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RESEARCH ARTICLE

Intergenerational differences in healthy eating beliefs among British Pakistanis with type 2 diabetes

Syka Iqbal¹  | Halima Iqbal² | Carolyn Kagan³

¹Department of Psychology, Faculty of Management, Law and Social Sciences, University of Bradford, Bradford, UK

²Department of Public Health, Faculty of Health, University of Bradford, Bradford, UK

³Research institute of Health and Social Change, Faculty of Health, Psychology and Social Care, Manchester Metropolitan University, Manchester, UK

Correspondence

Syka Iqbal, Department of Psychology, Faculty of Management, Law and Social Sciences, University of Bradford, Bradford, UK.

Email: s.iqbal@bradford.ac.uk

Abstract

Introduction: There are growing concerns on how to prevent, slow down and induce remission of type 2 diabetes mellitus (T2DM). Recent evidence has found diet and lifestyle interventions can cause remission of T2DM, however, there are challenges for diverse groups such as British Pakistanis who are four times more at risk of T2DM. There is a need to understand the food behaviours of different generational groups to develop culturally appropriate strategies to support diabetes prevention programmes.

Aims: This study explores beliefs about healthy eating and food practices related to T2DM among British Pakistanis to understand the challenges they face in implementing healthy diets.

Method: We carried out 26 semi-structured qualitative interviews via telephone and face-to-face. The sample included T2DM British Pakistanis living in Bradford (UK), aged between 18 and 71 with a mean age of 50 (SD = 17.04). Among the participants, 14 were women (54%) and 12 were men (46%), with interviews conducted in both English (76%) and Urdu (24%). Participants were grouped under three generation groups based on age (first generation 65+; second generation 40–64; younger generation 18–39 years). There was no biological link between the generational groups, and they were not part of the same family. Data were analysed using qualitative reflexive thematic analysis.

Results: Findings were categorised into three themes: knowledge and awareness of diabetes symptoms; social and family context of food practices and making sense of healthy eating. The family was the fundamental unit of understanding food-related health behaviours. Eating traditional food was perceived as healthy and deemed practical for first generations who were the initial members of their family to settle in the UK as well as the second generations who had parents born in Pakistan. Younger British Pakistanis were born in the UK and reported that they struggled to eat alternative foods within the home and manage their T2DM.

Conclusion: These findings improve our understanding of how three generations of British Pakistanis with T2DM negotiate healthy diets. There is a need for culturally tailored diet modifications and interventions, where different

generational needs can be specifically targeted to adopt healthier diets which should be shared and encouraged.

KEYWORDS

British Pakistanis, diabetes, health interventions, intergenerational differences, qualitative research, T2DM

1 | INTRODUCTION

It is predicted that by 2045, there will be over 700 million people who have type 2 diabetes mellitus (T2DM) globally.^{1,2} In Britain, it is estimated that 7 million people are deemed high-risk.³ South Asians have six times higher rates of diabetes compared with other ethnic and migrant groups in Britain.⁴ T2DM usually develops later in life, and the risk depends on a combination of genetic and lifestyle factors.⁵ T2DM in this population is partly attributable to lifestyle factors, such as decreased physical activity, increased intake of dietary fats, processed foods and migration to affluent countries causing rapid changes in diet.⁶

Lifestyle adjustments, diet modification, and exercise are known to be an important component in the management of T2DM together with glucose control.⁷ The Diabetes Remission Clinical Trial found substantial weight loss as part of a calorie restricted diet can induce remission of T2DM in 80% of people in a primary care setting.⁸ However, long-term maintenance of weight loss and intensive lifestyle interventions are challenging, particularly in ethnically diverse groups, who are often underrepresented in trials.⁹ Furthermore, lifestyle interventions for T2DM have been met with confusion and distrust within South Asian populations.¹⁰ An unhealthy diet has been attributed to a lack of knowledge of healthy foods, how to cook healthy dishes, and how to translate these into daily practices. A systematic review found that there were a lack of health guidelines targeted at ethnically diverse groups.¹¹

Family members engage, actively promote, develop, and sustain health behaviours.¹² These include, for example, dietary intake, knowledge of health, generational status, culture, socioeconomic factors, and community membership.¹³ A British study of South Asian diabetic people¹⁴ found that social norms impacted diet modifications, for example, reducing the amount of salt, or ghee (clarified butter) would result in deviating from traditional practices and was seen as shameful. Psychological factors focus on behaviours, self-motivation, and self-efficacy which are identified as predictors of weight loss.¹⁵ These, however, do not consider the degree to which intergenerational factors impact eating behaviour.¹⁶ This study contributes to understanding how the experiences of British Pakistanis in the family household

What's new?

- Eating behaviours among British Pakistanis with T2DM are influenced by intergenerational factors.
- Families play a pivotal role in not just encouraging but actively promoting, developing, and sustaining health behaviours in relation to T2DM.
- We capture valuable insights to culturally adapt health interventions that can address issues and gaps identified in current interventions that lack cultural sensitivity.
- For healthcare workers, a tailored intervention for specific generational groups and understanding the complex family dynamics is key to success.

shape and influence their dietary practices related to T2DM and maps the similarities and differences across three generation groups.

It is important to note that South Asians are non-homogeneous. British Pakistani populations are four times more likely to receive a diagnosis of T2DM in comparison to Indian and Bangladeshi communities.¹⁸ This study aimed to capture T2DM British Pakistanis' beliefs about healthy eating and T2DM food practices and to understand the challenges they face to implement healthy diets. This study was guided by the following research objectives:

1. To examine the experiences of adopting diet modifications/healthy eating in first, second and younger generation British Pakistanis.
2. To explore the influence of culture on food and dietary practices in relation to T2DM.

2 | METHODS

2.1 | Design

A qualitative approach was taken using semi-structured interviews to explore a rich and detailed account of the

lived experiences of current food practices of British Pakistanis, across different generations who were diagnosed with T2DM. Bradford ranks as the UK's 6th largest city (Wright et al., 2013).¹⁷ With over 500,000 residents, it hosts a diverse population and experiences high levels of deprivation and health challenges. The city notably holds a significant South Asian community, of which nearly half is of Pakistani descent, comprising a three-generation cohort (Wright et al., 2013).¹⁷

2.2 | Sampling

In this study, a purposive sampling approach was used to recruit T2DM British Pakistani participants from across three generation groups.¹⁹ It is important to note that the generation groups are not biologically linked and did not belong to the same family. Table 1 shows categories of generation groups based on age. Recruitment ended when saturation occurred ($N=26$) which was when no new information was obtained from additional participants.

2.3 | Inclusion and exclusion criteria

2.3.1 | Inclusion criteria

British Pakistanis, Adults with a diagnosis of T2DM, Aged 18+.

2.3.2 | Exclusion criteria

Non-British Pakistanis, Type 1 diabetes, Undiagnosed T2DM, Prediabetes, Gestational diabetes, Aged under 18.

2.4 | Setting and recruitment

The study took place in Bradford, which has the largest Pakistani presence in Britain, with exceptionally high rates of T2DM.²⁰ Using location was the first point of call, the main author (SI) initially reached out to potential groups through established connections and advice from trusted individuals and diabetes project professionals in Bradford. This helped to identify the scope of the

voluntary community centres and led SI to add additional groups for potential inclusion in the list. SI compiled a list of five potential voluntary/community centres serving British Pakistanis in Bradford, consisting of members with T2DM. These criteria ensured that a diverse range of participants could be reached to reflect various generational backgrounds. SI contacted the coordinator of each community centre to explain the purpose of the study and asked if they would be interested in facilitating participation in the study to their Pakistani members. SI worked with each coordinator to create an invitation letter distributed via post and/or email to potential participants. This approach was chosen to ensure that not only the coordinator, but also the potential participants received information about the study. The invitations were plain English and jargon-free, containing the contact details of the main author, advising those interested to make direct contact. Invites were also translated into Urdu by SI to advertise the study and increase recruitment. Potential participants were sent an information sheet and consent form.

2.5 | Interviews

An initial scoping of the literature led to the development of the interview guide which was shared with key stakeholders in the local South Asian community who formed an advisory group for the project. This was to assess whether the key priorities and issues of concern were suitably addressed. The topic guide underwent an iterative process with modification of the questions, to minimise researcher bias. The interview was guided by a schedule consisting of open-ended questions and prompts focussing on participants' knowledge and understanding of healthy eating, and to explore experiences of food practices within British Pakistani culture. Interviews were carried out over the phone and in person based on participants' preferences and were audio-recorded and transcribed verbatim. After ensuring accuracy, transcripts were anonymised by the SI. Six of the interviews were translated from Urdu to English by SI and validated by HI, who is also proficient in Urdu like SI. The translation involved conveying the meanings of the words instead of rephrasing them, as suggested when translating interviews²¹ and minimising potential effects on data integrity and interpretation. Notes were made during the interview, which were taken into consideration for analysis.

2.6 | Ethical considerations

The study was approved by Bradford research ethics committee (project number 06/Q1202/53) as part of a wider

TABLE 1 Generation group based on age.

First generation	Second generation	Younger generation
Foreign born	British/foreign born	British born
Age: 65+	Age: 40–64	Age: 18–39

study exploring T2DM health seeking behaviours. Written consent was obtained for all participants in the form of either a signed consent form or verbally recorded consent to take part in the study. All notes and audio recordings were anonymised and stored on a secure university server.

2.7 | Analysis

A reflexive thematic analysis with the aid of computer-assisted qualitative software (NVivo 11) was used in the analytical process. The stages of analysis include familiarisation, generating initial codes, searching for themes, integrating them to make broader themes, defining themes, and producing the report (Braun & Clarke, 2006).²² SI conducted line by line coding of 26 transcripts during data collection to establish an initial coding scheme. Following this, a codebook was formulated and iteratively improved by all authors who held regular meetings to mitigate potential bias, address discrepancies, and enhance the rigour of the analysis. Collaboratively, all authors identified overarching main themes from the codes and resolved discrepancies. For enhanced credibility and trustworthiness, all authors undertook closed-coding of four transcripts, and a member of the research team independently checked the analysis to reach the same conclusion and themes.

3 | RESULTS

Twenty-six participants, aged 18–71, with a mean age of 50 (SD=17.04), were recruited and interviewed across three generation groups (first generation $n=10$ (38%), second generation $n=8$ (31%), younger generation $n=8$ (31%)). The sample consisted of 14 women (54%) and 12 men (46%), with interviews conducted in both English (76%) and Urdu (24%). Refer to Table 2 for participant demographics. Participants are anonymised and identified by participant numbers throughout the study.

Three master themes with sub-themes emerged, (i) Knowledge and awareness of healthy eating, (ii) Social

and family context of food practices and (iii) Making sense of healthy eating (see Table 3). Throughout the discussion of these findings, direct quotations from participants' accounts are presented.

3.1 | Theme 1: Knowledge and awareness of healthy eating

One central theme which arose from the data was knowledge and awareness of a healthy diet. The majority of participants recalled they did not have in-depth knowledge and awareness of healthy diet and lifestyle.

3.1.1 | Misconceptions about healthy eating

Participants from across all generation groups had differing perceptions of what type of diet they deemed as healthy and as such the importance of watching what they ate, keeping blood sugar levels low and being aware of how eating in moderation can prevent T2DM was not fully understood. The majority of first- and second-generation participants recalled attributing their diet as healthy because it was filling, homecooked, and used fresh ingredients:

Curries and traditional food are healthy, they keep you full and there is no issue with them as they have spices which are good for you, so I don't think it really affects sugar.

(Participant 11, second generation, male)

The majority of first- and second-generation participants did not recall medical perceptions of healthy eating; rather, they revealed a lack of detailed knowledge regarding medical advice given:

It's mainly sugar and not frying foods and eating small portions, the nurses tell you to eat

TABLE 2 Participant demographics.

Generation ^a	Age	Gender		Interview language	
		Men	Women	Urdu	English
First generation $n=10$	68.1 (2.02)	4 (40%)	6 (60%)	5 (50%)	5 (50%)
Second generation $n=8$	48.3 (7.8)	3 (37.5%)	5 (62.5%)	1 (12.5%)	7 (87.5%)
Younger generation $n=8$	29.8 (6.1)	5 (62.5%)	3 (37.5%)	0 (0%)	8 (100%)
Total = 26	50.2	12 (46.2%)	14 (53.8)	6 (23.1%)	20 (76.9)

^aCategorical variables (i.e. generation, gender, and interview language) are expressed as count and percentages (%). Continuous variables (i.e. age) are expressed as mean and standard deviation (SD).

TABLE 3 Master themes and sub themes.

Master themes	Sub themes
Knowledge and awareness of healthy eating	Misconceptions about healthy eating
	Managing diabetes pain through food
	The severity of diet
Social and family context of food practices	Stigma around eating non-traditional food
	Power dynamics
	Major life events
Making sense of healthy eating	Mixed messages
	Challenges of integrating alternative diets
	Behaviour change

dried nuts, but I don't understand why they are better.

(Participant 8, first generation, male)

Analysis of younger generation revealed that, at the onset of diabetes symptoms, they were unable to decipher which foods they could and could not eat within the home, in contrast to foods with easily understandable food labels.

I have a list of foods that are good like fish and not using certain types of cooking oils. I have to look at low fat stuff when I go supermarkets like low-fat yoghurt or no added sugar stuff because I'm diabetic but controlling how much I eat home food is harder, so I would skip meals and just trying to eat less.

(Participant 26, young generation, female)

In contrast to the majority of participants, one-third of the participants from the entire sample had indicated that they knew of foods appropriate for diabetes and were aware of the effects of diet and lifestyle:

You know what foods you shouldn't be eating—eating high fat or sugary foods including carbohydrates such as rice.

(Participant 16, second generation, male)

3.1.2 | Managing diabetes pain through food

Many participants from the first and second generation believed that diet and lifestyle were related to balancing sugar level readings and reducing pain, rather than treating diabetes or enabling remission:

My body knows when I've eaten too much sugar, I get headaches and tiredness and my body starts to be in pain, my neck and shoulders start to hurt, that's when I stop. I don't watch what I eat before that until my body hurts.

(Participant 1, first generation, male)

For younger generations, having a member of your immediate and extended family who had diabetes proved to be an important learning mechanism in regard to management of diabetes. However, the younger generation also justified that there was a high tolerance for sugar in Pakistanis:

My dad is diabetic for around 12 years now, and he still eats dessert and rice all the time and then he will have severe headaches and feel fatigued, and I know we have a high tolerance to sugary food.

(Participant 20, younger generation, male)

3.1.3 | The severity of diet

Across all generations, it became evident that specific foods were regarded as serious or severe, resulting in an adverse effect on blood sugar levels. Foods such as refined sugar, desserts, fizzy drinks, and consuming larger portions were deemed to possess a higher severity. However, the first generation recalled traditional dietary practices as a guide to what was deemed appropriate for their health:

In Pakistan they eat rice and chapattis all day, in every meal. You have to eat it, you can't get energy eating leaves and salad, you can't live off those things—our bodies ask for it or you won't be able to function.

(Participant 7, first generation, female)

Participants from second generation and the younger generation were aware of the severity of specific foods that may impact diabetes; nonetheless, these were still deemed appropriate in moderation: *I know from the clinic things like rice cannot be good either like lots of bread and naans. It can raise my sugar. But I like naans, so I still eat it, I don't think it's as bad as dessert or fizzy drinks* (Participant 15, second generation, male).

3.2 | Theme 2: Social and family context of food practices

A central theme that arose from the data was the role of family and social pressures in relation to healthy eating.

Food was used to help maintain family relationships, and the dynamics of power and vulnerabilities were identified through cooking practices.

3.2.1 | Stigma around eating non-traditional food

Each generation group discussed stigma if they did not adhere to cultural expectations of eating traditional foods. Participants from the first generation discussed how 'others' would perceive them as losing their traditions:

You have to think about the guests and what they will say about you, it is your reputation which is very important to us, you have to cook and serve traditional food.

(Participant 3, first generation, male)

Following fixed recipes was identified as one of the major obstacles to cooking healthy dishes in Pakistani families, as described by second-generation participants, who experienced social pressure conforming to these, and described challenges such as sarcasm when trying to change their diets:

You can't really change the dish as people will notice and make comments, people will taste it to see if it's the same taste.

(Participant 17, second generation, female)

Young participants often felt that they did not maintain any long-term diet changes due to scrutiny from family and wider community when recipes were adapted. A refusal to eat certain traditional foods was often met with resistance and participants resorted to the family's choice of food:

They don't understand and think you are being disrespectful ... my family are always telling me why it's not healthy to avoid our traditional foods, and having to justify why, so I just give in.

(Participant 21, younger generation, female)

3.2.2 | Power dynamics

Family dynamics between the younger generation, who wished to choose their own diets, and older family members, who insisted on maintaining their traditional food were points of contention:

My parents don't like it if I don't eat food that is made for the family, I've ended up quarrelling

about this so many times when trying to explain it.

(Participant 23, younger generation, male)

The first generation had the most dominant voice in reinforcing and strengthening adherence to cultural foods. It was often described as improper to eat non-traditional foods and seen as a part of their cultural identity.

We can't eat healthy in our households, eating salads won't save you from getting diabetes, since our life started on these foods, since childhood, we need spicy traditional food, we eat it daily.

(Participant 10, first generation, female)

An imbalance of power emerged, with younger generation participants explaining how, in some cases, a hierarchical difference was conducive to unhealthy eating practices:

Food choice is coming from the family, that's eating whatever they want.

(Participant 26, younger generation, female)

3.2.3 | Major life events

Both the first and second generations emphasised the importance of food during life transitions. Difficulties arose in adopting healthier diets during such occasions, as they served to unite the family and transmit rituals, thus making diet adherence difficult. This often involved shopping, preparing, cooking, and hosting:

The preparation of food and the planning is a really big task, we would usually spend days cooking, buying and making sure everything is right with the food.

(Participant 7, first generation, female)

The younger generation deviated from this perspective, suggesting non-traditional foods during major life events are frequently unhealthy. *There can be a mix, but it's usually unhealthy stuff like pizza, fried chicken, and desserts* (Participant 26, younger generation, female).

3.3 | Theme 3: Making sense of healthy eating

A key theme observed across three generations was the manner in which food practices are learnt, transmitted, and understood.

3.3.1 | Mixed messages

Mixed messages from multiple sources in the home and wider community impacted health beliefs. First generations were apprehensive of health messages due to practical constraints of measuring the precise nutritional benefits of traditional food. Health messages were seen as constantly changing and as a result, undervalued:

They said ghee is bad and don't cook in ghee, but then they say it's ok, they keep changing and I just ignore the messages now if I'm honest.

(Participant 3, first generation, male)

Second generations spoke about a desire to eat healthy food and adhere to health messages, influenced in part by younger family members who encouraged the adoption of healthy cooking practices:

My son tells me off that my sugar will be high because of the way we cooked ... you put too much oil, too much sugar.

(Participant 17, second generation, female)

Younger generations described views that appeared to have been constructed by media, medical and educational sources. They were aware that starchy foods, frying foods, sugar, and junk food were likely to make their diabetes worse:

Fried food, junk food is worse for me and the main cause for why I had to go back on metformin.

(Participant 24, young generation, female)

3.3.2 | Challenges of integrating alternative diets

First-and second-generation participants recalled that non-traditional food were associated with being time-consuming and incurring additional expenses:

When you make Pakistani food, we have everything available in the cupboards. We buy kilos of rice, daals, and spices so it's cheaper and you can make it a lot quicker than cooking other foods which is not suitable for our family size.

(Participant 1, first generation, male)

Across all generations, searching for alternative recipes and choosing healthier ingredients was perceived as uneconomical and regarded as less tasty:

If I want something different I have to really think about it and go out of my way to super-market to buy and sometimes I don't always have the time to plan like this.

(Participant 14, second generation, female)

3.3.3 | Behaviour change

There were many intergenerational subtleties of how and where behaviour change took place. The first generation were mostly reluctant to modify behaviour which deviated from cooking traditional food, often at the expense of making healthier choices:

You can't change the way we cook; We make it in one pot ... you can't tell whether it's bad, maybe just eating less of it is better for you.

(Participant 9, first generation, female)

The second generation took pride in maintaining cultural cooking practices; however, their behaviours changed through interactions with wider community members, which improved their knowledge of healthy cooking:

My friend would tell me not to fry things like kebabs and seeing her enjoy them made me start grilling kebabs.

(Participant 12, second generation, female)

The role of friends, broader networks and the use of technology were valuable to younger and second generations in constructing healthier food behaviours.

I watched this video about what foods we eat and how to reduce blood sugar levels, and I read this ebook once.

(Participant 20, young generation, male)

Role models and mentors were important for both second and younger generations compared with first generations:

I just look online and follow accounts which help you to figure out what to eat, and you can use apps.

(Participant 25, younger generation, male)

However, the participants who did implement a lifestyle change tended to do so as an instant solution rather than a permanent alteration to their lifestyle, such as long-term physical activities and adjustments to diet.

I checked my blood sugar levels and thought I need to lower this number, so I'll cut down some things to keep it low.

(Participant 15, second generation, male)

Although some participants were engaged actively during consultations, the self-monitoring technology that guided their day-to-day readings held significance rather than long-term medical health adjustments.

If you've had days when you've eaten something sweet, you know your sugar reading is going to be high, and I might go for a long walk after to bring it down a little.

(Participant 23, younger generation, male)

4 | DISCUSSION

British Pakistanis were often unaware of the potential negative impact or consequences that specific foods might have on their T2DM and overall health. This was especially true for culturally significant home-cooked dishes, which, when consumed could disrupt glucose control and contribute to complications associated with T2DM. This has been evidenced elsewhere.²³ There was a lack of awareness about the nutritional components of eating foods which were high in sugar and fat across all generation groups, which meant people struggled to take measures to substitute their diets.¹¹ Early detection and understanding food and lifestyle are integral to prevent or delay complications and should continue to be a major public health campaign.²⁴

Similar to other studies in the UK, we found that traditional foods were deemed important in maintaining cultural roots across all generations; participants held beliefs that traditional foods were important to health.²⁵ Other studies consistently found decisions surrounding food practices were influenced by the family and wider community.^{26,27} This study showed that food practices are likely to be impacted by challenging family dynamics, whereby parents and extended family play an important role in facilitating a change in dietary behaviours. Participants were often unable to maintain diet changes due to their fear of attracting negative remarks, sarcasm from members of their communities, and expressed concerns about alternative food choices. Recent evidence supports this by indicating that family relationships can be a barrier in implementing a change.¹²

The current study found there were many subtleties and differences in participants' experiences across generations. First generation British Pakistanis are key in promoting health in families, given their customary position in the 'family hierarchy', however, we found that second-generation British Pakistanis were responsible for daily cooking practices in the household, and were an important lever to influence healthier eating practices. It is critical to educate British Pakistanis of the risks of eating an unhealthy diet that involves an approach which centres upon the family and exploring how to overcome challenges experienced in the family unit. This should, however, not be solely their responsibility.

Understanding the cultural context of food and eating practices has implications. Healthcare workers should understand cultural eating practices as these hold significance, and the desire for maintaining cultural roots should be respected.²⁸ They should familiarise themselves with people's cultural practices and beliefs and ascertain family dynamics and social pressures.²⁹ One way to do this would be for healthcare workers to adopt group-based delivery, fostering collectivism and social connectedness with family-centric activities prioritised. Various behaviour change models are used in diabetes interventions, such as the COM-B model.³⁰ These, however, are often used in different ways, with little guidance, and are not culturally adapted. Findings from this study call for modernising behaviour change approaches such as those utilising COM-B to understanding the complexity of T2DM health behaviours through normalising, communication, and culture-specific information on the nature of T2DM symptoms.³¹ Drawing on story sharing of familiar cultural practices and role modelling to motivate behaviour change is crucial.³² The National Institute for Health and Care Excellence³³ advocates culturally appropriate programmes which tailor intervention for minority ethnic groups through targeted and observable traits such as language. Although this is useful, it is potentially ameliorative, as it does not include the ways in which the family influence dietary choices.³⁴ On the other hand, transformative interventions should be culturally appropriate and offer palate-specific advice, retaining tradition, enjoyment, and family identity.¹¹

A key finding of this study found lay understandings of healthy eating do not generally conform to dietary guidelines, and health interventions. There were many mixed messages given to first and second generations by health professionals, about what is deemed 'healthy'. Changing guidelines on what food items to avoid or reduce were seen as confusing and resulted in distrust of health education messages as found in other studies.³⁵ The current study found that participants were receiving health messages

through non-mainstream sources, such as videos, blogs and social media resources which may lack evidence-base. Recent research found that targeted digital health messages for specific communities is effective and efficient to support behaviour change.³⁶

We found British Pakistani households prioritise traditional homecooked food and there are no labels or packages which British Pakistanis can check. Health interventions such as a calorie restricted diet do not consider traditional food practices. Consuming traditional food is important to British Pakistanis, and any intervention which does not cater to these foods, will unlikely succeed. Similar to other studies, providing culturally appropriate dietary information is useful to overcome the challenges of increasing healthy food behaviours.^{37,38}

4.1 | Recommendations

It is important to consider intergeneration differences and family influence in T2DM public health campaigns. Overcoming barriers like stigma, cooking practices and food awareness is crucial to reach those at risk. As such, we recommend replacing notions of calories and meal replacements, which are difficult to decipher, and hard to measure in multigenerational households. Solutions based on portion control may be better utilised as the precise fat and nutrient content of traditional food is often difficult to measure. Secondly, culturally tailored information booklets, featuring food photos for portion sizes, may reinforce educational messages and behavioural goals across generational groups.

Health workers must focus on tailored dietary interventions for specific generational groups within families. The first generation's influence on changing health beliefs affects subsequent generations. A targeted approach with culturally representative and practical food suggestions is essential, embodying cultural identity and nostalgia. The second generation used digital media and peer support. For this group, the evidence-based Diabetes UK community champion approach is recommended, as they play a pivotal role in cooking across generations. The younger generation faced family pressures and power dynamics, requiring additional support for healthy diets within a multigeneration household.

We recommend further work to build formal feedback loops and training to enhance healthcare workers' understanding of culturally specific barriers within generation groups for T2DM interventions. This will aid healthcare workers to address factors like cultural identity, family hierarchy, stigma and intergenerational dynamics. Keeping healthcare workers updated with recent community developments is equally vital.

Finally, we recommend adopting a test and learn approach for intergenerational interventions. This involves firstly identifying local barriers, and then enhancing healthcare workers' engagement and relationships with T2DM individuals in multigenerational households.

4.2 | Strengths and limitations

This study drew its participants from one geographical area (i.e. Bradford), which has its own history and local cultural practices. Conducting this study elsewhere, therefore, may yield different findings. Our results did not capture the impact of replacing meal and diet options specific to areas of diabetes prevention programmes.²⁵ Future research should utilise a methodology that engages the different generations of the same family, in dialogue with each other. A strength of this study was the inclusion of Urdu speaking participants as native speakers are not normally included in health research due to issues around language barriers.²⁶

5 | CONCLUSION

The intersectionality informed by differing generation groups identified the cultural matrix that exists within British Pakistani households. The overlap and divergence within three generational groups of British Pakistanis can help advance diet modifications for diabetes health interventions. Identification of culturally appropriate health interventions will assist different generational groups who desire to adopt healthier lifestyles that will go beyond behaviour change models to include cultural understanding and intergenerational differences.

AUTHOR CONTRIBUTIONS

Syka Iqbal and Carolyn Kagan contributed to the study conception and design. Material preparation and data collection were performed by Syka Iqbal. Analysis was performed by Syka Iqbal, Halima Iqbal and Carolyn Kagan. The manuscript was drafted by Syka Iqbal, and all authors were involved in revising the manuscript and have given final approval of the version to be published.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Syka Iqbal  <https://orcid.org/0000-0001-5292-5871>

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