Article:
Senior, L., Maynard, M.J. orcid.org/0000-0002-0011-752X and Apekey, T.A. orcid.org/0000-0003-1696-0834 (2023) Diet and nutritional status of West African and Caribbean adults in the United Kingdom: perspectives to inform community-based approaches to healthy eating. Sustainability, 15 (8). 6722. ISSN 2071-1050

https://doi.org/10.3390/su15086722

sustainability

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Perspective

Diet and Nutritional Status of West African and Caribbean Adults in the United Kingdom: Perspectives to Inform Community-Based Approaches to Healthy Eating

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Abstract: Reliable data on the diet and nutritional status of African and Caribbean adults in the UK is essential for the implementation of targeted interventions to prevent diseases, and to ensure health equity. This review provides an overview of diet and nutritional status, and research and intervention priorities for West African and Caribbean adults in the UK. Cross-sectional studies that compared the two groups with their counterparts in their country of origin and/or in Europe were identified from PubMed, SCOPUS, Cochrane and CINAHL electronic databases and manual searches of bibliographies. Six eligible studies were reviewed. Reported nutrient composition focused predominantly on energy, and macronutrients, with limited information on micronutrients. Carbohydrates and fats were the main sources of energy. Low quantities of non-starch polysaccharides fibre and protein were reported. Participants from rural areas in Ghana had lower average BMI and smaller waist circumference compared to their counterparts in urban Ghana and Europe. Ghanaians in Europe consumed more alcohol and were less physically active than those in the home country. The studies measured limited nutrient composition and health-related outcomes. Studies that measure a wide range of anthropometric and clinical outcomes and key micronutrients, and use objective measures of health-related risk behaviours are needed.

Keywords: nutritional status; health behaviour; diet; non-starch polysaccharide fibre; West African; Caribbean; body mass index; waist circumference; physical activity; review

Citation: Senior, L.; Maynard, M.J.; Apekey, T.A. Diet and Nutritional Status of West African and Caribbean Adults in the United Kingdom: Perspectives to Inform Community-Based Approaches to Healthy Eating. *Sustainability* **2023**, *15*, 6722. https://doi.org/10.3390/su15086722

Academic Editors: Grigorios L. Kyriakopoulos and Wen-Hsien Tsai

Received: 7 March 2023
Revised: 12 April 2023
Accepted: 14 April 2023
Published: 16 April 2023

1. Introduction

According to the latest UK (United Kingdom) census data, the number of people from ethnic groups other than 'White' has increased, with 'Asian' and 'Black' (respectively) being the largest ethnic groups [1]. The majority of those who identified as 'Black' were from African and Caribbean ethnic groups. In addition, Black West Africans are among the fastest growing minoritised ethnic groups. Some minoritised ethnic groups have poorer health-related quality of life compared to Whites in the UK [2]. Such disparities in health are attributable to various factors including poor access to and experience of health services, and socio-economic deprivation [3,4]. Despite these deep-rooted health inequalities, targeted public health interventions to improve the health and nutrition of minoritised ethnic groups are limited. Many of the wider determinants of health (e.g., social connections; physical, environmental and economic resources) are present at the community level [5]. As a result, there is a growing recognition of the role of communities in improving the health and wellbeing of people. The need for incorporating community-based approaches into health systems, policies and practices is equally receiving strong attention. It is therefore not surprising that the health system in the England has seen a shift to place-based approaches to reduce health inequalities [6]. An evidence-based framework for community-based approaches for health promotion in England has also been outlined [7]. The place-based approaches and framework involve working with

community-based health and social care third sector organisations to provide a range of interventions, to improve the health and wellbeing of people in their communities. It also involves community-based interventions for achieving a healthy diet and sustainable foods systems through the provision of, and increased access to, green spaces (areas of vegetation) for the cultivation of fruits and vegetables. The annual Community Life Survey [8] of adults aged 16 and above in England provides an indication of people's feelings towards their communities and their role within them. In addition, it provides trends across areas including wellbeing to inform policy and action. The survey questions are based on identity, social networks, sense of community, civic engagement, volunteering, social action, charitable giving, subjective wellbeing and loneliness. Although the recruitment strategy includes proportionate samples of people of Black and Asian ethnic groups, the measures of wellbeing have little relevance to interventions intended to increase access to healthy and sustainable diets at community level [9]. Evidence of the effectiveness of interventions to achieve a healthy diet and promote sustainable food systems in communities of minoritised ethnic groups is therefore lacking. In this review, 'Black Africans' (including West Africans) refers to people of direct Black African origin and 'Black Caribbeans' are Caribbeans of Black African descent.

Regular nutrition surveillance of populations, especially at-risk groups, is important for the identification of individuals with compromised nutritional status, and for the development of impactful interventions to ensure health equity [10]. In the UK, large-scale nutrition surveys such as the National Diet and Nutrition Survey (NDNS) occur annually. The NDNS is the only source of high-quality data on current nutrient intake and nutritional status of the population [11]. This survey enables the government to monitor the population's nutrient intake and compare the findings to national and global public health goals. NDNS data are key to nutrition policy development and the implementation of public health nutrition interventions, such as 5-A-day (i.e., 5 portions fruit and vegetables a day), sugar, salt and calorie reduction campaigns and Change 4 Life [12,13]. However, the NDNS survey sample size does not allow for a separate analysis for sub-groups including Black African and Black Caribbean adults [14]. Similarly, The Health Survey for England included proportionally representative samples of the main ethnic groups (e.g., Black groups, Asian groups) in the UK, but the sample sizes are small for minoritised ethnic groups [15]. Thus, there is limited reliable data on the current health and nutritional status of minoritised ethnic groups for targeted interventions. There is, however, the Active Life survey, which provides comprehensive data on people's activity levels across England [16]. The latest survey data by ethnicity showed that the proportion of physically active individuals in Black ethnic groups (50.4% to 57.8%) was less than the national average (61.4%). This survey, however, does not provide comprehensive data on the health status and health-related behaviours of individuals in Black ethnic groups.

In the absence of reliable and comprehensive national data, research studies have been undertaken to assess the nutrient intake, nutritional status and health-related behaviours of minoritised ethnic groups, including African and Caribbean populations living in the UK [17–21]. At present, there is a lack of review of existing research on nutrient composition of the diets, nutrition status and health-related behaviours of West African and Caribbean populations in the UK. A review which considers research surveys and identifies research gaps and interventions to inform community-based approaches to healthy eating and lifestyle is warranted.

The aim of this review, therefore, was to synthesise recent research on the nutrient composition of the diets, nutritional status and health-related behaviours of West African and Caribbean adults living in the UK. The review also identified priorities for research and interventions, including community-based interventions to support healthy eating and lifestyles.

2. Materials and Methods

A narrative-type review was chosen over a systematic review due to limited well-designed empirical research and good quality data on the topic area.

2.1. Information Sources, Search Strategy and Study Selection

PubMed, SCOPUS, Cochrane and CINAHL electronic databases were searched using keywords including 'dietary habits', 'diet', 'food', 'nutrition', 'intake', 'adult', 'United Kingdom', 'West Africa', 'Caribbean' and 'migrant', and Boolean operators (e.g., AND, OR). The date range for the search was limited to December 2012 to December 2022 to select contemporary studies and enable comparison of outcomes to UK recommendations over the past decade. A systematic search was carried to identify published, quantitative, cross-sectional studies that reported the dietary nutrient composition, health status and health-related behaviours of West African and African-Caribbean adults ($\geq$18 years) in the UK. The computer-based searches combined terms related to nutrition and health exposures, and population (i.e., West African and African-Caribbean) in humans. Titles and abstracts of the retrieved citations were screened to assess their suitability for potential inclusion, which was then followed by the acquisition of full texts for detailed evaluation. The reference lists from selected papers were also manually searched for relevant studies.

2.2. Eligibility and Exclusion Criteria

Studies that compared these population groups with their counterparts in their country of origin and/or in Europe, for the above outcomes were also included. Only studies published in English were considered due to limited resources.

Excluded studies were articles that investigated the dietary habits and nutrition status of adolescents, children, and any other ethnic groups, and articles from countries outside those stated in the inclusion criteria. Studies that did not assess nutritional status, nutrient intakes and health behaviours in the target groups were also excluded.

2.3. Data Extraction

Data were extracted, where available, on study location, study population, study design, sampling strategy, study participants, description of dietary assessment tool utilized, nutrient intake, energy intake and health behaviour and outcomes (Table 1). The nutrient and energy composition of the diets of participants were also extracted and are reported in Table 2.

Table 1. Characteristics of included studies.

Author(s)/Year	Setting	Study Population	Sampling	Sample Age (Years)	Sample Size	Dietary Assessment Tool	Health Assessment/Tool
Asante et al., [22]	UK Ghana	Ghanaians living in London and Accra	Purposive	25–60	N = 240 Men (n = 129) Women (n = 111) London, UK: n = 80 (men n = 43, women n = 37) Accra, Ghana: n = 160 (men n = 86, women n = 74) Drop out: n = 240	Food Frequency Questionnaire	Height Weight BMI Waist circumference Dietary supplement use Smoking status Alcohol consumption
Galbete et al., [23]	Ghana Germany Netherlands UK	Ghanaian migrants living in Europe (Berlin, London, Amsterdam), and urban and rural Ghana	Multistage random sampling	≥18	N = 3905 Men (n = 1449) Women (n = 2456) Rural Ghana: n = 926 (men% = 39.1, women% = 60.9) Urban Ghana: n = 1367 (men% = 27.9, women% = 72.1) Ghanaians in Europe: n = 1612 (men% = 43.7, women% = 56.3)	Food Propensity Questionnaire 24 h recalls	Height Weight BMI Waist circumference WHO Global Physical Activity Questionnaire [24] Smoking status
Galbete et al., [25]	Ghana Germany Netherlands UK	Ghanaian migrants living in Europe (Berlin, London, Amsterdam) and Ghanaians in urban and rural Ghana	Purposive, Multistage random sampling	≥18	N = 4213 Men (n = 1572) Women (n = 2641) Rural Ghana: n = 942 (men% = 38.7, women% = 61.3) Urban Ghana: n = 1420 (men% = 28.8, women% = 71.2) Ghanaians in Europe: n = 1851 (men% = 43.3, women% = 56.7)	Food Propensity Questionnaire 24 h recalls	Height Weight BMI Waist circumference Fasting plasma glucose WHO STEPS questionnaire [24] Smoking status
Gibson et al., [26]	Ghana UK	Ghanaians in Accra and London	Purposive	≥18	N = 83 Men (n = 45) Women (n = 38) London, UK: n = 57 (men n = 29, women n = 28) Accra, Ghana: n = 26 (men n = 16, women n = 10)	3-day food record	Height Weight BMI

Table 1. *Cont.*

Author(s)/Year	Setting	Study Population	Sampling	Sample Age (Years)	Sample Size	Dietary Assessment Tool	Health Assessment/Tool
Goff et al., [27]	UK	Caribbean, West-African	Purposive, Snowball	18–75	N = 133 Men (n = 39) Women (n = 94) African-Caribbean: n = 50 (men n = 10, women n = 40) West African: n = 83 (men n = 29, women n = 54)	24 h recall	Height Weight BMI
Osei-Kwasi et al., [28]	Ghana Germany Netherlands UK	Ghanaians living in Europe (Berlin, London, Amsterdam) and Ghanaians in urban and rural Ghana	Multistage random sampling	≥18	N = 4534 Men (% = 38) Women (% = 62) Ghanaians in Europe: n = 2011 (men% = 43.8, women% = 56.2) Ghana: n = 2543 (men% = 33.3, women% = 66.7)	Food Propensity Questionnaire	BMI

N: Total sample size; n: cohort size; BMI: Body Mass Index.

Table 2. Comparison of the energy and nutrient composition of the diets of the African and Caribbean adults in Europe, Ghana and UK.

Author	Energy, kj	Energy, kcal	Carbohydrate% of Total Energy	NSP, g	Protein, % of Total Energy	Fat, % of Total Energy	Saturated Fat, % of Total Energy
± SD or (95% Confidence Intervals)							
Galbete et al., [23]		Rural Ghana: 2611 ± 848	Rural Ghana: 56.5 ± 8.3	NR	Rural Ghana: 11.5 ± 2.2	Rural Ghana: 31.3 ± 7.3	NR
		Urban Ghana: 2295 ± 660	Urban Ghana: 54.4 ± 8.1	NR	Urban Ghana: 13.6 ± 2.5	Urban Ghana: 31.6 ± 7.3	NR
		Europe: 2677 ± 924	Europe: 50.4 ± 9.5	NR	Europe: 14.4 ± 2.5	Europe: 33.5 ± 9.4	NR
Gibson et al., [26]		Ghana: 2460 ± 779	Ghana: 61.5 ± 9.3	Ghana: 6.7 ± 2.2	Ghana: 14.1 ± 2.8	Ghana: 24.4 ± 8.5	Ghana: 5.8 ± 3.7
		UK:1853 ± 548	UK: 52.2 ± 7.7	UK: 8.3 ± 3.1	UK: 16.9 ± 3.9	UK: 29.9 ± 7.9	UK: 8.5 ± 3.4

Table 2. *Cont.*

Author	Energy, kj	Energy, kcal	Carbohydrate% of Total Energy	NSP, g	Protein, % of Total Energy	Fat, % of Total Energy	Saturated Fat, % of Total Energy
Goff et al., [27]	Caribbean: 9179 (8527,10 916)		Caribbean: 47.0 (44.6,49.5)	Caribbean: 7.1 (6·3, 7·9)	Caribbean: 15.8 (14.7,17.0)	Caribbean: 34.0 (32.1,35.9)	Caribbean: 10.6 (9.7,11.5)
	West African:8121 (7623, 8615)		West African: 49.0 (47.2,50.9)	West African: 7.6 (7·0, 8·2)	West African: 15.4 (14.6,16.2)	West African: 33.5 (31.8,35.2)	West African:10.2 (9.4,11.0)
	Whole sample: 8724 (8171, 9276)		Whole sample: 48.3 (46·8, 49·7)	Whole sample: 7.4 (6·9, 7·9)	Whole sample: 14.5 (14.2–14.9)	Whole sample: 32.3 (31.4–33.1)	Whole sample:11.4 (10.9–11.8)

SD: Standard deviation; NR: Not reported; NSP: Non starch polysaccharides.

3. Results

The initial search identified 6165 potential articles from databases and reference lists of studies. After screening of titles and abstracts, 6111 articles did not meet the inclusion criteria and were therefore excluded. Full text assessment was then conducted on the remaining 54 articles. Following the full text assessment, 25 articles did not include dietary assessment and 23 were conducted outside of the UK and Europe and were also excluded. Six articles [22,23,25–28] met the eligibility criteria and were included in the review. The characteristics of the 6 articles included are shown in Table 1.

3.1. Characteristics of Included Studies

The study settings were the United Kingdom, Netherlands, Ghana and Germany. Various approaches were used to gain access to potential participants. These included engagement with African and Caribbean organisations and community centres [22,23,26], religious communities [23,25,27], population registers [23], distribution of recruitment flyers in public areas [27] and the use of local media [23]. Dietary assessment tools used were questionnaires [22,23,25,28], 24-hour recalls [23,25,26] and food records [26]. In addition, manufacturer nutrient declarations on food labels and the West African Food Composition Table 2012 (WAFCT 2012), were used to convert traditional Ghanaian foods to energy and nutrient intake [23,25,27]. The WAFCT 2012 lacked important foods and recipes, and contained fewer analytical data compared to the updated 2019 version [29]. Anthropometric measures were used to assess nutritional status, and lifestyle related questionnaires for health behaviours.

3.2. Comparison of Dietary Nutrient Composition

Only three [23,26,27] of the six studies reported nutrient composition of the diets of participants. A comparison of the energy and nutrient composition of the diets of cohorts of African and Caribbean ethnicities from Ghana and European settings is shown in Table 2. Generally, nutrient composition varied between cohorts and settings, with carbohydrates and fats being the main sources of energy. Protein composition of the diets of Ghanaians in Ghana [23,26] was less than their counterparts in Europe, and the UK Reference Nutrient Intake of 15% of total energy (except the European cohort in Galbete et al. [23]. However, the saturated fatty acid composition of the diets of participants was within the UK recommendation of no more than 11% food energy [30]. Furthermore, the reported amount of non-starch polysaccharides (NSP) fibre was less than the current recommendation of at least 30 g/day of fibre for adults. It is worth noting that NSP fibre only consists of polysaccharides of plant cell wall components and does not include resistant starch and lignin [31]. Goff et al. [27] was the only study that reported the sodium composition of the diet of participants. In this study, the average sodium content of the diets was 3088 mg/d for Caribbean and 2604 mg/d for West African adults in the UK.

3.3. Nutritional Status and Health-Related Behaviours

Very limited outcome measurements for nutritional status and health-related behaviours were reported by the six studies (Table 3). The anthropometric measurements reported were weight, height, body mass index (BMI) and waist circumference. A limitation of these measurements is that they do not distinguish between fat mass and fat-free mass, and therefore are not reliable predictors of excess adiposity. Only Galbete et al. [28] reported fasting plasma glucose. No biomedical outcomes were reported by the other studies.

Table 3. Body mass index (BMI), waist circumference and health-related behaviour of Ghanaians and Caribbeans living in Europe and Ghana.

Author(s)/Year	Waist Circumference, cm	BMI, kg/m^2 ± Standard Deviation [1]	Smoking, Current or Former, n (%) Yes [1]	Alcohol Consumption, n (%) Yes [1]	Physical Activity, METs-h/Week **
Asante et al. [22]	NR	NR	London: 6 (14) Accra: 9 (10)	London: 37 (46) Accra: 47 (29)	NR
Galbete et al. [23]	Rural Ghana: 81.2 ± 10.9 Urban Ghana: 89.4 ± 11.8 Ghanaians (Europe): 94.1 ± 11.7	Rural Ghana: 22.5 ± 4.3 Urban Ghana: 26.9 ± 5.4 Ghanaians (Europe): 28.6 ± 5.0	Rural Ghana: (8.6) Urban Ghana: (6.8) Ghanaians (Europe): (12.2)	Rural Ghana: 0.06 (0, 1.22) ** Urban Ghana: 0.06 (0, 0.64) ** Ghanaians (Europe): 0.85 (0, 4.7) **	Rural Ghana: 88 (32,161) Urban Ghana: 60 (6,156) Ghanaians (Europe): 62 (14,186)
Galbete et al. [25]	Rural Ghana: 81.2 ± 10.8 Urban Ghana: 89.3 ± 11 Ghanaians (Europe): 94.4 ± 11.6	Rural Ghana: 22.6 ± 4.3 Urban Ghana: 26.9 ± 5.3 Ghanaians (Europe): 28.8 ± 4.9	Rural Ghana: (7.9) Urban Ghana: (6.9) Ghanaians (Europe): (12.0)	NR	Rural Ghana: 90 (36, 168) Urban Ghana: 60 (6, 156) Ghanaians (Europe): 64 (14,188)
Gibson et al. [26]	NR	Accra: 27.4 (23.8–29.0) *** London: 26.7 (24.2–29.2) ***	NR	NR	NR
Goff et al. [27]	NR	Caribbean: 30 ± 7.3 West-African: 26.8 ± 4.8	NR	NR	NR
Osei-Kwasi et al. [28]	NR	Ghanaians (Europe): BMI < 25 = 22.3 BMI 25–29.9 = 43.2 BMI ≥ 30 = 34.5 Ghana: BMI < 25 = 56.4 BMI 25–29.9 = 26.8 BMI ≥ 30 = 16.8	NR	NR	NR

[1] Unless otherwise stated; ** Data are shown as median (percentile 25, percentile 75); *** Data shown as median (Interquartile range); NR Not Reported.

Physical activity level, alcohol consumption and smoking status were the indicators of self-reported health-related behaviours, and these were only measured in three of the six studies [25,26,28]. Self-reported physical activity questionnaires have low participant burden and are easy to administer, and the data captured allows for energy expenditure calculation from daily activities. However, they are subject to recall bias due to their reliance on participants memory. In addition, participants typically overestimate the length and intensity of physical activity [32]; this may introduce information bias.

In studies reporting comparison between African and European settings, the average BMI for cohorts from the rural areas of Ghana was within the acceptable range as per the World Health Organization's thresholds [33], whereas this was comparatively higher for those in urban Ghana and Europe. In addition, those from rural Ghana presented with smaller waist circumferences compared to their counterparts in urban Ghana and Europe. Although only a small proportion of participants reported former or current smoking, smoking was more popular among Ghanaians in rural Ghana and Europe than in urban Ghana. Ghanaians living in Europe also consumed more alcohol than those in the home country. Furthermore, those in rural Ghana were more physically active than their counterparts in urban Ghana and Europe.

4. Discussion

The results showed that existing studies reported a limited number of health-related outcomes in the target populations. In addition, the validity of the data from the studies is questionable given the possibility of selection and information bias from the small samples and use of self-reported questionnaires. Thus, it is difficult to ascertain valid data on the nutritional and health status of West African and African-Caribbean adults in the UK based on the studies reviewed. Furthermore, BMI and waist circumference of participants are not sufficient for the prediction of metabolic risks associated with excess adiposity. Waist-to-height ratio [34] has been shown to be a better indicator of early health risks associated with adiposity compared to threshold values for BMI and waist circumference.

The health-related behaviour patterns observed in the current review showed low levels of physical activity, especially in cohorts living in urban Ghana and Europe. These two cohorts also had BMI of at least 26 kg/m^2, which is associated with increased risk of type 2 diabetes in Black populations [35]. In addition, the low levels of physical activity in these groups could also increase their risk of cardiovascular diseases [36–38]. Interventions that offer a wide range of fun physical activities and enable self-monitoring and goal setting could promote active lifestyle and weight loss in the groups [39,40]. The levels of alcohol consumption and smoking reported in this review may potentially have been underreported as these behaviours could be deemed socially undesirable for these ethnic groups [41]. Overall, low smoking and alcohol consumption levels in home countries are maintained in UK Black ethnic groups [42], and therefore disproportionate expenditure on cigarettes and alcohol is not a likely explanation for ethnic health differences. On the other hand, the latest data from the Health Survey for England showed that a higher proportion of men (28%) than women (15%) drank at increasing or higher risks levels of above 14 units per week [42].

Nutrient analysis of the diets of Black African and African-Caribbean groups in the UK is required to determine which nutrients are being over- or under-consumed, and to develop targeted health promotion campaigns. However, the reported average nutrient composition of the diets of participants in the studies reviewed provided limited information on micronutrients, with a predominant focus on energy and macronutrients. When the sodium composition of the diets of participants was reported [27], levels exceeded the recommendation of no more than 2.4 g/d [43]. Although the studies that reported nutrient composition data may have used validated dietary assessment tools, various sources including non-analytical nutrient composition databases for dietary analyses were relied upon. The UK's NDNS utilises a national food composition database (McCance and Widdowson's The Composition of Foods) [44] for macro and micronutrient analysis of the

diets of the survey participants. However, the database has limited data on the composition of the traditional foods commonly consumed by minoritised ethnic groups, and, therefore, makes it difficult to accurately assess nutrient intake for these ethnic groups [45,46]. For objective verification of reported nutrient intake and nutritional status in these groups, efficient dietary biomarkers such as urinary metabolites [47] are needed.

The search strategy used for this review was robust and systematic, which is not typical for narrative reviews [48], and therefore is a key strength. However, the small sample sizes and other biases in the methods used in the studies reviewed reduces the validity of the findings. For example, the six studies were of cross-sectional design and this is preferred over longitudinal surveys for nutrition surveillance (e.g., UK National Diet and Nutrition Surveys, NDNS; US National Health and Nutrition Examination Survey, NHANES)because it allows for the recruitment of large population samples, comparison of variables, sub-group analysis, estimation of exposure and outcome at the same time and the estimation of disease prevalence [49]. However, cross-sectional studies are unable to identify causality [50], but findings may lead to future hypothesis testing and public health interventions and/or initiatives to promote health. Nonetheless, the review highlights the need for evidence-based research to inform interventions in African and Caribbean communities in the UK. The overall sample size of West Africans included in the studies reviewed was small and did not include people originally from the various West African countries. The findings must therefore be interpreted with caution.

Recommendations for Practice and Research

Improving access to healthy diets and increasing nutrition knowledge are key pillars of public health interventions aimed at preventing chronic illnesses. Community-based interventions to encourage healthy eating in West Africans and Caribbeans in the UK should include the promotion of a range of foods (including traditional foods) rich in fibre and low in sodium or salt in order to address the nutritional issues identified in the current review. Community-based cooking and healthy eating interventions have the potential to enhance nutrition knowledge and promote healthy eating in adults, including those of African-Caribbean ethnicities [51,52]. There should also be a range of opportunities within communities for people to engage in active lifestyles. At present, community-based third sector organisations are funded to deliver on specific health outcomes. These outcomes may not represent the many and ever-changing needs of communities.

Research to provide insight into the health needs and priorities for African and African-Caribbean communities is essential for the development of culturally relevant interventions. Future research should consider co-produced and culturally appropriate interventions that include fun and accessible physical activities and support weight loss in order to ensure health equity for people from these communities. Scientifically robust studies with powered sample sizes, which measure a wide range of anthropometric and clinical (including biomarkers of key nutrients) outcomes, and use objective measures of health-related risk behaviours such as accelerometer-based measurement of physical activity [53], are also needed. Furthermore, comprehensive analytical nutrient composition databases of traditional foods and standardised portion sizes are needed for reliable diet and nutrition surveillance in these groups.

5. Conclusions

The review showed that the target population may be at risk of illnesses associated with excess adiposity, inactive lifestyle, high sodium consumption and inadequate fibre intake. The findings should be interpreted with caution given the quality and number of studies reviewed.

Author Contributions: Conceptualization, T.A.A.; methodology, L.S., T.A.A., M.J.M.; writing—original draft preparation, L.S.; writing—review and editing, T.A.A., M.J.M.; supervision, T.A.A., M.J.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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