primary care physician and two registered nurses from the local primary healthcare centre were subsequently interviewed.

Results: The findings of this study yielded the theme: Bridging Perspectives: Engaging Patients and Professionals in Diabetes Research, with two main categories, namely "Unlocking the Potential of Rural Research – with a Spotlight on the SMARTEST Study" and "Dimensions of Engagement in Diabetes Research from the Health Professional's View." The first category encompassed five sub-categories that emerged, providing insights into the patients' viewpoints and opinions. The second category, derived from interviews conducted with healthcare professionals specialising in the field of diabetes, identified five sub-categories.

Conclusions: Conclusion These findings collectively underscore the significance of diabetes research in rural settings, emphasising the need for inclusive approaches that address patient perspectives, promote collaboration, and enhance research infrastructure. In addition, the results from the present study may have implications for primary care research within other chronic diseases. Clinical Trial: (Clinicaltrials.gov identifier NCT03982381, EudraCT 2019-001046-17).

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"I mean, we live on an island and need to be self-sufficient, even with research" Patients' and healthcare professionals' views on participation in clinical studies in primary health care in a sparsely populated region: a qualitative study

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ABSTRACT

Introduction

A recently published study in Finland, Norway, and Sweden found that mortality rates are higher in rural areas compared to urban regions, with this difference increasing over time. The goal is to foster a dynamic research culture in healthcare that specifically targets improving health outcomes in rural populations. This entails addressing the unique health challenges faced by these areas and increasing research efforts, which are often neglected by larger research centers. A strong research culture requires established networks, funding, technology use, and collaborative methodologies. Challenges include a lack of understanding of the factors that contribute to success and underrepresentation of rural populations in research.

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Conclusion These findings collectively underscore the significance of diabetes research in rural settings, emphasising the need for inclusive approaches that address patient perspectives, promote collaboration, and enhance research infrastructure. In addition, the results from the present study may have implications for primary care research within other chronic diseases.

Strengths and limitations of this study

- Focus group interviews offered an exclusive insight into patients' experiences of participating in clinical studies in a sparsely populated region in Sweden.
- The study used a qualitative approach (inductive content analysis) to analyse the data, thus contributing important new insights into, to our knowledge, a seldom-researched topic from the patients' and healthcare professionals' perspective.
- The results from the present study may have implications for primary care research within other chronic diseases.
- The limitations of the study include the convenient sampling and just focusing on one region in Sweden. Furthermore, results are based on a small sample size of participants on the island of Gotland in Sweden. Caution should be taken when generalising the conclusions to other regions of Sweden or other countries.

BACKGROUND

A recently published study conducted in Finland, Norway and Sweden demonstrated that mortality rates were higher in sparsely or rural populated areas compared to urban areas, and this difference has been increasing over time (1). The objective of fostering a dynamic and robust research culture within the healthcare field is to generate and apply new knowledge specifically targeted at improving health outcomes in rural populations. This research culture highlights the importance of conducting studies, seeking innovative solutions, and utilising acquired knowledge to make positive advancements in healthcare that could benefit rural communities. The focus here is on addressing the unique health challenges faced by rural areas and on striving to improve health outcomes on a broader scale, rather than solely addressing individual cases or specific groups. Developing a vibrant and strong research culture in healthcare aims to create and leverage new knowledge to specifically address the health needs of the entire rural population (2-5). In general, research centres tend to predominantly concentrate within urban settings of considerable size. Consequently, research endeavours occurring within sparsely/rural populated regions frequently undergo neglect or are disregarded by these centres, resulting in a substantial marginalisation of research conducted within such areas. This means that both the population and staff are missing out on the benefits of a research culture. A further disadvantage regarding the credibility of the research is that the sample from residents in sparsely/rural populated areas is underrepresented in the production of research results as a basis for evidence-based care (6). The establishment of a strong research culture in rural areas faces challenges due to a lack of a comprehensive understanding of the factors contributing to its success. Several crucial elements contribute to the effectiveness of research endeavours. These elements encompass well-established networks and communication channels, adequate funding for research and administrative purposes, the utilisation of technology, and the adoption of team-based research methodologies (7, 8). Additional aspects that play a vital role include provision of ethical guidance, formation of peer support networks and local research leadership, accessibility to postgraduate education, clear delineation of research responsibilities and activities in official documents, as well as fostering collaboration both internally and externally (9). However, the specific pathways or mechanisms through which investments in research culture contribute to improved health outcomes in rural areas are not yet well-studied, as they are challenging to map and measure.

In 2021, an ongoing national registry-based randomised clinical trial, known as the SMARTEST programme (SGLT2 inhibitors or Metformin as Standard treatment in early diabetes type 2), was introduced to primary healthcare on Gotland. The programme aims to both investigate which drug treatment should be the first choice for type 2 diabetes and to highlight the importance of conducting research in rural areas, including the potential benefits of involving these areas in scientific advancements. Gotland, as a place of study, was included as an example of a sparsely populated rural area where research has the potential to be stimulated and developed, and where opportunities exist to implement clinical trials and to stimulate research culture and improve healthcare outcomes. The SMARTEST programme includes pilot projects with digital tools, such as electronic consent and "decentralised clinical trials" via video consultations (a project initiated by the Swedish Medical Products Agency, where SMARTEST is the first participating study). Therefore, it is important to describe patients' and healthcare professionals' views on participation in clinical studies.

Objective of the study

The overall aim of the study is, through focus group interviews, to get the views of patients with type 2 diabetes, physicians and nurses on participation in clinical trials in primary care in a sparsely populated region.

METHODS

The study is conducted and reported based on the ‘Consolidated criteria for Reporting Qualitative research’ (10).

Research Design

A descriptive qualitative design was used. The interviews were conducted in focus group discussion with adult patients with diabetes and healthcare professionals (HCPs). Additionally, some participants were interviewed individually via video.

Participant recruitment and settings

Participants residing on the sparsely populated island of Gotland were recruited either during an in-person visit or via video. They were consecutively enrolled among those entering a register-based randomized controlled trial (RRCT) called SMARTEST. (EudraCT 2019-001046-17, Clinicaltrials.gov NCT03982381) which is based in primary healthcare in Sweden. This trial investigates whether an SGLT2 inhibitor will be superior to metformin as first-line medication in early-stage type 2 diabetes with respect to prevention of vascular complications and premature death (11, 12). The inclusion criteria were: 18 years and older with a diagnosis of type 2 diabetes and newly diagnosed or less than 4 years of diabetes duration. Exclusion criteria in this sub study were living in a nursing home, dementia diagnosis, or non-Swedish speaking (information was retrieved from the health centre's medical record system). Initially, 25 potential patients were contacted by the first author (JL), and 19 responded, inquiring about their interest in participating in interviews regarding their personal experience with the SMARTEST study. Healthcare professionals eligible at the primary healthcare centre who were engaged in the SMARTEST study were invited to participate.

Data collection

Data were collected via four face-to-face focus groups and two individual interviews between March 2022 and March 2023. Three interviews were conducted undisturbed in a conference room at a primary healthcare centre and one interview in a room at the university campus on Gotland. Two interviews were conducted individually. Four groups and two individual interviews comprised 19 patients in total, and one focus group consisted of three healthcare professionals (Table 1). The interviews lasted 31–42 minutes (3 h 20 min in total) with two facilitators experienced in qualitative methodologies. The moderator (JL) focused on leading the discussion and ensuring that everyone had their say, while the assistant moderator (ACK) asked follow-up questions. Interview guides were prepared prior to the study for the patients (Table 2) and for the healthcare professionals (Table 3) based on the aim of the study. The participants were encouraged to share their opinions freely between themselves and discuss their own topics of interest during the interviews. The facilitators prompted questions when necessary.

Table 1. Study population variables

Variables	Patients	Healthcare professionals
Number included	19	3
Female n (%)	8 (42)	1 Registered nurse
Male n (%)	11 (58)	1 Primary care physician 1 Registered nurse
Age – years. Median; Range	60; 34-81	41; 37-49
Duration of diabetes type 2 (years). Median; Range	2; 1.0-3.5	NA
HbA1c (mmol/mol) Median; Range	50; 37-74	NA

Table 2 Semi-structured interview guide for the patients

Can you tell us about any research study you have participated in? How important do you think it is that research is conducted on Gotland? How important do you think research is in type 2 diabetes? Now that you are invited to participate in a research study, how did you reason, and what was decisive for you to accept? Can you describe the opportunities and obstacles of participating in a research study? How do you reason about participating in a research study at a distance, i.e. not in the physical room?

Table 3 Interview guide and areas of inquiry for the healthcare professionals

Interview topics	Areas of inquiry
Exposure to research; personal qualities (such as curiosity); opportunities for research	The questions cover professional and academic background, previous research involvement, workplace research obstacles and opportunities, access to research reports, opportunities for research discussions, and the feasibility of remote participation in research studies.
Strong networks and communication channels; research and administrative funding; use of technology and team-based research	The questions cover the workplace environment, access to research networks, communication channels, funding opportunities, experience with digital platforms, workplace communication, teamwork, and team-based research experience.
Support in ethical issues; the establishment of peer support networks and local research leaders; access to postgraduate education, operationalisation of research responsibilities and activities in documents;	The questions explore the model's workplace environment, access to training and research networks, communication channels, funding opportunities, digital platform experience, workplace communication, teamwork, and team-based research

collaboration, both internally and externally**.**	experience.

Data analysis

The interviews were audio-recorded and transcribed verbatim in Swedish by a professional transcription service. The transcription was checked and reviewed by the researchers JL and ACK. An inductive qualitative content analysis (13, 14) was used, where the first part of the analysis process involved identifying meaning-bearing units, condensing meaning-bearing units, and coding. Differences and similarities between the various codes were compared and sorted into sub-categories and categories. Both researchers (JL and ACK) coded the transcript independently and discussed any differences in the interpretation of the data. There was a high agreement in the comparison of the coding. Minor editing of the quotes was performed to ensure clarity of meaning.

Ethical consideration

This study was approved by the Swedish Ethical Review Board (reg. no. 2021-06769-01, and for the overall SMARTEST study (2019–01747, 2020–02824, 2020–06164). Each participant was informed about the study procedure and was free to withdraw from the study. All participants provided written informed consent to participate in the study, which included permission to audiotape and transcribe the interviews. Any potentially identifying information was removed from the transcripts. None of the researchers/moderators had a previous relationship with the participants.

Patient and public involvement statement

There was no patient or public involvement in the study development, design or recruitment process. Participants were not provided with the chance to review the transcripts, but they could request access to the final published manuscript.

RESULTS

The results from the interviews with the patients with type 2 diabetes and healthcare professionals in the field of diabetes revealed the following categories: "*Unlocking the Potential of Rural Research – with a Spotlight on the SMARTEST Study" and "Dimensions of Engagement in Diabetes Research from the Health Professional's View"*. These categories constituted the theme *"Bridging Perspectives: Engaging Patients and Professionals in Diabetes Research"* (Table 4).

Table 4 . Theme, categories, and sub-categories.

Theme: Bridging Perspectives: Engaging Patients and Professionals in Diabetes Research.

Categories	**Sub-Categories**

Unlocking the Potential of Rural Research – with a Spotlight on the SMARTEST Study	The importance of research studies in rural areas. Attitude towards participating in studies. Reasons for accepting participation in the study SMARTEST. Balancing medication and quality of life Digital inclusion vs Physical inclusion.
Dimensions of Engagement in Diabetes Research from the Health Professional's view	Positive attitude towards participation in the study. The importance of the team for research. Capture the patient's perspective. Importance of research-based knowledge and continual refreshment in diabetes work. Interest in own research – lack of infrastructure for research.

Unlocking the Potential of Rural Research – with a Spotlight on the SMARTEST Study

The importance of research studies in rural areas

The participants stressed the importance of conducting research in rural areas in addition to urban areas. Living conditions in these environments differ and can impact disease management and the disease landscape, including factors such as the environment, climate and dietary habits.

> *But I think we need more research, especially for rural areas. I mean, what's it like for people to live like that? And if you're invited to join a research project, you become more aware and stuff.* (Focus group 5)

Furthermore, participants emphasised the importance of research that is specific to Gotland, an island in the Baltic Sea. Gotland, with approximately 60 000 inhabitants, is an open society surrounded by water and faces unique challenges due to its limited area and well-defined permanent population. Higher living costs and strained finances affect the residents' way of life, making these factors crucial to research.

> *... I mean, we live on an island and need to be self-sufficient, even with research and stuff.* (Focus group 4)

Additionally, including Gotland's primary healthcare centre in studies was seen as allowing rural areas to contribute to scientific advancement. The island's sense of community offers valuable insights. Excluding Gotland from research is misguided, as its residents often feel excluded from the rest of Sweden. Continued research was emphasised as vital for the island's scientific contribution, and the participants were enthusiastic about advancements in medicine and the field.

> *I think it's really important to not just have urban samples in research. Doing research on Gotland could also create some job opportunities. It's crucial to not rely only on urban samples for research studies.* (Focus group 3)

Attitude towards participating in studies.

The attitude towards participating in the study was discussed based on four cornerstones: motivations for participation, benefits of participating, balancing personal motives and altruistic reasons, and recognition of the importance of research.

<u>Motivations for participation:</u> Many participants were motivated by the lack of prior research in their specific area of interest. They recognised the need for extensive research on the treatment and management of diabetes type 2. Additionally, some participants saw the drug study as a potential alternative to metformin.

> *We need more research, and it's cool that people are willing to participate. I'd selfishly love to get access to new medication. (*Focus group 4)

<u>Benefits of participating</u>: Participating in research provides an opportunity to contribute to the development of new medicines and treatments. It also increases self-awareness about one's own disease, fostering a deeper understanding and personal empowerment.

> *I find it interesting to participate because I didn't even know I had diabetes. It was just*

> *diagnosed. I haven't been running to the toilet or drinking more, but yeah, I had it. So if research can help spot these things earlier, that would be great.* (Focus group 4)

> *Joining a study is a chance to learn more about diabetes* (Focus group 3)

Balancing personal motives and altruistic reasons: While personal motives for participating, such as the desire to try a new medication, may exist, participants stressed the importance of considering altruistic reasons for contributing to the development of medicine.

> *What really mattered to me was that I believe research is important. It's not like I thought I'd get any personal benefits from participating.* (Focus group 3)

Recognition of the importance of research: Participants expressed gratitude for others' interest in driving research forward and recognised the significance of research in developing new medicines and treatments for diseases. They shared a collective belief in the value and necessity of research for advancing medical knowledge and improving patient care.

> *…I agree! I think it's important for us as individuals to contribute and take part if we want to move forward in the world*. (Focus group 4)

> *On the flip side, I haven't really come across any big studies on starting medication early or stuff like that. I haven't seen anything myself. I've tried looking for info on studies and how they tackle these issues, but most of the time, it feels like there aren't any studies—at least not on this specific medication.* (Focus group 1)

Reasons for accepting participation in the study SMARTEST

The participants stated that a prerequisite for participation is to have a good relationship with the diabetes healthcare profession, ensuring effective handling of any potential side effects.

The participants also mentioned the benefits of getting extra checks and access to alternative drugs that have been tested. They emphasised that this is important research, unlike less important studies that focus on obvious things: *"But there are some obvious things that need to be researched, like why people act in certain ways. The answers are already pretty clear in that kind of research. Still, I think this study is important and urgent"*. (Focus group 2). The participants also explained that they do not expect any miracles from participating in the study, but that they want to contribute to the research if it can help.

Another aspect that emerged was that the participants saw it as an advantage for the staff at the health centre to participate in the study. The participants also emphasised the importance of including people from rural areas in the studies to ensure a fair and broader representation.

> *Yeah, what really mattered for me was meeting the people in charge of it. That's when I decided to participate. But even then, I had the chance to choose for myself. I could've backed out after meeting the doctor and the others involved. (*Focus group 4)

> *It's about advancing research, and I believe that anyone who gets the opportunity to participate in such studies should do so. I have had good communication with the diabetes clinic, diabetes nurses, so if I don't feel well, if this doesn't work out, and if I need to switch medication, I just have to reach out to them. It's all about advancing research, and I think anyone who gets the chance to participate in these studies should go for it. I've had great communication with the diabetes clinic and the nurses, so if I'm not feeling well or if this doesn't work out and I need to switch medication, I can just reach out to them.* (Focus group 5)

Balancing medication and quality of life

A participant expressed uncertainty about the potential impact of a new medication on the quality of life, given the numerous variables that might affect this outcome. It was difficult to know what effect the medication had on their life quality, and overall, it seemed like there was a significant difference, but it was challenging for them to discern which factor was causing it. The person felt that taking medication was not necessarily the definition of quality of life, despite being informed that it could increase their lifespan.

> *So, in my case, I have been using this... is it called metformin? And I saw an opportunity to maybe try something else because I don't feel well with metformin.* (Individual 1)

> *It's important for people to consider... right now, I'm talking about quality of life. I mean, at our age, a lot of folks have other health issues or different challenges that affect their quality of life. So, it can be tough to figure out what's causing what, you know?* (Focus group 2)

Digital inclusion vs Physical inclusion

Participants expressed their preference for in-person meetings despite the possibility of including them digitally. The personal touch allows for follow-up questions and enables physicians to see participants' lives first hand. Participants identified benefits of digital meetings, such as the flexibility of scheduling appointments in the evenings and avoiding the need to travel or taking time off from work. However, it was essential to have a contact person that was responsible for the study to address any questions that arose. Limited media literacy was perceived as a barrier to digital communication, and participants recognised that there were pros and cons to both approaches. A hybrid solution was proposed, which could include both in-person and digital options. Although telephone consultations were considered acceptable, they lacked the non-verbal cues that in-person meetings provided.

> *Or I got to talk to a doctor over the phone. It was my first time doing that, and it was fine. The only thing is that she couldn't read me the same way she would if we were in person, especially if she needed to check how I was feeling. So that could be a downside. But other than that, it was okay.* (Focus group 3)

Dimensions of Engagement in Diabetes Research from the Health Professional's view

Positive attitude towards participation in the study

Health professionals participating in the study expressed their keen interest due to its research-based nature. They viewed the SMARTEST study as a valuable contribution that propels development within their field. Although running a study requires additional time and may disrupt their regular tasks, they perceived it as a manageable obstacle. Notably, they appreciated that their managers prioritised the necessary time allocation for the study.

The importance of the team for research

The participants highlighted the significance of regular meetings held at the health centre, which occurred in various formats, such as professional groups or team sessions. They emphasised the cohesive nature of their well-functioning team, all driven by a shared objective to achieve excellence. *'We trust that each other's professional capabilities contribute to the efficient and smooth workflow'*. They were engaged in weekly rounds and discussions, characterised by an open and constructive atmosphere. Even in situations where disagreements arose, they maintained a positive atmosphere and recognised that unanimity is not always essential.

Capture the patient's perspective.

When it comes to understanding the patient's perspective, a dilemma arises when patients are randomly assigned to one drug and consequently do not have the opportunity to try the other option, presenting a challenge. One participant provided a personal reflection, expressing:

> *If I had type 2 diabetes myself, I would probably prefer to receive both drugs fairly quickly within the study. Some patients are well-informed about the available options.*

The participants were engaged in an ongoing discussion, recognising that not all patients have the same viewpoint. However, it has been noted that certain patients express a strong preference for the new medication.

Importance of research-based knowledge and continual refreshment in diabetes work

The participants showed great interest in diabetes research and considered it extremely important to have research-based knowledge. ‘*We think it is almost a religion and continuously updated ourselves with the latest study results*. Although there is not so much reflection and discussion of specific study results, they sometimes discussed the latest research on diabetes. They believed that this was necessary to renew their knowledge of the work they do and create security. All their work is based on evidence and research that is applied in their daily work. In addition, they felt an obligation to use evidence-based knowledge, and that knowledge gives them guidelines for their work.

Interest in own research– lack of infrastructure for research

Opinions regarding personal interest in research and improvement work varied among the participants. One individual expressed enthusiasm for conducting their own research and even considered pursuing doctoral education: ‘*I would like to start doing research, but I don't know how to proceed*’. However, there is uncertainty surrounding the availability of funding opportunities, specifically for research conducted on Gotland. While library assistance is available to search for articles on ongoing studies, there is a lack of knowledge regarding the coordination of improvement work or research. Additionally, participants are unaware of the research leader on Gotland and struggle to locate up-to-date information about ongoing research projects.

DISCUSSION

Principal results

The main aim of this study was to examine the viewpoints of individuals diagnosed with type 2 diabetes and healthcare professionals concerning their participation in clinical trials carried out in primary care settings within sparsely populated regions. The research presented in this article focuses on the insights gathered from interviews conducted as a component of the SMARTEST programme. This programme involves a national registry-based randomised clinical trial conducted in primary healthcare settings on Gotland, an area characterised by a low population density and rural surroundings. The research methodology employed in this qualitative study comprised mainly on focus group interviews, and the subsequent data analysis followed an inductive qualitative content analysis approach. The findings of this study yielded the theme “*Bridging Perspectives: Engaging Patients and Professionals in Diabetes Research*” with two main categories, namely "Unlocking the Potential of Rural Research – with a Spotlight on the SMARTEST Study" and "Dimensions of Engagement in Diabetes Research from the Health Professional's View." The first category encompassed five sub-categories that emerged, providing insights into the patients' viewpoints and opinions. The second category, derived from interviews conducted with healthcare professionals specialising in the field of diabetes, identified five sub-categories.

Comparison with previous work

The discussion surrounding the importance of research studies in rural areas reveals several key points that deserve further exploration. Firstly, participants emphasised the significant differences in living conditions between rural and urban environments, underscoring the need to conduct research specifically tailored to rural areas. During the interviews, several aspects emerged regarding conducting research in rural areas. The health professional identified various obstacles, including insufficient customisation and coordination, conflicts between research and clinical practice, and a lack of knowledge regarding improvement work or research coordination. These challenges hinder the involvement of rural health professionals in research education and training. Additionally, participants in Gotland face difficulties in accessing up-to-date information on ongoing research projects and are unfamiliar with the research leader. Similar findings have been observed in other regions, particularly in Australia (5, 15).

Moreover, the interviews shed light on the unique challenges faced by rural populations living in isolated regions, such as the case of Gotland, an island in the Baltic Sea. Gotland's limited area and well-defined permanent population present distinct considerations for research. The higher living costs and strained finances experienced by residents impact their way of life and access to healthcare services. Consequently, understanding these socio-economic factors becomes crucial for designing effective interventions and healthcare strategies that are tailored to the specific needs of rural communities (16).

Furthermore, the results highlighted the motivations and attitudes of participants towards research participation. Both patients and healthcare professionals expressed a positive stance, recognising the importance of research in advancing medical knowledge and improving patient care. Patients expressed a desire to contribute to the development of new treatments that could benefit not only themselves but also others facing similar health challenges. One intriguing aspect was that participating in research studies also increased self-awareness regarding their own diseases, empowering patients to actively engage in managing their health. No previous study, or at least we have not found one, has confirmed the findings of this study regarding this positive aspect of participating in research studies. Healthcare professionals acknowledged the significance of research-based medicine and the value of evidence-based practices in delivering high-quality care to patients.

Another important aspect that emerged from the results was the preference for in-person meetings over digital interactions in research settings. Participants highlighted the personal touch and physicians’ ability to observe participants' lives first hand as key advantages of face-to-face interactions. In-person meetings provided a deeper understanding of participants' experiences, enabling researchers to gather more comprehensive data. Digital options, while offering flexibility and convenience, were viewed as potentially limiting due to issues such as limited literacy in digital media and the absence of non-verbal cues that are important for effective communication. To address this, a hybrid approach that combines both in-person and digital options was proposed, aiming for a balance between practical benefits and personal interaction. This approach would allow for broader participation while still ensuring the depth and quality of data collection.

Strengths and Limitations of the study

Strengths of the study

1. Clear research objective: The study clearly states the aim of the study, which is to gather the views of patient with type 2 diabetes, physicians and nurses on participation in clinical trials

in primary care in a sparsely populated region. This provides a clear focus for the study.

2. Comprehensive methodology: The use of focus groups allows for the exploration of multiple perspectives and the richness of qualitative data.
3. Inclusion of diverse participants: The study includes both patients with type 2 diabetes and healthcare professionals, providing a comprehensive view of the topic. The participants were recruited from an ongoing registry-based randomised controlled trial, adding to the relevance of the study.
4. Thorough data collection and analysis: Participants were engaged until the interviewers could not find any new responses, indicating that the interviews had reached saturation. The researchers have long experience of conducting qualitative studies and interviews. The interviews were audio-recorded and transcribed verbatim, ensuring accurate representation of the participants' views. The data analysis followed established qualitative research methods, including coding and categorisation, enhancing the rigour of the study.

Limitations of the study:

1. Small sample size: The study included a relatively small sample size of 19 patients and 3 healthcare professionals. While this is not uncommon in qualitative research, it limits the generalisability of the findings to a larger population.
2. Limited geographical scope: The study focused specifically on Gotland, a sparsely populated island in Sweden. The findings may not be applicable to other rural areas or different cultural contexts, potentially limiting the external validity of the study.
3. Lack of patient and public involvement: There was no patient or public involvement in the study development, design, or recruitment process. This omission may limit the relevance and applicability of the findings to the target population.

Implications and future perspectives

The interviews underscored the importance of conducting research studies in rural areas, considering the unique challenges and factors that influence disease management and health outcomes. The specific case of Gotland exemplifies the importance of tailoring research efforts to address the needs of distinct populations in isolated regions. The findings also emphasised the surprisingly positive attitudes, both from the patients and health care professionals, towards research participation which currently seldom happens, and the importance of ethical considerations in conducting studies. Balancing digital and physical inclusion in research approaches will become crucial to ensure effective communication, engagement, and the collection of comprehensive data. By considering these insights, future research can be more inclusive, impactful, and responsive to the needs of diverse populations in both rural and urban settings. In addition, the results from the present study may have implications for primary care research within other chronic diseases.

Conclusions

The study's findings highlight the need to strengthen diabetes research in rural settings, emphasizing patient perspectives, collaboration, and research infrastructure. These insights also have broader implications for primary care research in other chronic diseases. To achieve this, it is essential to provide potential study participants and primary healthcare clinics with more information about ongoing clinical studies.

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