RESEARCH ARTICLE

Comparing the acceptability of total diet replacement and food-based low-calorie diets for type 2 diabetes remission amongst Southeast Asians: a public and patient involvement activity [version 1; peer review: 1 approved with reservations, 1 not approved]

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Abstract

Background: With type 2 diabetes prevalence rising at alarming rates, low-calorie diets (total diet replacement and food-based low-calorie diets) are increasingly used to induce weight loss and achieve diabetes remission. The effectiveness of these diets has been primarily tested in the UK white population but not in the Southeast Asian population at high risk of diabetes. Obtaining the opinion of members of the community on what would constitute a culturally acceptable diet is essential for successful interventions aiming to achieve diabetes remission in the southeast Asian population.

Methods: We organised two patient and public involvement activities in the North West of England to understand views of people from the Southeast Asian population on whether low-calorie diets (850 Kcal) in the form of total diet replacement or food-based meals, are

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Approval Status

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(revision)		view	view	
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acceptable dietary interventions to achieve diabetes remission.

Results: Thirteen people, with either type 2 diabetes or having someone with diabetes in the family attended a virtual or a face-to-face meeting. Low-calorie total diet replacement in the form of soups and shakes was considered unacceptable, while there was a preference for a culturally tailored low-calorie food-based diet. Ready-made portion controlled catered meals were suggested as an excellent approach to improve adherence.

Conclusions: This work provided valuable insights to shape a future study looking at the feasibility to reverse diabetes in primary care through dietary intervention in the Southeast Asian population.

Keywords

Type 2 diabetes; South East Asian population; diabetes remission; primary care; total diet replacement; weight control

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Introduction

Type 2 diabetes has gained significant research interest due to its emergence as a global epidemic, causing significant health and economic impacts^{1,2}. Diabetes UK has been committed to tackling the diabetes crisis in the UK population, and has invested heavily in ground-breaking research looking to treat diabetes and reduce the burden on the NHS³. Diabetes UK-funded primary-care based trials were the first to report that type 2 diabetes can be reversed through weight loss brought about through low-calorie diets (~850 Kcal) in the form of total diet replacement (TDR)^{4,5}, and efforts are now made to provide isocaloric low-calorie (850 kcal) food-based alternatives in primary care⁶.

These approaches have been shown to be effective primarily in the White population in UK studies, and were shown to achieve diabetes remission in a Middle Eastern population⁷. However, their value has not been considered in the Southeast Asian population, the second largest ethnic group in the UK, who have significantly higher prevalence of diabetes compared to the White population^{8,9}. Southeast Asians have been historically less successful in weight loss programmes compared to White individuals, with greater reluctance to lose weight and a lesser body dissatisfaction^{10,11}. It has been speculated that the lack of consideration and knowledge of educators in ethnic-specific foods has been one of the barriers for success¹², especially in a population in which food constitutes an important social tradition, drawing on major socio-cultural differences and variances in dietary habits when compared to other ethnicities¹³. Therefore, obtaining the opinion of members of this community on what would constitute a culturally acceptable diet plan could help design an effective low energy dietary intervention in type 2 diabetes.

The Southeast Asian population has been majorly underrepresented in large national diabetes studies, which has limited culturally appropriate evidence-based recommendations¹⁴. The barriers and facilitators to participation in health and diabetes research within the Southeast Asian population have been described elsewhere^{15,16}. It is therefore important to look at the suitability and barriers for success for low-calorie interventions as a means of inducing diabetes remission in this population.

Patient and public involvement are essential in the success of clinical interventions¹⁷. We therefore organised two patient and public involvement activities in the North West of England on the 1st and 2nd of September 2021, with the aim of informing on several elements of diabetes dietary interventions: including choice of diet (TDR or food-based), acceptability of measurements tools used in the study (quality of life questionnaire, step counters, diet diary collection), as well as barriers and facilitators to participation and adherence.

Methods

Participants

Patients and family members were recruited face-to-face and by telephone through a GP practice and with the assistance of a community education representative with strong community links helping to spread the word within different sub-ethnic groups (Pakistani and Indian groups). Invitations included the

researchers' contact details and were sent out by email and "Whatsapp" application either by the researcher directly or through the community representative. Overall, 13 out of 18 people accepted the invitation. Inclusion criteria included men and women over 18 years of age from a Southeast Asian background who are either patients with type 2 diabetes or have someone with type 2 diabetes in the household. English and non-English speakers were invited to attend, and the community representative was available to help with the translation.

Meeting information

Five people living with diabetes attended a virtual meeting (4 women and 1 man), and 8 women who either have diabetes or who live with people with type 2 diabetes in their household, attended a face-to-face meeting at the Ghausia community centre (Burnley, Lancashire, UK). The face-to-face meeting was to support gender representation in a community where gender segregation is an important barrier, and to obtain insights from women who mostly handle the cooking in the household¹⁶. Additionally, the face-to-face meeting was aimed to overcome internet illiteracy which would normally hinder participation. Both meetings were facilitated by the researcher (GF, PhD, female) with the help of a community representative (SM) who have prior experience of leading meetings in the community and who joined both panels and helped overcome language barriers. The researcher had no prior links with the community and was presented to the panel as a University lecturer interested in diabetes research. Each meeting lasted for one hour. Participants were emailed information on the planned topics of discussion prior to the meetings and participants were provided with additional paper copies during the face-to-face meeting (*Extended data*¹⁸). This consisted of an example of a diet consisting of soups and shakes, a 3-day meal plan low-calorie food-based diet [they were provided with information to explain that the diet has Mediterranean components (olive oil, fruits and vegetables), which have been shown to have beneficial effects on the prevention and management of type 2 diabetes and cardiovascular disease], a quality-of-life questionnaire (EuroQol 5D questionnaire) and information on the use of step counters. We provided gift vouchers (£20) as an acknowledgment for their participation.

Questions asked during the meetings are listed in [Table 1](#). Audio recordings were made of the meetings, and the researcher also took field notes.

Data analysis

Interviews were first transcribed by the researcher (GF), and a detailed summary of all responses was produced. Relevant information was then retained and included in the report.

Ethical considerations

As this is a patient and public involvement and engagement work, ethical approval was not required, as per [NIHR guidelines](#). Participants provided written informed consent to participate in the work and for their data to be published anonymously.

Results

Characteristics of attendants are presented in [Table 2](#).

Table 1. Questions asked during both meetings.

- 1- What are your views on the TDR and the food based diet? What would be your preference if you are to take part?
- 2- What changes to the diets would you suggest that would make it more suitable to you?
- 3- If your preference is for food-based diets, would you prefer sets of meal plans that you are required to follow?
- 4- What are your views on the quality of life questionnaire?
- 5- Would you wear step counters during the study?
- 6- What are your views on online applications for recording diet?
- 7- Have you taken part in studies before? which ones or why not?
- 8- What do you think are the barriers for people in your community/your family to follow low calorie diets?
- 9- How could we help you be more engaged in research?
- 10- How important is it for your family/community members to support you when following the programme?
- 11- Would you be interested in taking part in the study if it is funded?

Table 2. Characteristics of people who took part in both activities.

	Number of people (n)
Gender (F/M)	n=12/n=1
Age (years)	
<40	n=1
40–65	n=9
>65	n=3
Disease status	
Type 2 diabetes patients	n=7
Family members/carers	n=4
Type 2 diabetes patients & carer	n=2
Education	
No formal qualifications/not schooled	n=7
GCSE/ O-Level	n=3
Degree Level	n=3
Profession	
Unemployed/stay at home	n=4
Carer	n=2
Teacher	n=2
Self-employed	n=2
Retired	n=3

Views on the use of total diet replacement

Overall, 11 out of 13 people stated that TDR for 12 weeks was an unacceptable intervention. Older people (n=3) felt that they would be particularly unwilling to follow this type of diet, and their perception is that that solid foods must be included to have a fulfilling diet. They provided examples of their preference as stated below:

“Soups and shakes could be a short-term fix (2 weeks or so) but not a diet that could be adopted for 3 months”
- Participant 1-Female (40–65 years)

“Too long” - Participant 2-Female (40–65 years)

“Soups won’t fill you up” - Participant 3-Female (>65 years)

“A soup represents for us a food you have when you are ill” - Participant 4-Female (>65 years)

“Adding Chapati to soups would be more acceptable”
- Participant 5-Male (40–65 years)

Low-calorie food-based diets are more acceptable

Panels were provided with an example of a 3-day meal plan low-calorie food-based diet. They were provided with information to explain that the diet has Mediterranean components (olive oil, fruits and vegetables), which have been shown to have beneficial effects on the prevention and management of type 2 diabetes and cardiovascular disease.

Eleven participants reported that the food-based diet would be more acceptable than TDR, but there was a unanimous opinion (n=13) that it would have to be culturally tailored to the Southeast Asian population. There was a strong message that the use of spices would be essential for acceptance of the intervention, as well as the inclusion of staple foods (chapati, rice etc.). For those born outside the UK (n=8), it was reported that it would be crucial that they adhere to a strict traditional diet, while Southeast Asians born in the UK were more willing to accept non-traditional foods. Below are some statements reported by the panels:

“Spices are needed for flavour” -Participant 1 -Female (40–65 years)

“Add traditional foods especially chapati and rice”
-Participants 2 & 3-Females (40–65 years)

“Set-up meal plans (e.g., 14 menus) are preferred” -All participants

“Add more vegetables that could be cooked with less oil” -Participant 3 -Female (40–65 years)

“Allow vegan/vegetarian options” Participant 4-Female (40–65 years)

“Olive and olive oil are acceptable” -All participants

“Consider teeth problems in older adults” -Participant 5-Female (>65 years).

Set-up catered meal plans are suggested as a convenient option

While discussing food-based diet preferences, two members of the panel went on to discuss the idea of providing ready-made portion controlled catered meals. The idea received enthusiasm from the whole cohort, and it was suggested that this would be an excellent way to improve adherence among people, educate them on portions/ingredients, and give them an idea about cooking methods for when they planned to prepare similar meals for themselves.

“Meal plans will help me understand what ingredients and portions to use so I can then later on prepare food by myself” – Participant 1-Female (40–65 years)

Support: family and community

The facilitator asked whether the presence of family and community support would be essential for the success of the intervention. Panels stressed the importance of peer support in the weight loss and diabetes remission journey. This includes peer support group meetings within the community (n=1). Patients (n=2) also welcomed the idea of having family members attending appointments and helping overcome language barriers. However, it was mentioned that “some meanings could be lost in the translation” (n=4), thus a translator with more expertise could be of greater help in conveying accurate information to patients. Another participant mentioned the potential importance of peer support group meetings in achieving adherence.

Other components of the intervention

All other outcome measures in the intervention (step counters) as well as quality of life questionnaire were deemed acceptable (n=13), but only after the community representative explained their use to both panels. However, reporting diet through a phone app was reported to be unsuitable by 11 people. Therefore, using a paper record was preferred by the majority.

Taking part in diabetes research studies

Participants expressed their enthusiasm in taking part in the study should it be funded. Five patients were very keen to follow an intervention that could achieve remission. Importantly, one participant stated that diabetes was not perceived as a major risk that requires action due to it being very common among their community. Participants (n=13) unanimously stated that they had not taken part in research studies before because they have never been asked. This statement contrasts with the findings of previous reports showing a lack of interest of this community in taking part in research studies⁹. Widening recruitment strategies might be an important point to consider in future research.

Discussion

Strengths and limitations

This report has several strengths. To our knowledge, this is the first activity comparing the potential acceptability of TDR and food-based low-calorie diets for diabetes remission in a Southeast Asian population. In addition to a virtual meeting, we used face-to-face meetings to overcome internet illiteracy.

There are some limitations. Whilst attempts were made to ensure that the study cohort was representative of the background population, the small number of participants and our recruitment methods could impact the conclusions drawn from these meetings. The predominance of women in this activity, might limit the generalisability of these insights in male South east Asian population groups.

Clinical and research implications

This work will help us design a randomised controlled study using low calorie diets in Southeast Asian people with type 2 diabetes with the aim of inducing remission. Based on these insights, we plan to avoid using TDR as an intervention for diabetes remission in the South east Asian population. Instead, this work suggests the potential utility of a food-based low-calorie intervention, including looking at the feasibility of administering catered meals in primary care when compared to usual care. Meal plans will be prepared together with members of the community and patient support members. Through the [Greater Manchester Strategic Clinical Network](#) and the [Research for the Future](#) intervention, we will promote engagement with this research for people with diabetes from the Southeast Asian population.

Conclusions

The Southeast Asian population is an important target group for interventions designed to prevent or treat type 2 diabetes. This activity provided useful insights to shape future study looking at the feasibility to reverse diabetes in primary care through dietary intervention in a high-risk population, and to encourage more patients to become involved in diabetes research, leading in the long-term to improved quality of life, health, and economic benefits.

Data availability

Underlying data

Data collected was in form of notes and recordings. Participants were informed that all recordings would be discarded after the interview. Therefore, the underlying data for this research is not available. Data collected was qualitative and the article encompasses most of the recorded data in order to help inform future research.

Extended data

Zenodo: Comparing the acceptability of total diet replacement and food-based low-calorie diets for type 2 diabetes remission

amongst Southeast Asians: a public and patient involvement activity, <https://doi.org/10.5281/zenodo.5720754>¹⁸.

This project contains the information sheet that participants were provided with before and during the meetings.

Reporting guidelines

Zenodo: COREQ checklist for 'Comparing the acceptability of total diet replacement and food-based low-calorie diets for type 2 diabetes remission amongst Southeast Asians: a

public and patient involvement activity', <https://doi.org/10.5281/zenodo.5720754>¹⁸.

Data are available under the terms of the [Creative Commons Attribution 4.0 International license \(CC-BY 4.0\)](#).

Acknowledgments

We would like to thank all patients and family members for taking part in this study.

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Open Peer Review

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Adrian Brown

Centre for Obesity Research, University College London, London, UK

Thank you for asking me to review this manuscript entitled “Comparing the acceptability of total diet replacement and food-based low-calorie diets for type 2 diabetes remission amongst Southeast Asians: a public and patient involvement activity”. This looked at gaining opinions of people from Southeast Asian community regarding what constitutes a culturally acceptable diet.

This is a very important topic of work with the scarcity of information in the area and with the increased interest of using total diet replacements within clinical practice for remission, the question around whether these types of diets are culturally sensitive and relevant is important. These PPI activities provide novel information suggesting that low energy food-based diets might be preferred within Southeast Asian ethnic groups. This is an interesting report with some important views related to the use of low energy TDR and food-based diets in people from Southeast Asian ethnicity. Including that ready-made catered meals would be welcomed, peer support was key and the need for experienced translators. It was excellent to see the inclusion of a community representative to help with PPI meetings to help with engagement and also translation.

The major comment within this manuscript is the risk of unconscious researcher bias. Looked at the extended data and the participant information sent prior to the events, the framing of the diets appears different. The information about the TDR diet could be seen as neutral with the following “People who take part in the diabetes research study will be asked to consume a diet only consisting of soups and shakes for 12 weeks. Food will be reintroduced after then. Here is an example of soups and shakes diets for one day (850 Kcal)”. However, the food-based diet had the additional of this sentence “The diet has been tailored to include components of the Mediterranean diet; this diet had many health benefits in the past for preventing diabetes and its complications”, which appears to be framing the diet more positively. This might have therefore impact on how the participants view the diets and therefore the interpret your data and conclusions. This would benefit from being explored.

There are a few points that would benefit from being addressed:

- Please can the authors consider changing the terminology from “low calorie” to “low energy”. Although this terminology is used, a calorie is a unit of energy, therefore it should be “low energy diets”.

Abstract:

- Please can you change the white population to capital “W”.

Introduction:

- When discussing diabetes and risk can you please ensure that you use Type 2 diabetes (T2D) and not diabetes as this could confuse individuals believing other forms can be put into remission e.g., people living with type 2 diabetes not living with diabetes.
- Please can you look at the language that is used as some could be viewed as stigmatising e.g. “tackling” “diabetes crisis” “the burden”. These are combative terms and appears to suggest that people with type 2 diabetes are a burden. Instead, can you look for alternative terms such as “address” instead of “tackling”; “increased diabetes prevalence” instead of “crisis”
- Can you please use the word “remission” instead of “reversed” as T2D cannot be reversed in terms of the underlying biological changes e.g., pancreatic beta cell death, but can be put in remission, transiently, assuming the patient losses weight and keeps it off.
- When discussing the barrier and facilitators to participation in research could the authors, please give an example or two to avoid the reader having to leave the paper completely to look at the reference.

Methods:

- Can the authors please explain how the people were selected i.e., how the community education presentative identified people. Also were there only 18 people invited to the PPI group or were there more, in order to get a sense of how many people did not respond to the invitation.

Meeting information:

- The Mediterranean diet has also been shown to be able to engender remission from the PREDIMED study – please see my review¹ for details. Also, can you reference your comment related to the beneficial effects.

Data analysis:

- Please can the authors include more detail on the analysis. Were the interviews transcribed verbatim? Was there then checking of the data and reviewed by another researcher to avoid bias?

Table 2:

- Would it be possible to have mean/median for age? Also was this gender or sex, were participants asked about the gender they identified with or was this from medical records? It is possible to identify which ethnic groups the participants were from e.g. Pakistani, Indian as culture is different and help to see generalisability of the data. Also was there data on socio-economic class, this again could impact the interpretation of the data and views.
- Did the participants explain why it was crucial that they adhere to a “strict traditional diet”? This seems a crucial point related to perceptions and an area to address around why people from Southeast Asian ethnic group might prefer using food-based diets and not a TDR. Could these points be addressed to increase acceptance of a TDR.

Taking part in research:

- Interesting that your data showed that people hadn't taken part of research as they hadn't been asked, please can you check the reference (9) you quote here as it appears not to be related to lack of interest in taking part in research. Instead related to prevalence of type 2 diabetes diagnoses in the UK primary care setting

Limitations:

- Only having one researcher review the data could be considered a limitation. If this was not the case, please including this in the methodology.
- It is important that the authors consider the impact of researcher bias and also social desirability bias.

Clinical and research implications:

- The conclusion to avoid using TDR completely in this group based on the opinions of 13 people and with the possible chance of unconscious researcher bias could be considered premature.
- With data showing that TDR is effective at engendering remission in individuals from a Middle Eastern population (as you referenced; Taheri *et al.*, 2020²), that People from Southeast Asia can achieve remission using a liquid low energy diet (Bhatt *et al.*, 2017³) and qualitative data, although mainly in White individuals, identifying that TDR were easier to follow than initially thought (Harper *et al.*, 2018⁴) appears important here. Perceptions of TDR prior to their use are often negative, but opinion frequently changes once they use them. In addition, the team responsible for the DiRECT study in Glasgow are conducting a study in a South Asian population using a TDR which results are expected soon. This will provide data to see if those that used a TDR stuck to it and if it was acceptable.
- It would seem that within this cohort that TDR is not preferred but viewing it as not being an option for remission is questionable considering previous data. It seems that in relation to how PPI might impact on the research, it appears that acceptability should be accessed with through a feasibility trial with a direct comparison between food-based diet and TDR as a start point. While also exploring some of the opinions of the PPI group further to related to why they considered the TDR unacceptable in formal qualitative research.

Conclusions:

- In the first sentence should focus on the aim of the study which is remission, it is not clear the reason there is discussion about prevention as this was not the aim of the PPI activities. Please can you review.
- As before please avoid using reverse, please use remission instead.

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Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Partly

If applicable, is the statistical analysis and its interpretation appropriate?

Not applicable

Are all the source data underlying the results available to ensure full reproducibility?

No

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Obesity, Type 2 diabetes, Weight Stigma and use of very low and low energy diets in Type 2 diabetes remission and other obesity related diseases.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 11 Feb 2022

Grace Farhat, Manchester Metropolitan University, Manchester, UK

Thank you for asking me to review this manuscript entitled "Comparing the acceptability of total diet replacement and food-based low-calorie diets for type 2 diabetes remission amongst Southeast Asians: a public and patient involvement activity". This looked at gaining opinions of people from Southeast Asian community regarding what constitutes a culturally acceptable diet.

Author response:

Thank you for taking the time to thoroughly review our manuscript and for providing helpful insights.

This is a very important topic of work with the scarcity of information in the area and with

the increased interest of using total diet replacements within clinical practice for remission, the question around whether these types of diets are culturally sensitive and relevant is important. These PPI activities provide novel information suggesting that low energy food-based diets might be preferred within Southeast Asian ethnic groups. This is an interesting report with some important views related to the use of low energy TDR and food-based diets in people from Southeast Asian ethnicity. Including that ready-made catered meals would be welcomed, peer support was key and the need for experienced translators. It was excellent to see the inclusion of a community representative to help with PPI meetings to help with engagement and also translation.

The major comment within this manuscript is the risk of unconscious researcher bias. Looked at the extended data and the participant information sent prior to the events, the framing of the diets appears different. The information about the TDR diet could be seen as neutral with the following *"People who take part in the diabetes research study will be asked to consume a diet only consisting of soups and shakes for 12 weeks. Food will be reintroduced after then. Here is an example of soups and shakes diets for one day (850 Kcal)"*. However, the food-based diet had the additional of this sentence *"The diet has been tailored to include components of the Mediterranean diet; this diet had many health benefits in the past for preventing diabetes and its complications"*, which appears to be framing the diet more positively. This might have therefore impact on how the participants view the diets and therefore the interpret your data and conclusions. This would benefit from being explored.

Author response:

This is a good point. We primarily aimed to look at the acceptability of TDR versus food-based diet, with a Mediterranean component because of its established health benefits in the south Asian population.

The sentence that acknowledged the benefits of a Mediterranean diet (in the document provided to participants) was mainly to provide a justification to why we are including a Mediterranean component in an Asian diet, as it could be unacceptable and unusual to some. Although this has made the food-based diet look more positive, we don't believe this has impacted the opinion of our panel.

All discussions focused on the culturally appropriate elements in the food-based diet (spices, traditional foods etc...) that made it appealing to this group. Mediterranean diet was only brought up during the discussion when we asked about its acceptability.

This point has been added to the Results section of the manuscript which now reads, "*Although including a Mediterranean component in the food-based diet (together with its potential beneficial effects) might have made the food-based diet appear more positive, this particular element was not the subject of discussion in both activities. All panel discussions focused on the culturally appropriate elements in the food-based diet such as spices and traditional foods, that made it more appealing.*"

However, response to this helpful comment, we have added the following sentence to the limitation section of the discussion, "*Our description of the potential health benefits of a Mediterranean diet may have positively impacted how participants viewed the food-based diet.*"

There are a few points that would benefit from being addressed:
Please can the authors consider changing the terminology from “low calorie” to “low energy”. Although this terminology is used, a calorie is a unit of energy, therefore it should be “low energy diets”.

Author response:

We agree and this terminology has been changed throughout the manuscript.

Abstract: Please can you change the white population to capital “W”.

Author response:

As per government guidelines, the “preferred style is not to capitalise ethnic groups, (such as ‘black’ or ‘white’) unless that group’s name includes a geographic place (for example, ‘Asian’, ‘Indian’ or ‘black Caribbean’)”. Please see [Writing about ethnicity - GOV.UK \(ethnicity-facts-figures.service.gov.uk\)](https://www.ethnicity-facts-figures.service.gov.uk)

Introduction: When discussing diabetes and risk can you please ensure that you use Type 2 diabetes (T2D) and not diabetes as this could confuse individuals believing other forms can be put into remission e.g., people living with type 2 diabetes not living with diabetes.

Author response:

Thank you. These statements have been amended.

Please can you look at the language that is used as some could be viewed as stigmatising e.g. “tackling” “diabetes crisis” “the burden”. These are combative terms and appears to suggest that people with type 2 diabetes are a burden. Instead, can you look for alternative terms such as “address” instead of “tackling”; “increased diabetes prevalence” instead of “crisis”

Author response:

These terms have been amended and alternative language has been used.

Can you please use the word “remission” instead of “reversed” as T2D cannot be reversed in terms of the underlying biological changes e.g., pancreatic beta cell death, but can be put in remission, transiently, assuming the patient losses weight and keeps it off.

Author response:

We are grateful for this comment. The term “reversed” has been replaced with “remission”.

When discussing the barrier and facilitators to participation in research could the authors, please give an example or two to avoid the reader having to leave the paper completely to look at the reference.

Author response:

Examples of barriers and facilitators to participation have been added to the

introduction which reads, *"The barriers and facilitators to participation in health and T2D diabetes research within the south Asian population (such as perceived participation to improve health, cultural and language barriers, and lack of interest) have been described elsewhere¹⁶. It is therefore important to look at the suitability and barriers for success for low energy interventions as a means of inducing T2D remission in this population."*

Methods: Can the authors please explain how the people were selected i.e., how the community education representative identified people. Also were there only 18 people invited to the PPI group or were there more, in order to get a sense of how many people did not respond to the invitation.

Author response:

The community representative recruited participants by getting in touch with a local GP practice and through word-of mouth in community local groups. This has resulted in 18 people being approached and 13 responding. We were only aiming to recruit around 12 people.

We have made this information clearer in the manuscript which now reads, *"Patients and family members were recruited face-to-face and by telephone through a GP practice and with the assistance of a community education representative with strong community links helping to spread the word within different sub-ethnic populations (Pakistani, Bangladeshi and Indian groups) in community local groups. Invitations included the researchers' contact details and were sent out by email and "Whatsapp" application either by the researcher directly or through the community representative. Overall, 18 people were approached, and 13 people accepted the invitation. Inclusion criteria included men and women over 18 years of age from a south Asian background who are either patients with type 2 diabetes or have someone with type 2 diabetes in the household. English and non-English speakers were invited to attend, and the community representative was available to help with the translation."*

Meeting information: The Mediterranean diet has also been shown to be able to engender remission from the PREDIMED study – please see my review¹ for details. Also, can you reference your comment related to the beneficial effects.

Author response:

Thank you. We have referenced a study linking Mediterranean diet to T2D remission & beneficial effects on cardiovascular health in the introduction section *"The information pack consisted of an example of a diet consisting of soups and shakes, a 3-day low energy food-based diet plan [they were provided with information to explain that the diet has Mediterranean components (olive oil, fruits and vegetables) which have beneficial effects on remission of T2D and cardiovascular health"*.

Data analysis: Please can the authors include more detail on the analysis. Were the interviews transcribed verbatim? Was there then checking of the data and reviewed by another researcher to avoid bias?

Author response:

The interviews were first transcribed verbatim and then a summary of important points was developed. This summary has been reviewed by the community representative. This sentence is now added to the “data analysis” section which reads, *“Interviews were first transcribed verbatim by the researcher (GF), and a detailed summary of all responses was then produced. This summary was reviewed by the community representative. Relevant information was retained and included in the report.”* The data was not checked by another researcher; a point that has been included as a study limitation. The relevant text in the discussion reads, *“Our data could have benefited by being reviewed by more than one researcher to reduce the potential for researcher bias”*.

Table 2: Would it be possible to have mean/median for age? Also was this gender or sex, were participants asked about the gender they identified with or was this from medical records? It is possible to identify which ethnic groups the participants were from e.g. Pakistani, Indian as culture is different and help to see generalisability of the data. Also was there data on socio-economic class, this again could impact the interpretation of the data and views.

Author response:

Thanks for asking these points for clarification. We recorded participants by their age category and not by their numeric age. Therefore, we are not able to provide the mean and median ages; just the median age category (40-64 years).

Gender is how our participants identified themselves.

Information on sub-ethnicity and socio-economic class has been added to the manuscript. Please see the revised Table 2.

Did the participants explain why it was crucial that they adhere to a “strict traditional diet”? This seems a crucial point related to perceptions and an area to address around why people from Southeast Asian ethnic group might prefer using food-based diets and not a TDR. Could these points be addressed to increase acceptance of a TDR.

Author response:

We understood this is mostly related to the association between diet and cultural identity which has been also backed by the literature¹. Participants mentioned that this is linked to their culture (this statement is now added to the results section), and this aspect is particularly important for those who were born outside the UK. Those born in the UK were less keen about a strict traditional diet.

The results section now reads, *“For those born outside the UK (n=8), it was reported that it would be crucial that they adhere to a strict traditional diet as this is linked to their home culture, while south Asians born in the UK were more willing to accept non-traditional foods”*.

¹ Diabetes UK (2009). Diabetes UK and South Asian Health Foundation recommendations on diabetes research priorities for British South Asians. Available at https://www.diabetes.org.uk/resources-s3/2017-11/south_asian_report.pdf

Taking part in research: Interesting that your data showed that people hadn't taken part of

research as they hadn't been asked, please can you check the reference (9) you quote here as it appears not to be related to lack of interest in taking part in research. Instead related to prevalence of type 2 diabetes diagnoses in the UK primary care setting

Author response:

Thanks for pointing out this error and we have found an alternative study that is in line with our outcomes. We have changed this reference to, *"This statement is in line with the findings of a previous report showing that people from this population did not participate in research studies because they have never been asked"*.

Limitations: Only having one researcher review the data could be considered a limitation. If this was not the case, please including this in the methodology.

It is important that the authors consider the impact of researcher bias and also social desirability bias.

Author response:

These limitations have been included to the limitations section of the discussion which now reads, *"Our data could have benefited by being reviewed by more than one researcher to reduce potential researcher bias. There may also have been social desirability bias amongst the PPIE group"*.

Clinical and research implications: The conclusion to avoid using TDR completely in this group based on the opinions of 13 people and with the possible chance of unconscious researcher bias could be considered premature.

With data showing that TDR is effective at engendering remission in individuals from a Middle Eastern population (as you referenced; Taheri *et al.*, 2020²), that People from Southeast Asia can achieve remission using a liquid low energy diet (Bhatt *et al.*, 2017³) and qualitative data, although mainly in White individuals, identifying that TDR were easier to follow than initially thought (Harper *et al.*, 2018⁴) appears important here. Perceptions of TDR prior to their use are often negative, but opinion frequently changes once they use them. In addition, the team responsible for the DiRECT study in Glasgow are conducting a [study in a South Asian population using a TDR](#) which results are expected soon. This will provide data to see if those that used a TDR stuck to it and if it was acceptable.

It would seem that within this cohort that TDR is not preferred but viewing it as not being an option for remission is questionable considering previous data. It seems that in relation to how PPI might impact on the research, it appears that acceptability should be accessed with through a feasibility trial with a direct comparison between food-based diet and TDR as a start point. While also exploring some of the opinions of the PPI group further to related to why they considered the TDR unacceptable in formal qualitative research.

Author response:

Thank you for these helpful insights. We have been considering these points in the planning of a feasibility study. There has been further research showing acceptability of TDR among south Asians which has raised many questions in relation to why outcomes of this PPIE activity have been different. It may be possible that the

different sub-ethnic groups and the more traditional populations might be less accepting of TDR. Additionally, in view of the perceived link between food and cultural identity in the south Asian population, looking for alternative options to TDR might encourage more people to take part in studies. We are aiming to develop a single arm feasibility study looking at the acceptability of food-based catered meals diet in the south Asian population, which would lay the ground for a full intervention comparing different diet options.

In response to these helpful comments, we have changed the first sentence of the Clinical and research implications section so that it reads, *"Data from this cohort, including participants from a more traditional south Asian sub-group, suggest that TDR may have limited acceptability in this patient population. We have also included the following statements in the limitation sections "Lastly, the lack of knowledge and use of TDR might have affected their acceptability. White individuals have previously expressed negative perceptions of TDR too, yet their opinions changed after use²³. Future studies will be able to identify whether this will be the case in the south Asian population"*.

Conclusions: In the first sentence should focus on the aim of the study which is remission, it is not clear the reason there is discussion about prevention as this was not the aim of the PPI activities. Please can you review.

Author response:

The first sentence of the conclusion has been amended so that it reads, *"The south Asian population is an important target group for interventions designed to induce T2D remission."*

As before please avoid using reverse, please use remission instead.

Author response:

We have amended these statements accordingly.

Competing Interests: No competing interests were disclosed.

Reviewer Report 13 December 2021

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The authors present a comparison between the acceptability of total diet replacement and food-based low calorie diets for type 2 diabetes remission in individuals of Southeast Asian ethnicity in the UK. Our major concern is whether this manuscript reports patient and public involvement as the authors assert or whether it is in fact qualitative formative work.

Major comments

1. As noted above, the key question is whether this manuscript details patient and public involvement or qualitative formative work. If it is the latter, ethical approval would have been required for the work and given that this was not done, the manuscript cannot be approved. Having reviewed [guidance](#) that highlights the differences between the two, we believe this constitutes qualitative research based on the following:

- Participants are primarily providing their perspectives on the acceptability of the method of consuming low calorie diets. There is no evidence of active discussion in which both researchers and participants offer views and participants contribute to decisions on the research question, design etc.
- Although feedback was sought on a proposed questionnaire and the use of step counters, it appeared rather superficial and there was no evidence as to how this feedback modified the researchers' plans.
- The participants appeared to have no prior experience of research while those in patient and public involvement usually have some experience of research, either as part of a charity or lay group.
- The questions put to participants were quite focused on a particular experience.

If it is accepted that this is indeed qualitative research, then apart from the absence of ethical approval, there are other issues to be addressed before the article is suitable for indexing.

- The authors need to provide more data on the context from which participants were recruited.
- There needs to be greater clarity about how participants were recruited-the information given appears to be contradictory.
- How was the number of people invited decided?
- The method of data analysis needs to be properly reported.
- The results need to be reported using standard qualitative reporting format. It would also be useful to include the diabetes status when reporting characteristics of the sources of quotes.
- It is less useful to report quantitative data as the numbers are too small to draw any conclusions.

- The authors should reflect on the influence of social desirability bias on their findings.

Minor comments

1. The introduction would benefit from being more focused.
2. The transcripts are not available and the analysis therefore not repeatable.
3. The entire article needs to be carefully proof read.

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

No

If applicable, is the statistical analysis and its interpretation appropriate?

Not applicable

Are all the source data underlying the results available to ensure full reproducibility?

No

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Endocrinology and metabolism in lower and middle income countries

We confirm that we have read this submission and believe that we have an appropriate level of expertise to state that we do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Author Response 11 Feb 2022

Grace Farhat, Manchester Metropolitan University, Manchester, UK

The authors present a comparison between the acceptability of total diet replacement and food-based low calorie diets for type 2 diabetes remission in individuals of Southeast Asian ethnicity in the UK. Our major concern is whether this manuscript reports patient and public involvement as the authors assert or whether it is in fact qualitative formative work.

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Having reviewed [guidance](#) that highlights the differences between the two, we believe this constitutes qualitative research based on the following: Participants are primarily providing their perspectives on the acceptability of the method of consuming low calorie diets. There is no evidence of active discussion in which both researchers and participants offer views and participants contribute to decisions on the research question, design etc.

Author response:

We explain below why we strongly believe that our work qualifies as a PPIE activity and not as qualitative work. We have received consent from participants to publish these PPIE views anonymously, therefore the work has entirely appropriate ethical standards.

The reviewers provide useful [guidance](#) that clarifies the difference between PPIE activities and qualitative research. Here we provide evidence that our work is a PPIE activity based on the seven characteristics that differentiate PPIE from qualitative research (see [here](#)).

Research question: Our stated aim was to understand the views of people from the south Asian population on potential dietary approaches to achieve diabetes remission. Our research was not addressing a single research question (qualitative research) but rather the PPIE group helped us to select and refine the research question for our future clinical trial. For example, in our discussions with our participants, we were rather surprised that they expressed a preference for a culturally tailored low energy food-based diet delivered as catered meals. Participants suggested that catered meals would increase adherence and knowledge in portion size and cooking methods. Therefore, this has led us to design a completely different dietary intervention than the one that we originally thought might be acceptable.

- 1. Practical approach: our approach to gathering information was arranged in a way that suited both researchers and participants (PPIE activity) and did not follow any method based on theory (qualitative research).**
- 2. People involved: our research is focused on people from the south Asian population but apart from this criterion we did not select participants in other ways which make this a PPIE activity rather than qualitative research.**
- 3. Ethical approval: this was not sought because we firmly believe that this is PPIE activity and not qualitative research based on these criteria.**
- 4. People's input: as we have described in the paper, we used people's input to help us design and undertake our future research. For example, based on the rather unexpected views of our participants we have designed our next study to assesses the feasibility and acceptability of a culturally appropriate food-based low energy intervention delivered through catered meals. We have not used**

people's input simply as data to address a specific research question. This makes this a PPIE activity rather than qualitative research.

5. **Power:** the views of our participants completely changed our thoughts about the nature of an appropriate future intervention in this patient population. As mentioned above, the research participants guided us in designing a more appropriate clinical intervention which will be tested in a clinical trial therefore this is clearly a PPIE activity rather than qualitative research in which only the researchers have the power to influence the conduct of the research.
6. **Use of the findings:** we recognise that the opinions of our participants relate to them and that their views may have limited generalisability. For example, in the clinical implications section of the manuscript we write, *"Data from this cohort, including participants from a more traditional south Asian sub-group, suggest that TDR may have limited acceptability in this patient population."* We also write in the limitations section, *"Whilst attempts were made to ensure that the study cohort was representative of the background population, the small number of participants and our recruitment methods could have impacted the conclusions drawn from these meetings."* We recognise that we need to study a larger sample that may be more representative of the SAP and therefore our feasibility study will recruit a larger cohort from a wider geographical region. Since we openly recognise the limited generalisability of our findings, this makes this a PPIE activity rather than qualitative research.

Therefore, based on the criteria above, we conclude that our study clearly represents a PPIE activity rather than a qualitative research study.

Although feedback was sought on a proposed questionnaire and the use of step counters, it appeared rather superficial and there was no evidence as to how this feedback modified the researchers' plans.

Author response:

The "Clinical and research implications" and conclusion sections in the manuscript have indicated how this feedback has helped in our research plans with the following statements:

"Data from this cohort, including participants from a more traditional south Asian sub-group, suggest that TDR may have limited acceptability in this patient population. This work will help us design a randomised controlled study using low energy diets in South Asian people with T2D with the aim of inducing remission. These activities suggest the potential utility of a food-based low energy intervention, including looking at the feasibility of administering catered meals in primary care when compared to usual care. Meal plans will be prepared together with members of the community and patient support members. An education element to increase knowledge of T2D risk and healthy eating will be considered. Through the [Greater Manchester Strategic Clinical Network](#) and the [Research for the Future](#) intervention, we will promote engagement with this research for people with diabetes from the south Asian population."

“The south Asian population is an important target group for interventions designed to induce T2D remission. This activity provided useful insights to shape a future study looking at the feasibility of food-based intervention for T2D remission in primary care in a high-risk population. It will encourage more patients to become involved in T2D research, which may lead in the long-term to improved quality of life, health, and economic benefits”.

The participants appeared to have no prior experience of research while those in patient and public involvement usually have some experience of research, either as part of a charity or lay group.

Author response:

Whilst we agree that it would be ideal to include people with prior research experience, it is not often possible especially in such an underrepresented group. As we have mentioned above, we did not select participants based on the prior research experience.

The questions put to participants were quite focused on a particular experience.

Author response:

Whilst researchers had broadly set the agenda, the session was flexible enough to allow for public-led items or a change of direction.

If it is accepted that this is indeed qualitative research, then apart from the absence of ethical approval, there are other issues to be addressed before the article is suitable for indexing.

Author response:

In view of the evidence that this is a PPIE activity, the points raised below would be more relevant for qualitative research than a PPIE, but if the reviewer and Editorial team feel that additional information is required in the context of a PPIE activity then we will be happy to respond.

The authors should reflect on the influence of social desirability bias on their findings.

Author response:

We have included social desirability as a limitation in the “limitations section”.

Minor comments

1. The introduction would benefit from being more focused.

Author response:

We have modified the introduction to make this more focussed (please see the revised manuscript).

2. The transcripts are not available and the analysis therefore not repeatable.

Author response:

We did not request participants' consent to publish their transcripts and have added this as a limitation.

3. The entire article needs to be carefully proofread.

Author response:

The article has been reviewed by all authors and proofread by the journal.

Competing Interests: No competing interests were disclosed.