

Understanding diet, weight and type 2 diabetes in minority ethnic groups in Scotland, their access and experiences of services to support weight management and type 2 diabetes, and recommendations for change



HEALTH AND SOCIAL CARE

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minority ethnic groups in Scotland, their access and experiences of
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recommendations for change**

Elena Magli
Health and Social Care Analysis Division
Scottish Government

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Executive Summary

The aim of this report was to bring together as much information and research as possible to summarise what we can reasonably say about:

- diet quality, weight status and type 2 diabetes (T2D) prevalence (and susceptibility) in minority ethnic (ME) groups;
- their experiences of accessing type 2 diabetes prevention and treatment services, weight management services (WMS) and programmes (WMP);
- evidence-based solutions to address any inequalities and recommendations arising from research and engagement work.

This is to help inform policy discussion, particularly in relation to “reinvigorating efforts on culturally competent health promotion and disease prevention of diabetes for people from minority ethnic communities”, a key commitment in the 2021 [Race Equality Immediate Priorities Improvement Plan](#) (Scottish Government, 2021).

A scoping review was conducted rather than a typical more systematic literature review due to the broad scope of the project and limited timescale (3 months). The aim of this scoping review was to give a comprehensive overview of the key themes and the gaps in our knowledge of ME communities and diet quality, weight status and the prevalence of type 2 diabetes.

The work involved three main approaches:

- Mapping of key sources of information and databases; main organisations operating in the field; key Scottish University research centres dealing with health inequalities and academics carrying out research in this area
- Reading of relevant grey and academic literature identified combined with hand searching academic paper reference lists and forward citations to look for other and more recent publications
- Informal conversations with a range of experts and key informants, who helped in developing a better understanding of the key themes and identifying further relevant sources of information.

The following are the key messages that emerged from this work.

In the last years, there have been significant improvements in the collection of data on ethnicity and health. Information on ethnic group at the time of death has been collected since April 2012. The Scottish Health and Ethnicity Linkage Study (SHELS) examined the links between a person's ethnic group and health outcomes in Scotland (Bhopal et al., 2011). The Scottish Diabetes Survey records information on ethnic group and the completeness of this data has risen from 69.6% in 2010 to 81.7% of the registered population with type 1 and type 2 diabetes in the last survey (Scottish Diabetes Survey, 2020).

Despite these improvements, this is an area where important data and information is still lacking. For example, there is no comprehensive data set on diet quality of ME groups, and not much is known about the numbers of people from ME communities accessing and attending weight management programmes. However, important work is under way in this regard and in the future more accurate information will be available.

There is a wide variety of factors affecting ME diet and weight, and as a consequence the higher non-biological risk of developing T2D (Agyemang et al., 2021; Leung & Stanner, 2011). These include: changes in dietary and lifestyle habits after migration; dietary acculturation; accessibility of food; cultural attitudes towards weight and obesity; and stress and discrimination which might lead to risky healthy behaviours.

It has been known for a long time that South Asian communities have a significant higher risk of developing T2D and the onset of the disease occurs much earlier than in white populations (Bhopal et al., 2014). More recent research has shown that also Black African and Caribbean communities in the UK suffer disproportionately from T2D (Goff, 2019). Assessing if people from these ME groups are aware of their higher risk of developing T2D would be helpful to inform awareness campaigns and/or prevention programmes.

Recently, there has been an increased focus on providing culturally appropriate and competent diabetes health education, for example by considering the types of food of traditional diets, giving information in different languages and considering different religious beliefs (NICE, 2011). However, there are also deeper factors and structures of a culture that might act as strong barriers to effective self-management. These for example include cultural preferences for being overweight or different illness beliefs. Qualitative work is helpful to uncover these deep barriers (Moore et al., 2022) and community engagement activities have the potential to improve health outcomes through nudging adherence to dietary and lifestyle advice (Nam et al., 2012).

Although several academic studies have been carried out in the last years to evaluate the effectiveness of culturally appropriate health interventions, this is an area that requires further research, especially in the UK (Goff, 2019). The delivery of the programme should be taken into account, in addition to the design, and issues around cost-effectiveness, sustainability and clinical outcomes should be evaluated (Creamer et al., 2016). Furthermore, it is still not clear 'what' works, for 'whom', and in 'what context' (Davidson et al., 2021). More evaluation studies are needed to assess the effectiveness of different interventions, and further qualitative work and realist evaluations are required to explore the casual mechanisms that lead to the intended positive health outcomes.

Introduction

Scotland's population is becoming increasingly ethnically diverse. According to Scotland's Census in 2011¹, which is the latest data we have on ethnic composition of the Scottish population, non-White minority groups form around 4% of the Scottish population. This percentage represents almost a four-fold increase from 1.3% in 1991, and the forecast is that this will increase further to 7% by 2031 (Walsh et al., 2018). According to the 2011 census, 2.7% of the population identified as Asian, Asian Scottish or Asian British, with the largest Asian group being Pakistani, followed by Chinese, Indian, Other and Bangladeshi. Just over 1% of Scottish population identified as African, Caribbean or Black. Under 1% identified as Mixed, Multiple or Other ethnicity, including Arab.

It is well known that in the UK, as well as in other countries, there is a striking persistence of health inequalities, including ethnic (or racial) inequalities in health (Marmot, 2010; Williams et al., 2019a). The relationship between ethnicity and health is extremely complex and strongly affected by socioeconomic factors (Walsh et al., 2018). However, socioeconomic factors alone do not fully explain health inequalities among different ethnic groups, and there are differences in some health outcomes even when the risk is adjusted for indicators of socioeconomic status (Fischbacher et al., 2014; Williams et al., 2019).

The Scottish Health and Ethnicity Linkage Study (SHELS) is a key source of information in relation to ethnicity and health in Scotland. By examining the links between a person's ethnic group and health outcomes, a number of important differences have been found in cardiovascular diseases, cancer, maternal and child health and other health outcomes across minority ethnic (ME) groups (Bhopal et al., 2011). While ME groups in Scotland have in general lower mortality than the general population, evidence shows that they suffer disproportionately from specific health problems, such as heart diseases and diabetes (ScotPHO, 2020).

The aim of this report is to bring together as much information and research as possible to summarise what we can reasonably say about:

- diet quality, weight status and type 2 diabetes (T2D) prevalence (and susceptibility) in minority ethnic (ME) groups;
- minority ethnic groups' experiences of accessing type 2 diabetes prevention and treatment services, weight management services (WMS) and programmes (WMP);
- evidence-based solutions to address any inequalities and recommendations arising from research and engagement work.

This is to help inform policy discussion, particularly in relation to “reinvigorating efforts on culturally competent health promotion and disease prevention of diabetes for people from minority ethnic communities”, a key commitment in the

¹ [Ethnicity | Scotland's Census \(scotlandscensus.gov.uk\)](https://www.scotlandscensus.gov.uk) (accessed 30/09/2022)

2021 Race Equality Immediate Priorities Improvement Plan (Scottish Government, 2021).

The report is structured as follows: section 2 describes the methods that have been adopted to inform this scoping work on minority ethnic diet, weight and type 2 diabetes. Section 3 focuses on diet quality and behaviours of ME groups, followed by section 4 that presents data about the weight status of ME groups, including some evidence on access to weight management services and programmes. Section 5 focuses on the higher prevalence of type 2 diabetes in some ME groups, and section 6 brings everything with a focus on the design and delivery of culturally appropriate health education programmes. Section 7 highlights some limitations of this work, and the final section summarises the main issues and provides some general final recommendations about culturally appropriate health promotion.

Methods

A scoping review was conducted rather than a typical literature review involving the application of specific search terms to a set of databases. This was because the scope of the project was very broad and within a limited timescale (3 months). The aim of this scoping review was to give an overview of the key themes and the gaps in our knowledge of ME communities and diet quality, weight status and the prevalence of type 2 diabetes. As such this scoping work could be used to inform policy discussion and specification of future more systematic reviews on the subthemes presented in the following sections.

This scoping work involved three main approaches. Firstly, a mapping exercise was carried out to identify:

- the key sources of information and databases - ScotPHO, Public Health Scotland, Scottish Diabetes Survey, Scottish Migrant and Ethnic Health Research Strategy Group (SMEHRS), Scottish Health Survey;
- the main bodies and organisations operating in this field - Race and Health Observatory, Food Standards Scotland, Glasgow Centre for Population Health (GCPH), Diabetes UK, Diabetes in Scotland, Diabetes.co.uk, DESMOND, BEMIS, Community Food and Health (Scotland);
- the main Scottish university research centres dealing with health inequalities - Centre for Population Health Sciences, University of Edinburgh; MRC/CSO Social and Public Health Science Unit, University of Glasgow;
- and academics carrying out research in this area

Once these had been identified, relevant grey and academic literature were read. Further references were obtained from hand searching academic paper reference lists and forward citations to look for other and more recent publications.

Thirdly, informal conversations were conducted with a range of experts and key informants, who helped in developing a better understanding of the key themes and identifying further relevant sources of information.

Ethnic Minorities and Diet

Diet Quality in ME communities: Existing Evidence

This is an area where in general we do not have a large amount of evidence. Despite the increasing number of ME communities in high-income countries, national food consumption surveys do not generally include information about the specific dietary intakes of ethnic minorities and limited research has been carried out to compare the dietary habits of different ME groups (Bennett et al., 2022).

In the UK, no comprehensive data exists on eating habits and nutritional status of ME groups. Although the UK-wide National Diet and Nutrition Survey (NDNS) is designed to be representative of the population, sample sizes of minority ethnic groups are not large enough to allow separate analysis (Leung & Stanner, 2011).

Food Standards Scotland (FSS) is the public sector food body for Scotland. FSS has a statutory objective to improve the extent to which members of the public have diets which are conducive to good health. Part of the FSS remit is dietary surveillance, including monitoring population progress towards the Scottish Dietary Goals. Currently FSS use an online dietary recall tool called Intake24 to gather information on dietary intake, as well as market research data on the retail and out of home food environment from Kantar². Due to small numbers within national surveys, it has not so far been possible assess dietary intakes in ethnic minority populations.

Intake24 has been included in the Scottish Health Survey in 2018 and 2021, to collect nationally representative dietary intake data from people living in Scotland. FSS have recently commissioned a programme of three further surveys using Intake24 to assess dietary intake in populations of specific policy interest. The first survey is in children aged 2-15 years living in Scotland. Subject to outcomes from Scotland's census 2021 and policy discussions, FSS may direct one of these surveys towards one or more ethnic minority population groups living in Scotland.

Some evidence about the dietary habits of different ME groups comes from the Scottish Health Survey (SHeS) Topic Report (Scottish Government, 2012). The small size of ME groups makes it difficult to obtain representative information from a single year of the national health survey, therefore this report combines data from four consecutive Scottish Health Surveys (2008-2011). This enables in-depth analysis of different health conditions and behaviours, such as those related to diet, by socio-demographic characteristics, including ethnic group and religion. From the analysis carried out in the SHeS Topic Report, we know that:

- White British respondents were least likely to eat 5 portions of fruit and vegetables a day;

² See [FSS nutrition hub](#) for reports and full picture of dietary assessment methods

- Respondents from White Other, Pakistani, Chinese, Asian Other and Other ethnic groups all had significantly higher consumption of fruit and vegetables than the national average;
- Buddhists, Muslims and Hindus were most likely to meet the 5-a-day recommendation and consumed the highest mean daily portions of fruit and vegetables.

Figures 1 and 2 below show the daily portions of fruit and vegetables by ethnic group and religion in 2008-2011 (Figure 1 and Figure 2). This is quite dated now and more up to date analysis would be welcomed.

Figure 1. Mean daily portions of fruit and vegetables by ethnic groups. From Scottish Government (2012, p.44)

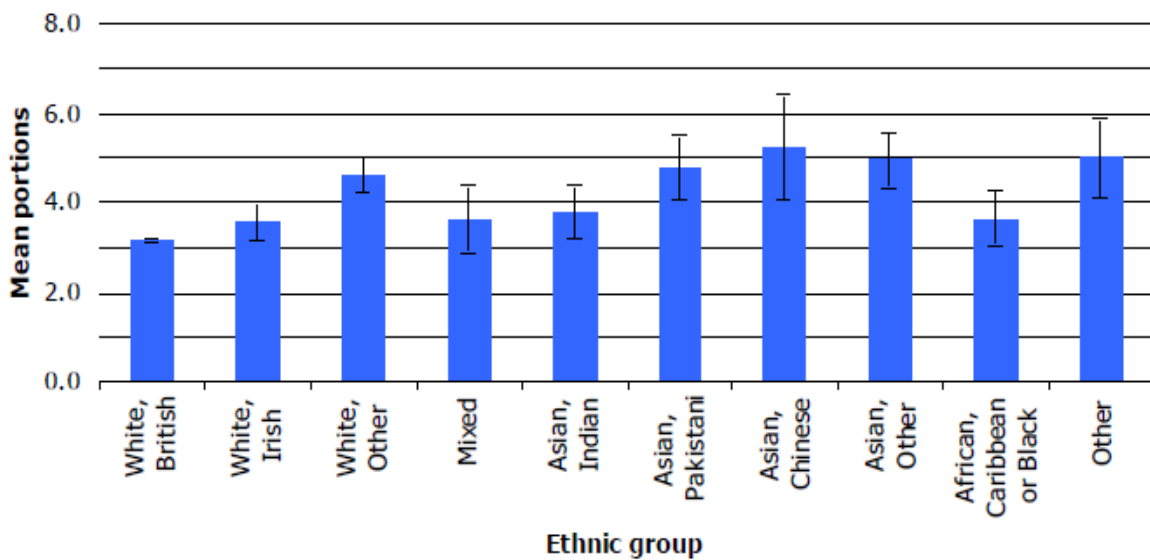
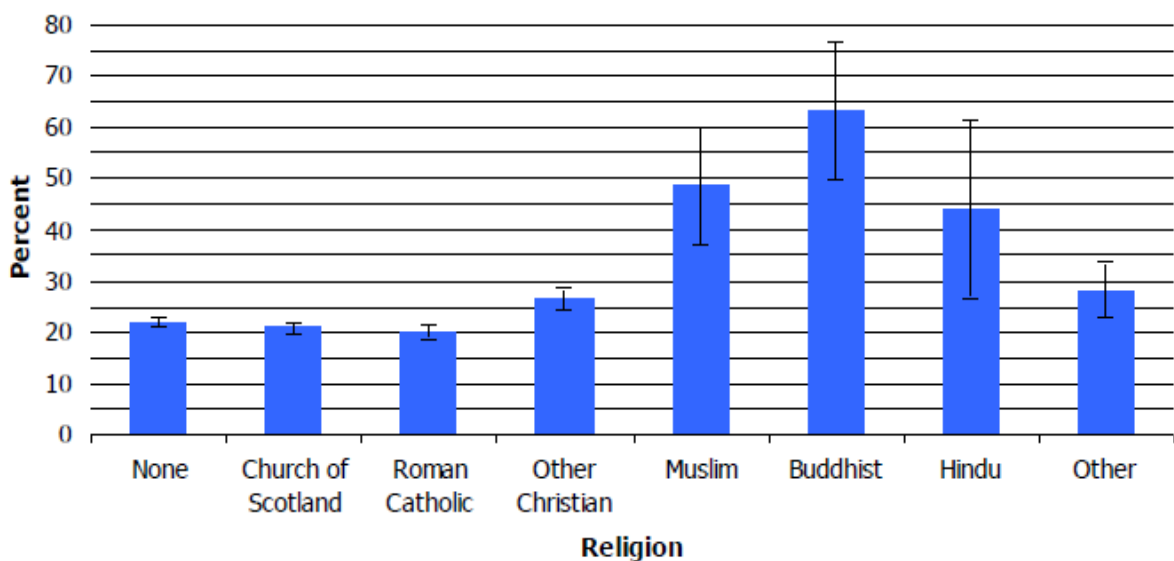


Figure 2. Percentages eating 5 or more portions of fruit and vegetables a day by religion. From Scottish Government (2012, p.45)



In relation to academic research carried out in this field, Bennett et al. (2022) conducted a systematic review on dietary intakes in ME groups globally. They included 49 studies in their review, the majority of which were carried out in North America (31). They concluded that Black groups had the lowest fruit and vegetable intakes and did not meet daily recommendations. Hispanic and Latino groups had higher fruit and vegetable consumption than other ME groups, but a significant proportion did not meet the daily recommendations either. Results for Asian groups were inconsistent, as they varied across different communities and countries.

Bennett et al. (2022) also discuss other food group intakes, finding that red meat intake was low among Asian and Black groups compared to White and Hispanic communities. Fish was the food type with the lowest number of daily servings across all ethnic groups. Asian groups were found to have the highest fish intake, which contributed to the high quality of their diet in general, but their consumption of calcium-rich foods was consistently low.

While fruit and vegetable intake is a key diet quality indicator, it is also important to consider total calorie and nutrients intake and meal patterns when assessing the quality of a diet. Bennett et al. (2022) observe that this is a major limitation of the studies included in their review, as they only focused on food group intake. Drawing on a review of surveys and studies carried out in the UK, Leung & Stanner (2011) reported that Asian groups consistently consume minimal calcium-rich foods, and South Asian children have a low intake of vitamin C. Vitamin D deficiency is observed across all ME groups, especially in winter months. Fat intake is lower for men and significantly lower for women from minority ethnic groups compared with the general population, with lowest intakes among Indian, Chinese and Black African men and Black Caribbean, Bangladeshi and Pakistani. A higher use of salt when cooking and eating is reported in ME groups compared to the general population.

Leung & Stanner (2011) also provided a description of the typical diet of South Asian, African-Caribbean and Chinese groups in the UK, as they are the 3 largest non-White populations:

- The traditional diet of South Asians consists of staples, such as rice and bread, eaten with vegetables, beans and pulses (dhals), meat or seafood in a curry. A wide range of herbs and spices are used for flavouring.
- Regarding African-Caribbean communities, the authors note that there are a number of specific terms that are used to refer to traditional dishes and that may vary between subgroups. The traditional diet includes a range of starchy foods such as rice, plantains, cassava, fufu, yams and potatoes. Various vegetables are also consumed with meat or fish dishes as well as different tropical fruits. Commonly eaten snacks include beef patties, salt fish fritters and fried dumplings.
- As regards to the Chinese diet, noodles or buns are commonly consumed as staples in northern China, while rice is typical for southern China. These

dishes are often packed with lots of green, leafy vegetables and mushrooms. Soy milk and other soy products, such as bean curd (tofu) and its derivatives, are commonly used in the Chinese diet.

These are of course generalisations, as the dietary habits of ME groups vary widely and there is also significant heterogeneity within each group, depending on the specific country/region of origin. However, it is helpful to have information about different traditional diets, as will be explained further in Section 6.

To conclude, while comprehensive and accurate data on the eating habits of different ME communities is still lacking, it is important to note that the situation has improved and is set to improve further.

Factors Influencing Diet in ME Communities

It is beyond the scope of this work to review the general factors that influence people's choices in relation to diet. However, a number of interesting issues emerged during this project specifically in relation to the dietary habits of ME communities living in the UK and other high-income countries.

Central and West Integration Network (CWIN)³ carried out a community-led research project in 2019 to explore food security among Black and Minority ethnic people in Glasgow (CWIN, 2019). Participants were 56 people from 23 different countries, including people from Iraq, Iran, Pakistan, Sudan, Sri Lanka, Libya, Eritrea, Afghanistan, and other countries. What emerges is the emphasis placed on 'cultural food'. While this concept is not concretely defined, it refers to food typical of people's cultures. It is generally seen as healthy, except when eaten in great quantities if guests are visiting. Participants say that cultural food is sometimes expensive, but it is still considered important to buy it. This suggests that cultural food is cherished and has greater significance than just its nutritional value. This was also a recurring theme in the informal conversations with experts working in the field. Cultural food becomes an important indicator of identity, resulting in some ME groups living in the UK eating more traditional dishes than their family and friends living in the country of origin.

Leung & Stanner (2011) note that there are usually differences in generations among the dietary habits of ME groups. Older generations are more likely to follow traditional diets and less likely to change their dietary habits compared with younger generations. They report the results of a qualitative study conducted in Bradford, which found that first-generation British Pakistanis were more reluctant to try any English foods compared with the second generation. The latter perceived English foods as convenient, a way to conform to the mainstream culture and a reflection of independence from their parents. Also women of the first generation were more adventurous in this regard compared with their husbands, mostly because they

³ Scottish charity based in Glasgow which support EM communities, asylum seekers and refugees and promote integration.

wanted to share the same experience of consuming English foods with their children (Jamal 1998; cited in Leung & Stanner, 2011).

It has been noted that sometimes older generations try and make traditional food richer and more calorific in order to please children and teenagers by competing with McDonald's and other takeaway food (Davidson et al., 2021). A qualitative study carried out in Glasgow found something similar in relation to the younger generations of ME groups, who felt culturally torn between ideas and attitudes of their parents and those of their Scottish peers. In addition, it was also noted that the longer working hours and frenetic lifestyle of the younger generation also led to irregular dietary habits, which may encourage them to eat more convenience foods (Mullen et al. 2006; cited in Leung & Stanner, 2011).

Considering these differences among generations, it will be important to monitor if the higher consumption of fruit and vegetables in some ME groups compared to the general population in the UK will be retained over time, or if this difference will diminish as the population gets more and more diverse.

While older generations are more likely to keep a traditional diet, it has been observed that there might be a phenomenon of 'dietary acculturation' of ethnic minorities after migration (Leung & Stanner 2011; Satia-Abouta et al., 2002). This is the process by which migrants assimilate the dietary habits of the host country, and it usually entails eating more junk food, therefore adopting a less healthy diet that is higher in energy, fat and salt and lower in fruit and vegetables. Integration can be challenging for immigrants in terms of adapting to new lifestyles, cultures and dietary norms. In their review on T2D among migrants in Europe, Agyemang et al. (2021) consider the changes in dietary behaviours as a post-migration risk factor for developing diabetes among South Asians, as they are not used to this type of food and they are likely to develop the metabolic syndrome.

Beyond these issues of migration, integration and generational differences, there are other broader factors that affect food choices among ME groups in high-income countries. Drawing on Bennett et al. (2022) and Osei-Kwasi et al. (2016)'s systematic reviews, these are:

- Socio-economic status – income is significantly associated with healthier and more diverse food intake, including higher fruit, vegetable and fish consumption, and it is known that some ME groups tend to be poorer than the general population;
- Accessibility of food, including traditional foods availability, shops proximity (more an issue in the US) and food price, which might be a barrier to a healthier diet;
- Cultural identity and religious beliefs, which might forbid to eat some types of foods;
- Food beliefs, including the social role of food and perceptions of healthy food;

- Perceptions of body images, such as preferences for a larger body size, covered in more detail in section 4;
- Gender differences, such as husband's food preferences, that are likely to influence the food consumption of the whole household;
- Lack of time for cooking, which might be a problem for younger people, especially women, who work and have less time to cook.

Some of these factors are personal and depends on individual choices, but others are profoundly shaped by the food environment we live in, such as the types of food that are more expensive/cheaper, and the foods that are more readily available. Furthermore, the majority of these factors do not exclusively influence the dietary behaviours of ME community, but concern the overall population.

To conclude, dietary behaviours are complex, multidimensional and dynamic. They are affected by a broad range of underlying mechanisms and might change over time. Quantitative work is helpful to get a comprehensive picture of diet quality and behaviour patterns in the population to identify problems and design interventions. But qualitative work is also necessary to uncover these deep issues and structures that affect our food choices.

Ethnic Minorities and Weight

Body Weight in ME groups

The Scottish Health Topic Report (Scottish Government, 2012) remains the latest data we currently have, on the weight status of ME groups in Scotland:

- Chinese and Asian Other respondents had significantly lower levels of overweight and obesity than most other ethnic groups (Figure 3);
- Buddhists and Hindus had a tendency towards markedly lower levels of obesity compared to others, although small sample sizes mean wide confidence intervals, (Figure 4).

Figure 3. Prevalence of obesity by ethnic groups. From Scottish Government (2012, p.58)

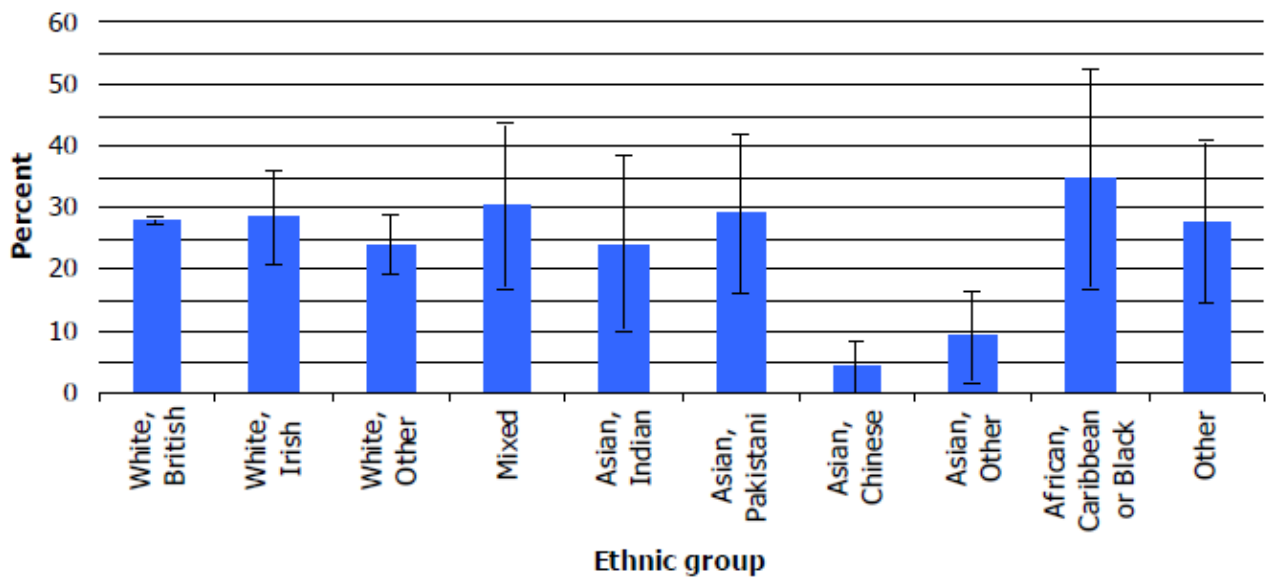
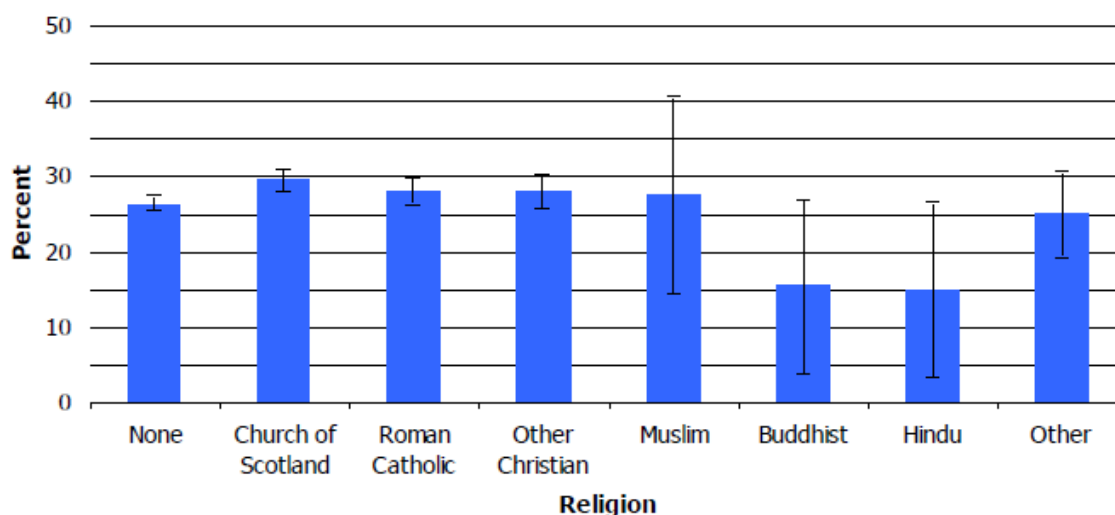


Figure 4. Prevalence of obesity by religion. From Scottish Government (2012, p.59)



The ethnic groups considered were: White, British; White, Irish; White, Other; Mixed; Asian, Indian; Asian, Pakistani; Asian, Chinese; Asian, Other; African, Caribbean or Black; Other. Participants' weight and height were measured during the interview and overweight and obesity were defined using Body Mass Index (BMI), defined as weight (Kg)/height (m²): a BMI from 25 to less than 30 was classified as Overweight; 30 to less than 40 as Obese, excluding morbidly obese; a BMI of more than 40 as Morbidly obese.

It is well known that there are biological ethnic differences in BMI risk thresholds for diabetes among different ME groups. Among women, a waist circumference of 88 cm in the white subgroup is regarded as having the equivalent health risks to the following: South Asians, 70 cm; Chinese, 74 cm ; and Black, 79 cm. Among men, a waist circumference of 102 cm equates to 79, 88, and 88 cm for South Asian, Chinese, and Black participants respectively (Ntuk et al., 2014). This means that conventional clinical definitions for overweight and obesity, that are derived from populations of white European descent, are not appropriate for non-white groups. NICE (2014) recommends the use of lower BMI thresholds (23 kg/m² to indicate increased risk and 27.5 kg/m² to indicate high risk) to identify overweight and obesity among Black African, African-Caribbean and Asian (South Asian and Chinese) groups and those at risk of developing type 2 diabetes.

Lower thresholds were not used to identify overweight and obesity among Asian groups in the SHeS analysis. This means a potential underestimation of overweight and obesity among these communities. The impact at population level is likely to be very minimal.

The UK Government reports statistics on the prevalence of overweight and obesity among ME groups in England and provides a more up to date indication of differences by ME group. Regarding adults, the latest statistics from the *Active Lives Adult Survey* are (Gov.UK, 2021):

- in the year to November 2020, 62.8% of adults (aged 18+) in England were overweight or obese, a similar percentage to November 2019 (62.3%);

- White British adults were more likely than the average to be overweight or obese (63.7%)
- 67.5% of Black adults were overweight or obese – the highest percentage out of all ethnic groups;
- 32.2% of adults from the Chinese ethnic group were overweight or obese – the lowest percentage out of all ethnic groups;
- the percentage of adults from the Asian (59.7%), Other White (58.0%) and Mixed (59.6%) ethnic groups who were overweight or obese was lower than average;
- the percentage of adults in the Other ethnic group (61.2%) who were overweight or obese was similar to the national average;
- while percentages were broadly similar to those from November 2016 for most ethnic groups, this was not true for White British people, where it went up from 62.0% to 63.7%, and for Black people, where it went down from 72.8% to 67.5%.

It is worth noting certain aspects of how the UK data has been collected and reported compared to SHeS:

- Ethnicity classification is different from SHeS, reported above. Estimates in the UK data are shown for 7 ethnic groups, Asian, Black, Chinese, Mixed, White British, White Other, Other, while the SHeS considered more categories for ethnicity.. However, data on the lower rates of overweight and obesity in Chinese and Asian communities compared to the general population is consistent with the results of the SHeS Topic Report;
- For England, people were asked for their self-report height and weight and these figures were used to determine their BMI, while SHeS BMI data relies on measured height and weight. However, English data adjusts for the known bias from self-report BMI where people tend to underestimate their weight and overestimate their height leading to a lower self-report BMI than is actually the case. Thus the two analyses should be reasonably comparable.
- As in SHeS, a BMI of 25 or more was classified as overweight and a BMI of 30 or more was classed as obese. Therefore, different BMI thresholds were not used for different ME groups, contrary to NICE (2014) guidelines. Hence the data should be approximately comparable.

The UK Government (Gov.UK 2020) also reports statistics of children in state-funded mainstream primary schools who are overweight or obese. Data about children in independent and special schools are not included. Estimates are published for two school years: reception year (when children are usually 4 to 5 years old), and year 6 (when children are usually 10 to 11 years old). Children are defined as overweight or obese based on their body mass index (BMI), which is measured using their weight, height, age and sex. This data comes from Public

Health England and 16 ethnic groups are recognised, the same used in their 2001 census.

The latest confirmed statistics from England for percentage at risk of overweight or obesity are for the year 2020/21⁴. There was a noted sharp increase in overweight and obesity prevalence across all groups compared to previous years which has been put down to impact from the Pandemic. For example, 22.4% of children aged 4 to 5 in England were at risk of overweight or obesity in 2017/18 compared to 27.7% in 2020/21, see Table 1.

The data shows that at age 4 to 5 years, Asian children have lower prevalence compared to the average, and Chinese children are at much lower risk. However, by age 10 to 11 years, Asian and Chinese groups are either at a similar level to average or above. At both ages, Black African/Caribbean children have a markedly higher prevalence.

Table 1: Prevalence of obesity and overweight combined in 2020/21 in children in England, by ethnic group

	Reception Age 4 to 5 yrs	Year 6 Age 10 to 11 yrs
Total	27.7	40.9
White	27.4	38.8
Asian	25.8	46.7
Black	37.9	52.4

Source: National Child Measurement Programme (NCMP) Dataset, NHS Digital 2021

White – British, Irish, any other white background

Asian – Indian, Pakistani, Bangladeshi, any other Asian background

Black – Caribbean, African, Any other Black background

Factors Affecting Body Weight in ME groups

There is a direct relationship between dietary habits and weight⁵. As mentioned previously, Asian groups are generally reported as eating more fruit and vegetables than other groups, possibly indicating an overall healthier diet. This might in part explain the apparent lower incidence of overweight and obesity in their communities. However, some caution should be adopted in this regard, because if lower BMI thresholds have not been used in prevalence estimations there might be

⁴ [National Child Measurement Programme, England 2020/21 School Year - NHS Digital](#)

⁵ [Time to Solve Childhood Obesity \(publishing.service.gov.uk\)](#) An Independent Report by the Chief Medical Officer, 2019
Professor Dame Sally Davie

a significant underestimation. There are indications that Black groups may have an unhealthier diet, although this is primarily about what takes place in the US. We have no data to understand this more clearly in the UK, however, it may also be true here given the prevalence of overweight and obesity among Black communities despite not using lower BMI classification thresholds.

In this regard it is important to mention that some ME groups hold traditional beliefs around food, health and views on body image that may conflict with those based on scientific research. Specifically, overweight children are seen as healthy, and obesity in adults is seen as a symbol of affluence and success (Leung & Stanner, 2011). Moore et al. (2022) observe these strong cultural norms around weight in some UK Black African and Caribbean communities. In their qualitative study, they observe that the advice to lose weight for people diagnosed with T2D was extremely difficult to reconcile with cultural associations with prosperity and health, in both genders. Furthermore, in women there is also an issue of attractiveness and desirable maturity. As a consequence, some of the participants were following the health advice to lose weight only as far as it fitted within the cultural identity. This for example involved losing weight, but not to the degree that it was noticeable by family and friends.

CWIN (2019), the community-led project in Glasgow, also reports mixed cultural attitudes towards obesity. While some participants reported a positive attitude towards being overweight, others see obesity as a health problem or medical condition. Furthermore, someone also highlighted the stigma and the shame of being obese, especially for unmarried women. The report also discusses participants' awareness of the links between diet, overweight and health conditions, and it is noted that most people are aware of this. However, there might be a knowledge-action gap and other work observes that to have a good knowledge and awareness of a healthy diet did not necessarily translate to behaviour (Leung & Stanner, 2011).

Participants also think that their attitude and behaviour towards diet and obesity are strongly affected by the people they socialise with, such as family and friends (CWIN, 2019). This is consistent with some academic literature, which reports social pressure to eat large portions of traditional food during social events to comply with social expectations (Moore et al., 2022).

Regarding broader factors that affect weight status, obesity has been associated with experiencing discrimination and racism. Williams et al. (2019) conducted a review of literature reviews and meta-analyses from 2013 to 2019 to understand how discrimination affects health, finding 29 studies (US and international). They concluded that experiences of discrimination reported by adults are adversely related to mental health and indicators of physical health, such as overweight, other preclinical indicators of disease, health behaviours, utilisation of care and adherence to medical regimens. One of the included articles is Paradies et al. (2015), who conducted a meta-analysis on the relationship between reported racism and mental and physical health outcomes, analysing 293 studies (predominantly carried out in the US). They concluded that racism is significantly related to poorer health, with the relationship being stronger for poor mental health

and weaker for poor physical health. However, overweight-related outcomes were the only physical health ones significantly associated with racism.

This is observed also in Europe, where a high prevalence of discrimination among migrants groups has found to be associated with obesity (Agyemang et al., 2021). This paper also highlights the stress of the migration process itself, which might subsequently have an impact on health through the adoption of risky behaviours. Furthermore, it is also important to consider the factors previously mentioned that affect diet and, as a consequence health, such as dietary acculturation and socioeconomic inequalities.

To conclude, while it is beyond the scope of this review to critically analyse all the factors that influence people's weight, some interesting issues have emerged that are specifically related to migrants and some ME groups. These needs to be considered when designing weight management programmes and services for these populations.

Weight Management Services and Programmes

This is an area where there is increasing attention, as weight is the biggest modifiable factor for T2D and it has been demonstrated that a significant weight loss can put diabetes into remission (Lean et al., 2019). In 2018 Scottish Government published its Diet and Healthy Weight Delivery Plan, setting out five outcomes to support people to eat well and have a healthy weight. In support of Outcome 3, Scottish Government also published the Framework for the Prevention, Early Detection and Early Intervention of type 2 diabetes to ensure everyone across Scotland diagnosed with, or at risk of, type 2 diabetes has access to quality weight management services (Scottish Government, 2018).

Work is currently under way to develop and refine a new dataset that focuses on people at risk of T2D and their journey into and through NHS weight management services (Tier 2 and Tier 3). Public Health Scotland (2021) *Referrals to NHS Board Commissioned Weight Management Services (Tier 2 and Tier 3)* is the first report from this data and has been published as experimental statistics as this dataset is still being refined and improved. The report includes the number of referrals by ethnic group but caution is advised around interpreting this data as ethnicity was not known (missing) for a substantial portion of the data (31.4%):

- Nationally, 64.2% of individuals referred were White, 2.2% Asian/Asian Scottish/Asian British, 1.2% Other ethnic group, 0.6% African, 0.3% Mixed or Multiple ethnic groups, 0.1% Caribbean or Black.
- The Asian ethnic group had the lowest median BMI (BMI 38.0), as they are one of the groups with a lower BMI threshold for referral. Across NHS Boards, median adult BMI ranged from 34.7 to 42.9.

As this is the first report, the only information available at this time is the number of people being referred to weight management services, but not yet information about the numbers accessing and sticking with weight management services (WMS). However, this will be a regular publication from now on, with data from

October 2020 to September 2021 currently being analysed by PHS and being published later this year. What the Scottish Government hopes to get from this new dataset is:

- If the people in weight management services are the ones then diagnosed with diabetes;
- If people are staying in or dropping out from these services;
- If they are dropping out, why? And what types of people are they?
- If they are staying, what are the outcomes?

Additional insights are offered by an 8 week Discovery project conducted by the Digital Transformation Service working on behalf of the Scottish Government Diet and Healthy Weight Team (Digital Scotland, 2021). The aim of this work was to explore the experiences of people living with a higher weight (including those with T2D) in areas of high deprivation with NHS weight management services and healthcare professionals. This is to better understand patients' needs, access and barriers to services and reduce health inequalities.

The results of this work show that language is the biggest barrier for ethnic minorities accessing WMS. Although translation services are provided in some cases, health practitioners struggle to engage with some people who don't speak English, as they might need longer appointments. Furthermore, additional challenges are faced by people living in deprived communities, including from ME. They might face difficulties in accessing digital services, more unhealthy food options are available in those areas, and someone might not be able to cook from scratch. Furthermore, weight management is not seen as a priority in a situation where people need to deal with housing, a limited budget and sometimes mental health.

Academic research shows that weight management may be a particularly thorny issue in diabetes prevention and care, as this is an area where health outcomes can be poorer for ME groups compared to the white population. Goff (2019) reports that in the US, it was observed that African Americans attending a diabetes prevention programme achieved on average half of the weight loss than that achieved by White Americans.

Other studies found more positive results, for example Bhopal et al. (2014)'s evaluation of a weight management programme for South Asian communities in Scotland. However, these were still relatively modest.

To conclude, very limited evidence exists and more research is needed to understand what helps to improve referral, engagement, persistence and effectiveness of weight loss services and programmes for those in ME groups. Work is currently underway in the Scottish Government and Public Health Scotland to improve the available evidence on referrals, including by ethnicity, to weight management services and statistics on the numbers of people accessing, attending

and sustaining weight management programmes. Section 6 provides more details on WMS in the context of prevention and treatment of T2D.

Type 2 Diabetes and Ethnicity

General Context: Type 2 Diabetes as a Public Health Priority

The prevalence of T2D is increasing rapidly in Scotland, as in many other high-income countries. According to the latest Scottish Diabetes Survey (2020), 5.8% of the Scottish population of all ages are diagnosed with diabetes, and Type 2 Diabetes (T2D) is the most prevalent (87.7% of all cases). In addition to this, it is estimated that around 10% of cases of diabetes remain undiagnosed, (ScotPHO, 2022). Diabetes is an important cause of disability and increases the risk of coronary heart disease and other health problems (ScotPHO, 2022). Therefore, this significant increase of cases of diabetes in Scotland and the UK is a major public health priority (Goff, 2019).

The onset of T2D is primarily due to poor diet (specifically excess energy intake), low levels of physical activity and the resulting increase in levels of obesity. It is estimated that T2D is around *ten times higher* among those with a body mass index (BMI) over 30 compared with those with a BMI under 30. T2D is much more common at older ages, and the increase in the number of older people in Scotland also contributes to the increase in numbers of those with diabetes. Furthermore, T2D is more common in the families of those with type 2 diabetes, and in some ME groups (Scottish Diabetes Survey, 2020; ScotPHO, 2022).

The Higher Prevalence of T2D in Minority ethnic (ME) Groups

Evidence indicates that ME groups in the UK and in other high-income countries suffer disproportionately from diabetes compared with non-minority populations. The prevalence of T2D is estimated to be approximately 3 to 5 times higher in certain ME groups than in the white British population (Goff, 2019). This high incidence mainly affects two ME communities:

- South Asian groups – the susceptibility to T2D of people of South Asian descent has been known since 1985 (Bhopal et al. 2014). They have the highest rate of T2D. Among migrants in Europe, it was found to be up to six fold higher in Bangladeshis, fivefold higher in Pakistanis and fourfold higher in Indians (Agyemang et al., 2021);
- Black African and Caribbean groups - the incidence of type 2 diabetes in UK in these communities is estimated to be 3 times higher than in the general population (Moore et al., 2022).

The onset of T2D in these populations occurs 10-12 years younger, and a greater proportion of people develop T2D before the age of 40 years compared with white Europeans (Goff, 2019). text

The higher prevalence of T2D in ME groups is true also for childhood T2D: it has been estimated that South Asian children in the UK are 14 times more likely to develop T2D than white European children (Goff, 2019). Agyemang et al. (2021), in their review on T2D burden among migrants in Europe, report that also gestational

diabetes is higher in most ME groups than in Europeans. On one side this might contribute to their high risk of T2D, but on the other it raises questions on why and whether it is treated effectively.

In certain ME groups there is also the problem that many cases remain undiagnosed. Anderson et al. (2021) analyse baseline UK Biobank data on plasma glycated haemoglobin (HbA1c) to compare the prevalence of pre-diabetes and undiagnosed diabetes mellitus in white, South Asian, black, and Chinese participants. They find that while 1 in 22 (4.7%) of individuals aged 40–70 years old in the UK have actionable HbA1c concentrations, 1 in 6–7 individuals of black or South Asian ethnicity have actionable values. This means that approximately 1 in 30 are living with undiagnosed diabetes.

Also the prevalence of diabetes-related complications differs between ME groups and white-British. For example, Tillin et al. (2013) find that the risk of stroke was almost twice as high in South Asians and over twofold higher in African-Caribbean individuals with diabetes compared to their white-European peers.

Why is T2D more prevalent in ME communities?

It is argued that the higher prevalence of T2D in ME communities is driven by a complex interplay of biological, socio-economic and lifestyle factors, both in developing and in the treatment of T2D. Therefore, genetic, physiological, socio-economic and lifestyle factors contribute to ethnic inequalities in T2D (Goff, 2019).

Biological Factors

There are a number of biological reasons that seem to drive the higher susceptibility of South Asians to T2D. Narayan & Kanaya (2020) find that these are: lower ability to secrete insulin, and thus may have less compensatory reserves when challenged with unhealthy lifestyles; lower muscle mass, specific propensity to ectopic hepatic fat accumulation and for intramyocellular fat deposition. The hypothesis is that this susceptibility is primarily driven by poor metabolic capacity (i.e. reduced beta cell mass and/or function, which impairs insulin secretion), coupled with low lean muscle mass, which may be responsible for reduced insulin action. This is accentuated by a propensity to ectopic fat deposition in the liver and muscle, which further impairs insulin action.

Regarding the biological basis to increased risk, it has also been observed that minority ethnic groups experience a higher risk of T2D at lower levels of obesity than white Europeans (Ntuk et al., 2014). This depends on the levels of adiposity and how fat is stored. Fat distribution, particularly abdominal/visceral fat, are more sensitive predictor of insulin sensitivity than BMI. South Asians may be more prone to visceral fat deposition (Goff, 2019). This means that conventional clinical definitions for obesity, that are derived from populations of white European descent, are not appropriate for screening diabetes risk in non-white groups and lower BMI. This is reflected in NICE (2014) recommendations, previously discussed in section 4 on page 12.

Recent research has shown that T2D seems to develop differently in black African people. Bello et al. 2019 (research funded by Diabetes UK) has revealed that insulin resistance is not the chief cause of type 2 diabetes in black African people, as is the case for white populations. Their research suggests that type 2 diabetes may develop in 'reverse order' in black populations: high levels of insulin leading to insulin resistance. But the research team doesn't yet know why insulin levels are high to begin with and they are planning to carry out further work to confirm this and explore why.

While these biological factors are much more in the realm of clinical practices rather than policy, they point out the need for more high quality research in this area (Bello et al., 2019; Narayan & Kanaya, 2020). As stated by Dr Louise Goff, lead researcher for Diabetes UK:

"[p]eople of [ME groups] might be getting poorer care because we're applying what we've learnt from white populations to everyone. [For example] many approaches to treating or preventing type 2 diabetes focus on tackling insulin resistance, but if this isn't a driving factor for black African people, then targeting this isn't going to be as effective."

Therefore more research is needed and specific prevention and treatment programmes might be needed for T2D across different ME groups.

Non-biological Factors

Regarding non-genetic factors, epidemiological and migration studies have observed different rates of T2D within the same ethnic group living in different environments or countries. For example, Agyemang et al. (2016) show that the prevalence of T2D (adjusted by age and education) among Ghanaian migrant men in London is almost three times higher than their peers in rural Ghana. Mbanya et al. (1999) also consider rural/urban differences in the same country of origin and find that the prevalence of T2D increases from rural Cameroon (0.8%) to urban Cameroon (2%), to reach up to 14.60% in Manchester. Similar differences have been observed in the Asian population: the prevalence of T2D is 2.4% in rural areas of India, compared to 8.2% among Asian Indians living in urban India (Ramachandran et al., 1992). Asian Indians living in the UK or other European countries have about four times higher prevalence (Goff, 2019).

This shows that non-genetic factors play a significant role in the higher prevalence of T2D among ME groups. Among these, obesity represents one of the strongest contributors to the development of T2D. As shown above, it is known that obesity rates are higher in some ethnic groups than the general population, for example among Black African and Caribbean women. This can therefore explain in part higher prevalence of diabetes in some populations T2D (Goff, 2019).

In addition to this, Agyemang et al. (2021) identify pre-migration and post-migration factors as underlying the high risk of T2D within ME groups in Europe. Among the former, they identify adverse early life factors, such as low birth and malnutrition, that might lead to T2D in adulthood. The risk is further increased by a rapid gain in

fatness (catch-up growth) in early life (Leung & Stanner, 2011). Furthermore, the difficulties that lead to the decision to migrate, such as poverty and wars, and the stress to the migration process itself, might subsequently have a negative impact on people's health, directly or indirectly through the adoption of risky behaviours. Among the post-migration factors, changes in dietary habits, as mentioned above, changes in lifestyles, living in deprived neighbourhoods and discrimination are all associated with a high risk of developing T2D. While the focus of Agyemang et al. (2021) is on migrants, some of the risk factors they identify are true also for established ME groups, such as discrimination, the difficulties related to integration, and socio-economic inequalities.

ME Diet, Weight and T2D: Culturally Competent Health Promotion

Context: The importance of Health Education for T2D

Research has shown that the key to stemming the flow of global diabetes is early prevention, education and awareness.

It is estimated that the cost of diabetes to the NHS is close to £10 billion each year (Public Health England, 2015), meaning that prevention is a priority. Individuals at high risk of T2D, including from ME groups and those who are obese, are encouraged to have a risk assessment at their GP surgery or pharmacy, or using a validated web-based tool such as the one on the Diabetes UK website (NICE, 2012). As weight is the biggest modifiable factor for T2D, preventative programmes usually consist of lifestyle intervention involving weight loss and increasing physical activity.

As argued by Goff (2019), there is a need to promote patient involvement and self-management for the management of long-term conditions, and patient education is a keystone of effective T2D treatment. Yet, as reported by Dallosso et al. (2022), it is estimated that people with T2D spend on average 3 hours per year with a health care professional and manage their own care for the remaining 8,757 hours. Self-management programmes are therefore the cornerstone of diabetes care, and structured diabetes health education is advocated for patient empowerment and self-management, which will result in clinical and patient-centred improvements (Goff, 2019). Health education programmes for T2D usually focus on diet and lifestyle advice, weight management and glycaemic control.

Need for Culturally Competent Health Promotion

While the effectiveness of structured diabetes health education is acknowledged, there is evidence that many education programmes are considerably less successful in people from minority ethnic groups. For example, as previously highlighted, Goff (2019) reports that African American participating in a diabetes prevention programme achieved approximately half of the weight loss than what achieved by white Americans. In Scotland, a higher rate of suboptimal glycaemic control has been found in migrants compared to white Scottish (Negandhi et al., 2013).

This is usually attributed to the lack of cultural competency among healthcare practitioners and the failure of generic diabetes education to account for cultural beliefs and language requirements (Goff, 2019). Access to health-care is similarly hindered by a lack of cultural sensitivity in service provision and under use of clinic-based interpreters and community-based services (Wilson et al., 2012). As reported in Creamer et al. (2016), ME groups often face significant barriers to effective healthcare because of migrant status, low socio-economic status, language and cultural differences and poor health literacy. This results in minority ethnic patients

generally having inadequate knowledge of diabetes, poorer glycaemic control and higher diabetes complications.

In their in-depth study on diabetes self-management among UK Black African and Caribbean communities, Moore et al. (2022) observe significant challenges faced by the participants in following advice and guidance to manage their diabetes. Firstly, in relation to language and health literacy. For example, the understanding of a concept like 'BMI' is taken for granted, but some of the participants did not understand and felt uncomfortable in asking for clarification. Then, participants perceived a lack of cultural relevance in dietary advice, as the foods that were familiar to them were not generally discussed in conventionally structured education sessions.

While language discordance is of course one of the first barriers to access material and resources, it is important to take into account the deeper cultural structures which may even act as stronger barriers to healthy self-management practices (Goff, 2019). Moore et al. (2022) observe that in some cultures excess weight is seen as a sign of good health and wealth, and this discouraged participants to follow health advice to lose weight. Furthermore, there is a sense of social responsibility in relation to keeping a traditional diet and eating large portions of cultural food is important in social gatherings. Other themes that emerge in the literature in relation to different cultural beliefs that act as barriers to healthy self-management are different illness beliefs of South Asian communities, with a more fatalistic view of diabetes (Dallosso et al., 2022), and a desire for natural, non-pharmacological therapies in Black and African communities (Goff, 2019). Moreover, there is a need to consider physical activities that resonate with participants, such as walking and dancing, and using gender-specific exercise facilities (Goff, 2019).

In conclusion, cultural barriers to accessing healthcare and inappropriate health education make a significant contribution to ethnic inequalities in diabetes (Goff, 2019). There is a need to develop culturally tailored advice and education programmes that are respectful of, and responsive to, the health beliefs, practices, cultural and linguistic needs of diverse people (Goff, 2019). 'Cultural Appropriateness' is one of the guiding principles of NICE (2011)'s recommendations and refers to interventions that take into account people's first language, literacy skills, cultural and religious beliefs. It is fundamental to understand the target community, use messages that resonate with them and take into account different cultural and religious beliefs, for example by separating physical activity sessions for women and men; considering culturally appropriate activities, such as dancing and walking; considering cultural practices about food, hospitality and religious events; teaching/counselling about dietary change by modifying ethnic foods and recipes (Nam et al., 2012; NICE, 2011).

Culturally Competent Health Promotion

This section provides some recommendations and solutions that have been put forward and implemented to provide culturally competent and appropriate health promotion and education, in order to overcome the barriers outlined above.

Language and Health Literacy

It is recommended that health education is delivered in the language preferred by the participants, including all informative material (NICE, 2011). For example, *My Diabetes, My Way* is NHS Scotland's interactive diabetes website to help support people who have diabetes and their family and friends. In the section 'My Languages', there are diabetes resources in several languages, including Arabic, Bengali, French, Punjabi and Gujarati. Something that could be improved here is to use multicultural images (e.g. photos of people from different origins), so that people can identify with what they see, rather than perceiving that 'it's not for them', as emerges in some conversations with experts.

The delivery of health education in different languages is done by using interpreters, involving staff that can speak the languages used by the community, including link workers, and/or training lay educators to provide the education. Something that is observed in this regard is that when interpreters are involved, more time is needed for the delivery of the education programme (Dallosso et al., 2022).

Experts argue that involving link workers is the most powerful and effective way for engaging with a community because they are 'more than interpreters'. They understand the culture and act as a bridge towards that community, building strong relationships.

Furthermore, the information has to be provided for varying levels of literacy. This can be done by using images to replace or supplement writing to tailor to low-literacy needs; using less and simple text in leaflets; and using basic street language, even when the programme is delivered in English, to make sure that people understand.

Culturally Appropriate Food

Food is an important part of people's identity and cultural food is cherished among ME communities (CWIN, 2019). As observed by Moore et al. (2022), translating dietary advice to traditional cultural food was a key challenge for their participants from Black African and Caribbean communities. The foods that were familiar to them were not generally discussed in conventionally structured education sessions. They had to go through a process of 'reconciliation' between the healthcare advice and their own perspective, through absorbing guidance, facilitating knowledge with informal conversations with their peers, and filtering what they felt they could and could not do.

This emerges also from community engagement work in Scotland. Third sector organisations have carried out significant work in the field of food among ME groups, generally with the threefold aim of health promotion, fighting food insecurity and promoting community integration. Although not specifically focused on T2D, this work offers important insights, both in terms of challenges faced by ME groups in relation to food, and in terms of successful programmes. For example, BEMIS and Community Food Health (Scotland) (2013) carried out a study to map the voluntary and community organisations on maternal and infant nutrition across ME

groups. They conducted interviews and focus groups with women from different ME communities (African, Czech, Polish and Roma) to explore their experiences of seeking and receiving support in relation to maternal and infant nutrition. In line with what was reported above, what emerged is the confusion faced by these women between the advice received by the NHS versus that received from their peers because of differences in diet and eating habits.

This highlights the need to consider a broader range of types of food in health promotion and education, including the types of food that are relevant to traditional diets. There is a need to include ethnic-style cuisine in nutrient datasets to gain a better understanding of the nutritional composition of these foods (Leung & Stanner, 2011).

Edinburgh Community Food have designed a specific 'Eat Well Guide' for African & Caribbean and South Asian communities, taking into account their traditional foods. During the pandemic, they ran a successful programme called 'Be a Healthier Me (BaHMe)', which consisted of sending a 'cultural food box' to ME households and then holding video calls to cook together. The aim of the programme was to offer access to a targeted healthier lifestyles programme to ME groups, through incorporating cultural understanding of food, with the final aim of tackling persistent health inequalities. Food has been used here as 'the hook' to then achieve good health results, such as lose weight and prevent diabetes.

While the examples above are more about healthy eating in general, there are specific resources that have been developed in relation to T2D management and diet advice. For example, Diabetes UK has some resources aimed at the South Asian community - '[Healthy eating for the South Asian community](#)' (2011) and '[Healthy Eating and Diet Tips for South Asians](#)' (2019). These consider culturally appropriate foods and provide guidance for making traditional recipes healthier and reducing portion sizes.

Religious Beliefs and Celebrations

To address the needs of different ethnic groups, another important aspect to consider includes specific religious beliefs and celebrations, as these might affect the dietary habits in general and/or in specific periods of time. For example, during Ramadan Muslim people are obligated to fast every day from sunrise to sunset. This is challenging for people with T2D as it might lead to hypoglycaemic events. Self-management education programmes have therefore been adapted to meet the needs of Muslim people during Ramadan to allow for safer fasting. Daly et al. (2014) provides a rich description of DESMOND culturally adapted programme, '[A Safer Ramadan](#)'.

Community Engagement

Another important aspect of culturally competent and appropriate health promotion and education is to work with and alongside communities, in order to understand their specific needs and improve health promotion. As mentioned before, there might be deep cultural barriers to effective self-management, such as different cultural attitudes to weight or different illness beliefs, that hinder people's

engagement with educational programmes and their adherence to medical advice. Community engagement activities can help in overcoming these barriers and improve health outcomes for ME groups (Creamer et al., 2016).

For example, health promotion programmes may be promoted and implemented in faith settings. In Gutierrez et al. (2014), a diabetes prevention program was offered free of charge in Latino communities' churches in New York. Through spiritual messaging and the support of the church community, the program consisted of promoting healthier food and physical activity using goal-setting techniques. Each session included a 1-hour nutrition discussion followed by a 1-hour exercise session. After the 12 weeks of the program, participants reported significant improvements in weight, BMI, fasting glucose, healthy nutrition and physical activity behaviours.

It is recommended to involve community organisations and identify and encourage community champions, such as religious and community leaders, to improve awareness of T2D, promote healthy lifestyle and encourage other members of the communities to be involved (Nam et al., 2012; NICE, 2011). Creamer et al. (2016) suggest to train lay and peer workers from the community, who can be involved in a supportive role in the delivery of health promotion activities in order to provide support to participants, encourage attendance to sessions and ensure adherence to dietary and lifestyle advice.

The Minority Ethnic Health Inclusion Project (MEHIS) in Lothian works with link-workers from different communities. Those involved in the project report that they are 'more than interpreters', as it is not only a matter of speaking different languages, but they are part of the community and know the culture very well. Their programmes are very well attended as on one side, they understand very well the needs of their community, and on the other they work for the NHS, so they are seen as a trustworthy source of information.

Academic research in this field is increasingly adopting participatory methods to co-produce culturally competent and appropriate health interventions. For example, Goff et al. (2021) worked with Black-British adults living with T2D, healthcare professionals and community leaders to co-design a culturally tailored diabetes self-management education and support programme. Firstly, they conducted focus groups and interviews with participants to identify the main barriers to effective health education, from both the professional and patient's point of view. Then, they organised and facilitated an interactive workshop which resulted in some key requirements of health education, such as avoidance of medical settings, appropriately trained and culturally knowledgeable educators, flexible appointments, preference for verbal and visual information and avoidance of technical/medical terms. Lastly, the material for the education was developed by the participants and this included culturally-sensitive videos, information booklets and food photography to provide dietary advice. The authors argue that participatory methods provided an important means to understand the needs of the community, enabling the development of an intervention that was sensitive to the needs of both the service users and the providers.

O'Mara-Eves et al. (2013) define 'community engagement' as involving communities in decision-making and in the planning, design, governance and delivery of services. In their systematic review of community engagement activities, they find that community engagement interventions have a positive impact on health behaviours, health consequences, self-efficacy and perceived social support outcomes across a range of conditions. Co-production is therefore an important means to reduce health inequalities and it is recommended that should be incorporated in public health interventions.

Patient-Practitioner Relationship

It has been observed that a good patient-practitioner relationship has the potential to positively affect health outcomes, as it nudges adherence to recommendations. Factors increasing trust in the healthcare team include to give people time, appreciating that it is difficult to receive a diabetes diagnosis; to relate to them as individual, showing empathy and offering encouragement; and respecting cultural practices and beliefs, tailoring explanations and providing salient relevant advice. (Moore et al., 2022)

It is important to ensure cultural competency of healthcare professionals, meaning that they understand and can address the needs of people from different backgrounds who have different beliefs, values and habits (Goff, 2019). Cultural concordance is not necessary, but healthcare professionals should appreciate cultural diversity and be inclusive in their guidance (Moore et al., 2022).

Patients' knowledge and understanding of their illness is fundamental for the effective self-management of diabetes (Wilson et al., 2012). Health practitioners need to help people understand the short, medium and longer-term consequences of their health-related behaviours, helping them plan changes in terms of easy sustainable steps over time (NICE, 2011). This includes recognising how people's social context affects their behaviours. For example, on the website of Diabetes UK there is a section on '*Eating out with diabetes*', which provides guidance for small lifestyle changes when eating out that don't compromise people's social life. This could be expanded to consider a wider range of social gatherings.

Other factors

There are other factors that are important for an effective structured education programme. These do not apply only to ME groups but are important for person-centred care. A combination of both group and individual education sessions is recommended (Creamer et al., 2016), so that people can have peer support but also feel comfortable in asking any questions they need to. It is important to give the opportunity for family members to attend the education programme, so they can provide home-based support (Nam et al., 2012). The programme has to be affordable and accessible, and it has to be delivered in different ways in order to take into account different working patterns and needs, such as childcare. Digital and/or face-to face options can be offered, so people can choose what works best for them.

Evaluation Studies and Open Issues

The evaluation of culturally appropriate health interventions for T2D is an area that has received increasing attention in academic research. In Creamer et al. (2016), the authors carried out the same systematic review as Hawthorne et al. (2010), searching for randomised controlled trials (RCTs) on culturally appropriate health education for any ME group in high-income countries. They found 22 new studies to be added to the original 11 included in first review. They conclude that culturally appropriate health education, defined as health education that has been tailored to the cultural and religious beliefs, linguistic and literacy skills of the community receiving the programme, led to better health outcomes than conventional health education. These include improvements in glycaemic control, diabetes knowledge and self-efficacy. Drawing on the reviewed studies, they provide evidence-based guidance for designing and delivering health education interventions in ME groups (see box below).

1. Use previous research, experience of working with the community and the community themselves to inform the design of the intervention.
2. A combination of both groups and individual education sessions.
3. When designing the intervention, consider participants' socio-economic status, health literacy and any other potential barriers to effective diabetes self-management .
4. Use of lay-workers in a supportive role.
5. Educational group sessions held at weekly intervals, followed by regular telephone calls for reinforcement .
6. Use more personal methods, such as referral through clinics or telephone calls, when recruiting participants.
7. When recruiting, focus on individuals who are currently demonstrating poor diabetes self-management and glycaemic control.

Pilot the interventions to assess their effectiveness and allow participant feedback to be incorporated into the intervention

Adapted from Creamer et al. (2016, p. 180)

As mentioned in section 6.3.4, Gutierrez et al. (2014) report improvements in BMI and weight resulting from the church-based diabetes prevention programme, showing that culturally competent health promotion and community engagement can achieve positive health outcomes also in relation to weight management. Bhopal et al. (2014) conducted a trial in Scotland to assess a weight control and physical activity intervention (PODOSA) in South Asian communities. The description of the cultural adaptation is in Wallia et al. (2013), and mainly consisted of delivering the intervention at home instead of in a clinic, and using dietitians rather than clinic staff. The authors conclude that the results in the intervention group were better than in the control one, with a significant but relatively modest mean weight loss of 1.13 Kg.

Considering the cultural attitudes towards overweight and the significant differences in obesity rates among ME groups highlighted in section 4, this is an area where further academic research is needed. Moore et al. (2022) focus on Black African and Caribbean communities, who in general have positive attitudes towards overweight and obesity. In their qualitative study, they explored the barriers that participants faced in following health practitioners' advice to lose weight and provided some recommendations to improve this, including establishing strong community partnerships between ME groups and healthcare. Evaluation of these approaches would be beneficial.

Ross et al. (2022) evaluated the impact of a pilot digital stream of the diabetes prevention programme '[Healthier You](#)' in England. They concluded that participation in the digital diabetes prevention programme was associated with clinically significant reductions in weight and glycated haemoglobin (HbA1c) at 12 months. They observe that there was no effect of ethnicity on outcomes or age, unlike comparable face-to-face programs that had previously reported worst outcomes for those from ethnic minorities (Valabhji et al., 2020). The digital provision of diabetes education programmes is an important development and it will be something to monitor in future. The authors conclude that digital diabetes education can be effective and wide-reaching and could provide an important component of a population-based approach to addressing type 2 diabetes prevention and self-management.

While the results outlined above are positive and promising, there are some issues that are still not clear and require further investigation. The majority of the studies included in Creamer et al. (2016) were conducted in the US, with only 4 studies carried out in the UK and all focusing on South Asian communities. As highlighted by Goff (2019), very few culturally tailored programmes have been evaluated in the UK and further research is therefore needed in this field.

Furthermore, it is not clear whether improvements in glycaemic control and diabetes knowledge translate into better clinical outcomes. Additional trials of longer duration are needed to investigate clinical outcomes such as the development of diabetes complications, mortality and patient quality of life (Creamer et al., 2016). Moreover, little is known about the cost effectiveness of these programmes (Goff, 2019).

An intervention that is successful in a specific location may not be as successful if replicated somewhere else because of the unique circumstances of every ME community. Guidance for culturally competent and appropriate health promotion are generic and need to be tailored to the specific needs of the target population (Creamer et al., 2016).

Health interventions designed and implemented in a research setting do not usually become embedded within existing health service or community structures and are not sustainable once the research project has come to an end. This means that the achieved positive health outcomes are short lived and the community might feel let down by the lack of on-going commitment (Davidson et al., 2021). Sustainability should therefore be given more attention when designing an intervention, including consideration of how the new intervention might become embedded in established health and/or community services if shown to be successful.

As highlighted by Goff et al. (2019, p. 934), “*‘culture’ is an ever-changing concept [and] this is particularly true among different generations of migrant groups*”. As discussed previously in this report, there are significant generational differences in lifestyles, dietary habits and religious beliefs among ME communities. This means that something that is effective for a first generation of people who have moved to the UK, might be completely inappropriate for a second or third generation of individuals who were born here. Future work on culturally competent health promotion should take this into account.

It is still not possible to identify which aspects of the culturally appropriate health education programme makes the strongest difference in the health outcomes and for whom (Hawthorne et al., 2010). As argued by Davidson et al. (2021), there is still a limited theoretical understanding of ‘how’ cultural adaptation works, for ‘whom’ and in ‘what contexts’. It is for this reason that they carried out a realist review to synthesise the literature on culturally adapted T2D prevention interventions for South Asian populations living in Europe or elsewhere as a minority group. Davidson et al. (2021) concluded that the intervention context and broader context strongly affect the effectiveness of the health education programme, meaning that participants’ response to the same intervention might vary. The main contextual influences that they identify are:

- situation in which the intervention takes place – for example, as previously mentioned, if the intervention takes place in a research setting, the intervention is not likely to be sustainable when the research project comes to an end;
- heterogeneous populations, consisting of individuals with diverse and intersecting identities;
- broader social context, shaped by traditional cultural beliefs and Western lifestyles;

- socio-cultural stress, such as lack of resources and/or time to access the intervention.

There are therefore different causal mechanisms that lead to the intended health outcomes for some individuals. A more nuanced understanding of what works, for whom, and why is fundamental to advance cultural adaptation and tackle inequalities in health, considering this large and growing population that is extremely heterogeneous.

Limitations

The aim of this scoping review was to provide an overview of evidence to support understanding of Ethnic Minorities diet, weight and type 2 diabetes, through identifying key sources of information and themes existing around this topic. It does not claim to be systematic or comprehensive. It could be used to inform the specification of future systematic reviews on the subthemes presented in this report and as a prompt for discussion.

There are some issues that were only briefly addressed in this report but could be explored further. These include the complications of diabetes, whether there are differences across different types of ME groups and why; the numbers of people accessing type 2 diabetes prevention and treatment programmes, including statistics by ethnicity; and whether misdiagnosis is more common in ME groups than in white populations.

Furthermore, this scoping work did not include data and research on physical activity in ME groups. This is, however, an important topic both in relation to weight and diabetes care, and should be taken into account in policy discussion and future work.

Conclusions

To conclude, there are some broader issues that it is important to highlight in relation to ME diet, weight and T2D. While there is room for improvement in how ethnicity data is collected, it is important to keep in mind that 'ethnicity' is a complex and contested concept (Walsh et al., 2018). Membership of any ethnic group is subjective to the individual, and this self-perceived identity might shift over time (Goff, 2019).

There are significant differences among generations of ME communities, meaning that something that might work for a first-generation of migrants who have moved to the UK might be completely inappropriate for second or third-generations who were born in the UK. There is not much about this aspect in the culturally appropriate health education literature, but this is something that requires more attention in the future, as the population is becoming more and more diverse. Furthermore, this increased diversity of the population also means that sometimes it is difficult to categorise ethnicity, as individuals might have different origins and backgrounds.

People from the same ME group usually share the same language and have common cultural values and religious beliefs. However, they are still extremely heterogeneous populations "*with diverse and intersecting identities*", quoting Davidson et al. (2021, p.7). As reported in this study, "*[while] culturally sensitive adaptations are essential ... they should avoid reinforcing stereotypes*" (Davidson et al., 2021, p.7). This is to say that within the same ME community, individuals have different and specific needs and it will be impossible to find a solution that will

fit everyone's needs. Rather, it is important to provide different services in different ways for healthcare to be 'person-centred' and cater for diverse needs.

Related to what mentioned above, the focus of this work has been on ethnicity, but intersectionality cannot be ignored when talking about ethnic minorities and health inequalities. It is well known that people from some ME groups tend to be poorer and live in more deprived areas than the general population, and there are inequalities between men and women (Davidson et al., 2021; Leung & Stanner, 2011). Therefore, it is fundamental to consider how these inequalities are linked and interact with each other. Academic research might help to try and disentangle the effects of different inequalities on health outcomes.

Lastly, in section 3 the concept of 'dietary acculturation' was introduced, referring to how the diet of ME groups changes after migration to Western countries. This usually entails that their diet gets worse, as people start eating more fast food that is high in energy, fat and salt (Leung & Stanner, 2011). The unhealthy food environment is a broad and deep problem in the UK and it requires significant attention beyond inequalities among ME groups.

References

SOURCE	DESCRIPTION
<p>Agyemang, C., Meeks, K., Beune, E., Owusu-Dabo, E., Mockenhaupt, F. P., Addo, J., ... & Stronks, K., 2016. Obesity and type 2 diabetes in sub-Saharan Africans—Is the burden in today’s Africa similar to African migrants in Europe? The RODAM study. <i>BMC medicine</i>, 14(1), 1-12.</p>	<p>Academic paper. Cross-sectional study among Ghanaian adults living in rural and urban Ghana, and three European cities (Amsterdam, London and Berlin).</p>
<p>Agyemang, C., van der Linden, E. L., & Bennet, L., 2021. Type 2 diabetes burden among migrants in Europe: unravelling the causal pathways. <i>Diabetologia</i>, 64(12), 2665-2675.</p>	<p>Academic paper. Literature review on the burden of T2D on migrants in Europe, its related complications, and potential explanatory mechanisms.</p>
<p>Anderson, J. J., Welsh, P., Ho, F. K., Ferguson, L. D., Welsh, C. E., Pellicori, P., ... and Sattar, N., 2021. Ethnic differences in prevalence of actionable HbA1c levels in UK Biobank: implications for screening. <i>BMJ Open Diabetes Research and Care</i>, 9(1), e002176.</p>	<p>Academic paper. Cross-sectional study analysing baseline UK Biobank data on plasma glycated haemoglobin (HbA1c) to compare the prevalence of pre-diabetes and undiagnosed diabetes mellitus in white, South Asian, black, and Chinese participants. Main results: 1 in 6–7 individuals of black or South Asian ethnicity have actionable values and approximately 1 in 30 are living with undiagnosed diabetes.</p>
<p>BEMIS and Community Food and Health (Scotland), 2013. Strengthening food work across minority ethnic communities: A focus on maternal and infant nutrition. Available at: https://www.bemis.org.uk/documents/cfhs-bemis-maternal-infant-nutrition-report.pdf</p>	<p>BEMIS is the national Ethnic Minorities led umbrella body supporting the development of the Ethnic Minorities Voluntary Sector in Scotland. This is the report of a small scale study designed to:</p> <ul style="list-style-type: none"> - provide a snapshot of voluntary and community organisations activity on maternal and infant nutrition across ME communities in Scotland; - explore the experiences of women from different communities (African, Czech, Polish and Roma) through interviews and focus groups.

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<p>Bennett, G., Bardon, L. A., & Gibney, E. R., 2022. A Comparison of Dietary Patterns and Factors Influencing Food Choice among Ethnic Groups Living in One Locality: A Systematic Review. <i>Nutrients</i>, 14(5), 941.</p>	<p>Academic paper. Systematic review of international studies on dietary differences of ethnic groups and the factors that influence their food choices.</p>
<p>Bhopal, R., Fischbacher, C., Povey, C., Chalmers, J., Mueller, G., Steiner, M., ... & Bansal, N., 2011. Cohort profile: Scottish Health and Ethnicity Linkage Study of 4.65 million people exploring ethnic variations in disease in Scotland. <i>International journal of epidemiology</i>, 40(5), 1168-1175.</p>	<p>Academic paper about the Scottish Health and Ethnicity Linkage Study (SHELs), in which population data have been linked to morbidity and mortality records to show differences among ME groups. Main source of health data for ethnic minorities in Scotland.</p>
<p>Bhopal, R. S., Douglas, A., Wallia, S., Forbes, J. F., Lean, M. E., Gill, J. M., ... & Murray, G. D., 2014. Effect of a lifestyle intervention on weight change in south Asian individuals in the UK at high risk of type 2 diabetes: a family-cluster randomised controlled trial. <i>The lancet Diabetes & endocrinology</i>, 2(3), 218-227.</p>	<p>Academic paper. Trial in Scotland to assess a weight control and physical activity intervention (PODOSA) in South Asian individuals. Intervention: culturally adapted, family-based lifestyle intervention consisting of 15 visits from a dietitian over 3 years. Main results: weight loss in the intervention group (1.13kg).</p>
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<p>CWIN (Central & West Integration Network), 2019. Knowledge into Action – Community-led research that makes a</p>	<p>Grey literature. Community-led research project carried out by CWIN and supported by Community Food Health</p>

<p>difference. Food security, diet, and obesity – exploring the experiences of ethnic minority groups. Available at: CWIN report (communityfoodandhealth.org.uk)</p>	<p>(Scotland) to explore food security within Minority ethnic people in Glasgow.</p>
<p>Dallosso, H., Mandalia, P., Gray, L. J., Chudasama, Y. V., Choudhury, S., Taheri, S., ... & Davies, M. J., 2022. The effectiveness of a structured group education programme for people with established type 2 diabetes in a multi-ethnic population in primary care: A cluster randomised trial. <i>Nutrition, Metabolism and Cardiovascular Diseases</i>.</p>	<p>Academic paper. Cluster randomised trial in Birmingham and Leicester with patients with T2D for at least one year who never attended a group education programme before to test the effectiveness of a structured group education programme in a multi-ethnic population. Results: significant reductions in body weight over 12 months.</p>
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<p>Diabetes UK, 2022. Type 2 Diabetes. Know your own risk [online]. Available at: https://riskscore.diabetes.org.uk/start</p>	<p>Website of Diabetes UK. Digital tool to calculate the personal risk of T2D.</p>
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	experiences with NHS weight management services in areas of deprivation.
Fischbacher, C. M., Cezard, G., Bhopal, R. S., Pearce, J., & Bansal, N., 2014. Measures of socioeconomic position are not consistently associated with ethnic differences in cardiovascular disease in Scotland: methods from the Scottish Health and Ethnicity Linkage Study (SHELs). <i>International journal of epidemiology</i> , 43(1), 129-139.	Academic paper. Part of SHELs. It explored the association between ethnicity, cardiovascular diseases and socioeconomic position. Results: across groups, socioeconomic position measures were inconsistently associated with CVD hospitalization or death.
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NICE (National Institute for Health and care Excellence), 2011. Type 2 Diabetes prevention: population and community-level interventions. Available at: https://www.nice.org.uk/guidance/ph35#path=view%3A/pathways/preventing-type-2-	Guidelines for preventing type 2 diabetes in adult populations and communities who are at high risk. It aims to promote a healthy diet and physical activity, and

<p>diabetes/national-strategy-and-policy-to-prevent-type-2-diabetes.xml&content=view-node%3Anodes-conveying-healthier-lifestyle-messages-to-the-whole-pop</p>	<p>recommends how to tailor services for people in ME communities.</p>
<p>NICE (National Institute for Health and care Excellence), 2012. Type 2 diabetes: prevention in people at high risk. Available at: https://www.nice.org.uk/guidance/ph38/chapter/Recommendations</p>	<p>Guidelines to identify adults at high risk of type 2 diabetes and to provide them with an effective and appropriate intensive lifestyle-change programme to prevent or delay the onset of T2D.</p>
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<p>ScotPHO, 2020. Ethnic minorities: key points. Available at: https://www.scotpho.org.uk/population-groups/ethnic-minorities/key-points/</p>	<p>Section of ScotPHO website. Information about ME groups in Scotland, including biggest ME group, ethnicity coding, health. Last updated in June 2020.</p>
<p>ScotPHO, 2021. Diabetes: key points. Available at: https://www.scotpho.org.uk/health-wellbeing-and-disease/diabetes/key-points/</p>	<p>Section of ScotPHO website. Key points about diabetes. Last reviewed in December 2021.</p>
<p>Scottish Diabetes Survey 2020. Available at: https://www.diabetesinscotland.org.uk/wp-content/uploads/2022/01/Diabetes-Scottish-Diabetes-Survey-2020.pdf</p>	<p>The Scottish Diabetes Survey is carried out yearly and provides a comprehensive view on diabetes prevalence across the whole population of Scotland.</p>
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