

# FOOD INSECURITY IN RELATION TO OBESITY IN PERI-URBAN CAPE TOWN, SOUTH AFRICA: IMPLICATIONS FOR DIET-RELATED NON- COMMUNICABLE DISEASE

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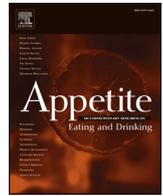
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# Food insecurity in relation to obesity in peri-urban Cape Town, South Africa: Implications for diet-related non-communicable disease

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## ABSTRACT

In urban informal areas of South Africa, obesity and hunger represent two sides of food insecurity. Despite this, public health and clinical obesity interventions focus on nutrition education, implying dietary choice and thereby overlooking food insecurity. The objective of this paper is to explore peri-urban residents' perspectives of changing food environments, framed by the Food Aid Organization (FAO) definition of food security and demonstrating the interconnectedness of dimensions of food security. We conducted three-part in-depth interviews with 21 participants and nine focus group discussions with a total of 57 participants, consisting primarily of women aged 20–84, in a peri-urban township and informal settlement outside of Cape Town, South Africa. Participants' encounters in clinical settings framed choice as a driver of diet-related non-communicable disease (NCD). Yet participants lacked economic access to food, particularly at the end of the month. Diets consisted of fewer green leafy vegetables relative to their diets in rural areas, despite affirming a preference for these foods. They described consuming more meat, which was also perceived as unhealthy. Based on self-report, residents within this peri-urban area of South Africa were food insecure: they lacked access to food at specific times of the month, they were unable to consume foods they preferred, and they felt that their diets were neither nutritious nor enabled an active and healthy life. When viewed in terms of multiple facets of food security, participants' concurrent experiences of hunger and obesity were unsurprising. Health interventions related to diet should incorporate an understanding of food security as shaped by the interactions of access, availability, utilization and stability.

## 1. Introduction

Public health approaches to obesity in low-and-middle income countries (LMIC) continue to focus on behaviour, choice, and the proliferation of obesogenic food environments, all of which can obscure the persistence of hunger in low-income urban communities (Schönfeldt, Hall, & Bester, 2013; Steyn & Temple, 2012). The co-existence and intersections of hunger and obesity as two sides of food insecurity have been well documented in multiple countries (DeBono, Ross, & Berrang-Ford, 2012; Imamura et al., 2015; Walker, Keane, & Burke, 2010). Attempting to engage this duality, the Committee on World Food Security (2012) proposed expanding the definition of food security to “Food and nutrition security,” for those countries with the capacity to engage such an expanded definition. Yet experiences of hunger and inconsistent access to food in urban contexts are seldom incorporated into responses to obesity in LMIC.

South Africa has experienced the nutrition transition (Igumbor et al., 2012). In Cape Town, a study observed that cookies, sugar, margarine and oil were among the cheapest sources of energy, though a wide range of healthier food choices was nearly always available (Temple & Steyn, 2011). Even when available, nutrient-dense foods such as lean meats, fish, fruit and vegetables tend to cost more than processed food products (Igumbor et al., 2012); “healthier” foods were typically 10–60% more expensive (Jacobs, 2009; Schönfeldt et al., 2013). Many residents of informal urban spaces in South Africa have experienced hunger as children and continue to experience chronic and acute food shortages. At the same time, they have dramatically increased access to high-calorie foods.

Alongside the nutrition transition, rates of obesity are increasing in South Africa. This has implications for health and for health systems, particularly in the form of increasing rates of non-communicable disease (NCDs) and associated risk factors such as hypertension, diabetes,

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and cardiovascular disease (Popkin, 2006). This increased risk of diabetes and cardiovascular disease (CVD) is further compounded by early life experiences of stunting, malnutrition and recurrent infection, all factors known to increase the risk of CVD in later life (Deboer et al., 2012). The South African Demographic and Health survey in 2016 found that 41% of black women, 31% of white women, 46% of coloured women and 49% of Indian/Asian women are obese; 39% of white South African men are obese, as compared to 9% of black men and 14% of coloured men, and 22% of Indian/Asian men (Statistics South Africa, 2017). At the same time, only 15% of residents in three sampled low-income areas of Cape Town have been found to be food secure, with 5% mildly food insecure, 12% moderately food insecure, and 68% severely food insecure (Battersby, 2011a). Over 32% of urban informal residents in South Africa experience hunger (Shisana et al., 2013). Despite the co-existence of undernutrition, hunger, and obesity within households, and even within individuals, who may have inconsistent access to food, public health policy and clinical nutrition interventions have been slow to adopt practices that respond simultaneously to hunger, obesity, and diet-related NCDs in addressing food security amongst the urban poor.

Food security scholarship offers one helpful lens through which to understand the coexistence of hunger and obesity. A widely accepted definition, adopted at an earlier World Food summit in 1996 describes food security as “A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2009, pp. 16–18). This definition has been represented in terms of four dimensions, or pillars: availability, access, utilization, and stability (Committee on World Food Security, 2012). However these dimensions are often presented as hierarchical rather than intertwined (Webb et al., 2006). In this paper we suggest that considering the interconnectedness of all four dimensions of food security in public health interventions and clinical contexts may facilitate better responses to obesity as a manifestation of food insecurity. To this end, we explore a group of peri-urban residents’ relationships with food, and their experiences of hunger, obesity and diet-related NCDs in LMIC urban spaces.

## 2. Methods

This qualitative methodology includes three-part oral histories with 21 people as well as nine focus group discussions with a total of 57 individuals (Table 1). An exploration of disaggregation of participants

**Table 1**  
Sample Demographics of Focus Group Participants and Interview participants (N = 78).

	Average	Range
Age (years)	42	20–84
Length of time in Masiphumelele (years)	16	0–30
Highest level of education (N = 78):	<i>n</i>	%
No schooling	2	3
Grades 1-7	9	12
Grades 8-11	35	45
Passed Grade 12 (High school graduate)	23	29
Tertiary Education	8	10
Gender (N = 78)		
Male	1	1
Female	77	99
Housing type (N = 78):		
Brick house	26	33
Shack	52	67
Marital Status:		
Married, living with spouse	29	37
Married, separated	7	9
Divorced	3	4
Never married	36	46
Other	3	4

into separate interview and focus group categories neither revealed any differences in demographic information nor added additional information, and so the overall description of participants are presented.

### 2.1. Setting, sampling and research team

Fieldwork took place in Masiphumelele, a peri-urban low-income area with a population of about 40,000, located 35 km from the centre of Cape Town in the Western Cape of South Africa. It is densely settled with a mix of brick houses, backyard shacks, and shacks in an informal settlement. The informal settlement occupies a wetland, which frequently floods in the winter, and is prone to fire because of densely built shacks, lack of roads and the use of indoor propane fires. There is a consistent availability of many foods at nearby mall supermarkets (2 km away), as well as small, often Somali-owned general dealers (commonly known, and hereafter referred to, as spazas), roadside stalls (vegetables, cooked meat, snack foods, imported vegetables from neighbouring countries), and sit-in restaurants. Some residents also work in the city centre, and pass through other parts of the city on their way to Cape Town city centre, where they purchase food. Many residents identify as having moved from a rural area of the neighbouring province of the Eastern Cape, though residents have increasingly spent a large proportion of their lives in the neighbourhood. All participants were black South Africans. Based on observation rather than formal measurement, body size within our sample roughly mirrored national obesity trends (41% of black women obese). The majority of participants affirmed personal or family experiences of non-communicable disease: primarily high-blood pressure and Type 2 diabetes. Recruitment for in-depth interviews and focus groups was managed by a research assistant who resides in the neighbourhood and is also employed by one large non-profit that works there. She identified acquaintances interested in participation. Recruitment thereafter involved snowball sampling (Sadler, Lee, Lim, & Fullerton, 2010), with participants identifying other individuals who would be potentially interested in participation. During the entire fieldwork period, the interviewer/moderator excluded a total of about eight participants who seemed very quiet, in order to favour participants who would actively discuss the topic of food.

### 2.2. In-depth interviews

We recruited 21 participants (20 women and one man); 19 of which were interviewed on 3 separate occasions, one week apart. The remainder 2 (women) participants declined further interviews: one did not feel she had additional information to share due to a lifetime of hunger and the other could not be reached after an initial interview. Findings from all 21 individuals were included in the analysis. Drawing on oral history methodologies we created an interview guide that builds a timeline of food experiences and interactions (Benson & Nagar, 2006). Questions included memories of food and health as a child (Interview 1), during the formative years of young adulthood (and sometimes the early years of marriage) (Interview 2), and the current food environment in Masiphumelele (Interview 3). These stages were defined by the participant's own life experiences, rather than by specific age cut off values. These questions helped participants to reflect on the role food has played in their lives, and on food access, preferences, and self-perceived health.

### 2.3. Focus group discussions

Nine focus groups, of a total of 57 participants, offered collective perspectives on food experiences in Masiphumelele. These participants had not previously participated in in-depth interviews. These group perspectives tended to evoke different kinds of discussion than individual interviews, as the participants discussed food issues with each other, rather than primarily with the moderator, who has a different

background and experience to the participants. Nine focus group discussions were conducted, each with between six and ten individuals (see Table 1: Sample Demographics). The content of the focus group discussion involved greater explicit discussion of food and health, had fewer questions, and did not distinguish between life stages in the same way as the in-depth interviews.

#### 2.4. Language

Focus groups and in-depth interviews were conducted in English where possible. When participants preferred to communicate in isiXhosa, an isiXhosa field worker was present to help with interpretation. All in-depth interviews and focus groups were professionally translated (where applicable) and transcribed verbatim. They were then checked for both quality of translation and quality of transcription.

#### 2.5. Limitations

Due to the discussion of historical experiences of food and the importance of women as gatekeepers of food entering the household, the focus of the study was on women's experiences of food. In the future, our research team hopes to garner additional perspectives from men. The perspectives reflected in this article are therefore largely specific to women, which seems justifiable given that obesity and certain NCDs disproportionately affect women (Case & Menendez, 2009; Day et al., 2014; Naghavi & Forouzanfar, 2010).

#### 2.6. Analysis

##### 2.6.1. Codebook and coding software

Thematic codes (Boyatzis, 1998) were generated through a process of discussion within the research group, by careful reading of all transcripts and immersion in the text, as well as in relation to interview and focus group guides. All focus group and in-depth interview transcripts were coded manually in Hyperresearch (Researchware Inc., 2009; Massachusetts, U.S.A.).

##### 2.6.2. Ethics

This study was approved by the University of Cape Town Human Research Ethics Committee (098/2016). Written informed consent included an outline of the research purpose, risks and benefits, and the opportunity to opt out before or during the interview. In-depth interview and focus group discussion participants received a gift card of R50 (US\$4) as a thank you for the time spent participating. They were informed of this gift card at the end of the informed consent process, rather than during recruitment, to lessen the risk of coerced participation. Transcripts were blinded and both audio and written transcripts were kept securely in a password-protected electronic format.

### 3. Results

The four FAO dimensions of food security frame our empirical results: availability, access, utilization, and stability. Our first section (1) lays out the types of nutritional advice participants' described receiving in clinical encounters. We then juxtaposed this with categories that map directly to the FAO definition, and which highlight multiple dimensions of access, including the relationships between food security and health in terms of stable physical, social and economic access to: (2) sufficient food, (3) safe and nutritious food, (4) preferred food, and (5) food that met dietary needs and enabled an active and healthy life.

#### 3.1. Nutritional advice in clinical settings

Participants described receiving very straightforward instructions on foods they should avoid or substitute in order to lose weight in the context of NCD diagnoses:

*The doctor told them they shouldn't eat food with too much sugar, because my dad takes six spoons of sugar, and my mom takes about four, they [are] limiting those. No sugar, no greasy foods and less meat, and the white part of the chicken what is it called? (Focus Group Discussion (FGD) 1)*

*Doctor tell me don't eat unhealthy food! Eat veg, healthy food. (FGD 6)*

*When I go to the doctor, because I get that I was having a high blood pressure so the doctor now said you must just reduce your food. (FGD 3)*

*I was asking the doctors why I've got this high blood pressure? They are telling that I don't eat healthy most of the time. (Age 60)*

These dietary instructions and explanations were relayed as simple and easy to understand. Yet this simplicity did not seem to make them easy to adopt:

*We have like blood pressure and, and sugar so the, the doctors force them to do, they give you the paper, you must eat this if you want to manage your blood pressure. And sometimes I do say sometimes I need the junk food to thank me because I work hard for the long whole month I must have KFC today, it's payday! (FGD 3)*

*I'm talking about my mother though, this other time she went to a doctor and they told her she was overweight and they gave her a diet and she followed it for three days and she said I'm sick and tired of this. (FGD 5)*

These clinical encounters implied a level of choice and that the main barriers to implementation relied primarily on willpower. Nowhere in the advice was there an acknowledgement of hunger or lack of food choice. Given significantly constrained choice, which will be discussed in the subsequent sections, these educational moments in clinical encounters did not necessarily facilitate healthier diets. The following sections show the presence of hunger, and the challenge in making "healthy" food choices given multiple dimensions of food insecurity.

#### 3.2. Access: physical, social and economic access to food, access to sufficient food

Both for themselves, and for their neighbours, access to food was unstable. There were times when participants lacked access to any food. Participants described hunger at the end of the month, before receiving wages or child support grants:

*Especially now (I don't have food), because it's almost the end of the month ... I was ashamed because I was to borrow the money from my friend, then she didn't come with the money, then I was so ashamed to call her and ask "where, where!?" (Interview, 30 year old woman)*

*... here you can even go to sleep without eating any food just because we do not have money. (Interview, 40 year old woman)*

Church communities who knew of the needs of their neighbours, did make an effort to support hungry church members:

*We put money together and then give it to her because most of the days she goes hungry and then now we try to prevent that, we give her something every week. (Interview, 34 year old woman)*

However, getting help from neighbours was not a consistent safety net for residents. Rather, asking for help directly was viewed with suspicion or disdain, as criminals sometimes made requests for food in order to gain entry into a home. Lack of work was often perceived as a personal failing, as the majority of participants identified as having relocated to the neighbourhood specifically in order to work. Lack of sufficient food was thus presented as a problem of economic access, which intersected with limits to social means of gaining access. Embarrassment over lack of economic access to food meant that individuals were reticent to tell peers about their hunger, rather concealing hunger in order to save face. Hunger therefore tended to be a

private experience.

### 3.3. Access to safe and nutritious food

In their articulation of healthy food, participants spoke of green vegetables as a proxy for nutritious foods. Barriers to accessing nutritious food were juxtaposed with relatively easy access in rural areas of the Eastern Cape, where previously:

*You get green vegetables for free, we grow vegetables in the garden, we eat the green vegetables from the garden, you don't stress about what you are going to eat, if you can't grow vegetables. Here in Cape Town you must always think about where you going to get cabbage. (FGD 6)*

All participants in this sample lacked access to garden space, which many participants felt provided both sufficient and nutritious food.

*But what I notice now if you going home, you only go to town to buy rice, everything, mealie (maize) meal, veggies are there in the garden, even now we are hungry that is why we want to go home to the Eastern Cape, there is no hunger there, we are hungry here. (FGD 2)*

Street vendors within the neighbourhood sold vegetables and basic fruits were available in some spaza shops. A wide range of fruits and vegetables were sold in the nearby malls. However, the relative quality of these fruits and vegetables, their relative cost, and their short shelf life, were all raised as significant barriers to access. For example:

*Because everything is expensive now ... But at that time everything was cheaper and food was original. Now everything is expensive and we used to get maybe fake ... But that time we used to, to get originals, fresh ones from the gardens you see. (Interview, 40 year old woman)*

*it was healthy [in the rural areas, growing up] because it was fresh from the soil (Interview, 41 year old woman)*

*there is a lot of sand [in Cape Town], so the plants or the veggies won't grow properly (FGD 2)*

Suspicion around food that was not “original”—used to connote “genuine” or grown in small-scale gardens, or grown in fertile soil—was a reason participants gave for not consuming many fruits or vegetables in the city. Fruits and vegetables were not always perceived as expensive per se. Rather, they were perceived to have a higher cost for the perceived low quality, compared to previous experience in rural areas. In this context, given a limited budget, participants felt compelled to spend their money on other foods, or on other needs such as cell phone airtime, school fees, school uniforms, or clothing. Examples of other foods included white and brown sliced bread, which was seen as affordable and filling. Meat was another food item that seemed to have replaced vegetables in meals, as it was filling, quick and easy to cook. Participants' description of meat as quick and easy to cook referenced time—arriving home late from work and wanting to eat quickly. Ease of preparation was an important factor shaping food choice. This was due to both the cost of fuel (gas, electricity, or paraffin), lack of space, and lack of time.

Participants occasionally spoke about food safety—in reference to expired or rotten food in small spaza shops (“they are not hygienic [or] clean”), or in reference to avoiding street food, particularly due to contamination of the wood used to cook (“yes, they have paint sometimes”). However, relative to the issues of “sufficient” and “nutritious” food, concerns over food safety were not dominant.

### 3.4. Utilization: access to preferred food

Remembering their gardens in the rural Eastern Cape, many participants voiced a clear preference for previous diet, and a lack of access to preferred foods in Cape Town:

*Everything that we ate [in the Eastern Cape] was good, the spinach, and*

*cabbage and also green beans because we were planting them. We were doing planting in the rural areas. We also planted apple trees everything that we ate was grown from the garden and the greens that grow naturally without planting them. We were eating and it was nice, not what we are eating nowadays. (30 years old, 9 years living in neighbourhood)*

Changing diets were often framed in terms of previous unavailability rather than in terms of a preference for current diet. In the context of fast foods, one participant emphasized:

*We tend to eat what we didn't have [available] to eat [in rural areas]; there's a lot of takeaway (fast food) stuff that we didn't have before. (FGD 5)*

Meat consumption was a highly emphasized illustration of shifting food preferences, symbolic of broader urban experience, where there was a sense that a previous experience of scarcity that produced new cultural norms (often experienced as peer pressure), and over-consumption in the city:

*I think, but most of them they say coz back there in the Eastern Cape they used not to eat meat and meat was scarce and then we are now in Cape Town, working, so [they say] “we can eat meat Monday to Sunday and this is my money that buys it so you have nothing to say.” (Interview, 34 year old woman)*

The food environment, was also shaped by demand for foods which were previously inaccessible; stalls on the streets of Masiphumelele have a variety of offal available, and buying from these stalls was perceived as a marker of wealth. Participants described how the geographic demand for these items revolved around the taxi rank, where minibus taxi drivers were seen to have disposable income and wealth, and therefore also to have a diet others aspired to. Moreover, participants described stigma associated with eating like a rural person:

*The other people, they laugh when you, if you just eating the, the junk food, the, the natural food like in [the rural areas], they can laugh on you to say ‘ooh, this one it's the home, it's the home lady’, it's because you eating those old stuff ... eh, they were saying it's a junk food (Interview, 66 year old woman)*

This alternative interpretation of “junk food”—or food not valued—was used several times to reference “rural food”, simple food, or the traditional diet of a previous generation, which consisted primarily of maize and green vegetables, primarily boiled outside with few seasonings. It was in this context that participants felt pressure to conform to urban ways of eating, consuming too much meat even while feeling it was dangerous, careless, or imprudent to do so:

*This food we were eating now, it's junk food, it's because you can't eat without “meat”(Interview, 66 year old woman)*

*We tend to eat a lot of meat, it is expensive but it's accessible. (FGD5)*

Moreover, for individuals who felt that their basic food needs were met, they typically did not feel that access to more money was desirable to change their eating habits:

*I wouldn't change ... I would buy it although I have money. Maybe if I change I will ruin my body because I am already fat and I would become worse. (Interview, 60 year old man)*

Access to foods consistent with food preferences was particularly complex as these preferences were shaped by previous experiences of hunger or food scarcity, and could not necessarily be addressed by an increased food budget, or by the availability of alternative foods.

### 3.5. Access to food that met dietary needs and enabled an active and healthy life

In the previous section, we described circumstances in which food preferences were inaccessible, or participants consumed unhealthy

diets due to price, new cultural norms or a changing food environment. In this context, life in the city was presented as unhealthy. Participants did not feel that their diets enabled an active and healthy life. Rather, they felt that their diets were connected to diabetes and high blood pressure:

*I don't think the food we eat now is health[ier] than the food people ate before, because the people who were there that time, they stay longer than us, and they were healthier than us, and I never hear my granny get sugar diabetes and high blood pressure until she died. (FGD 1)*

*Food is not healthy, fish and chips and KFC, all those fat and coke, we just eating what you want to eat and we don't last long. Our parents went to, are reaching 80 years, we just, we struggle to go for 50 because of the, the things that we eat. (FGD3)*

Here, the sense that foods failed to enable a healthy and active life was presented as a compounding of social, historical, economic and physical factors, which together seemed to contribute to participants' feeling that diet-related NCDs were prevalent and almost inevitable.

#### 4. Discussion

In South Africa, the constitutional right to food highlights the responsibility of the state to ensure adequate access to food. However, focusing narrowly on an adequate supply of calories available at a national level may obscure issues related to the quality of the food consumed, particularly nutrient density. In this article, we described participants' experience of food security, highlighting the confluence of issues of access, availability, utilization and stability as mechanisms shaping potentially unhealthy diets. Clinical interventions that respond to diet-related NCDs with nutrition education risk ignoring the lived experience of the urban poor. This experience includes lack of choice, and frequently experiences of both hunger and undernutrition.

Monthly cycles of hunger were related to being unable to get a job, and therefore being unable to buy food. This meant that food access was sometimes unstable, depending on infrequent and unpredictable work. Hunger was expressed in terms of not having money, particularly at the end of the month. This also affirms previous work that suggests that urban food security revolves around economic, rather than purely physical, access to food (Battersby, 2012). Participants' hunger was shameful and private, because of the ways it was related to money.

Maxwell (1999) as well as previous studies in South Africa (Hunter-Adams & Rother, 2016) have conceptualized food insecurity in urban spaces as hidden, which was affirmed by this group of participants. Since individuals perceived that they were in Cape Town to work, the lack of work, to the point of hunger, was a source of embarrassment. Individuals felt that they should return to the rural Eastern Cape if their efforts in the city had been unsuccessful. However, given the dominance of sporadic or part-time work, it was often unclear when or whether to give up hopes for better opportunities, particularly given the reliance of family members in rural areas on financial support from relatives in urban areas like Cape Town. Pressure to be perceived as having successfully navigated migration to the city was central to the shamefulness of hunger. Urban food insecurity also seemed to be shameful because of the ways it was perceived as a choice: food was one of many competing priorities, and some considered their own food insecurity as a result of de-prioritization of food or a personal failing, rather than as a result of forces beyond their control. The shamefulness of hunger meant that unstable access to food, and resultant periods of hunger, may be invisible in clinical encounters or other settings where obesity interventions take place.

This invisibility may be compounded by dietary advice in clinical settings that focus on prudent choices. In the context of hunger, stress, and lack of choice, participants frequently discussed concerns over individual overweight and non-communicable disease. They were highly aware of the high prevalence of overweight/obesity and non-

communicable disease in the neighbourhood more generally, detailed in another publication (Hunter-Adams, 2019).

The intersections between food preferences, economic and historical access to foods highlight the dynamism of the food environment in the contexts of both time and space. A confluence of scarcity (of money, time, assets, and home-grown vegetables) and abundance (of aspirational foods such as meat and sweetened processed foods) have potentially important influences on eating patterns and health. In the urban periphery, vegetables were relatively less available as compared to the rural areas that participants originated from. Specifically, they were perceived to be less accessible, costlier, and seen as less nutritious, due to perceptions around the low quality of the soil in which they were grown and the perceived excessive length of time between harvesting and consumption. In contrast, meat and meat products were seen as both more accessible and more desirable. However, meat in Cape Town was not necessarily cheap, nor were vegetables always expensive. Rather, perceptions and preferences were relative, and intertwined with previous rural experiences. That is, participants were accustomed to very infrequent access to meat, and many were accustomed to vegetables to being freely available from gardens. Diets of peri-urban poor residents in LMIC seemed to be impacted by increased access to meat and ultra-processed foods, in the context of previous experiences of hunger, previous lack of access to these foods, and resultant shifts in food preferences.

The confluence of changing availability and hunger seems to drive social norms, which cyclically increases preference for meat or foods that become socially acceptable in the urban space. The factors shaping lack of access to nutritious and acceptable food was further compounded by an overall lack of food at particular times of month. As such, the intersections of access, availability, utilization and stability are apparent.

Time, cooking space, and access to fuels to cook, all represent vital dimensions of food security. Given lack of time, cooking space, or cooking fuel, food preferences are shaped by a relatively narrow set of options (foods that are both cheap and do not require much cooking, such as sliced bread), and it is more difficult for an individual to eat according to their preferences, while also eating nutritious foods that enable an active and healthy life.

Food insecurity should therefore be integral to discussions of obesity in low-income communities. Given the high prevalence of high blood pressure and diabetes in peri-urban areas within Africa, standard dietary recommendations that accompany these diagnoses must be carefully interrogated. For example, participants' perception that their consumption of meat was unhealthy suggested that residents of low-income areas who eat a lot of meat are *not* lacking in knowledge. Rather, self-reported meat over-consumption occurred in the context of a food environment that has changed rapidly given mobility and changing food systems. As such, in peri-urban contexts, it is important that obesity interventions, including advice given in clinical settings, have a baseline understanding of contextual barriers to food security, and recognize the role of both historical hunger and current food scarcity on food preferences. For example, explicitly incorporating questions around hunger and food choices during NCD appointments may help to generate better nutritional advice. Adding these questions may not only remove some of the blame associated with obesity and NCDs, but also make experiences of hunger less shameful and private. Rather than reproducing prescriptive nutritional advice that assumes food security and choice, public health messages must grapple with questions the urban poor are asking: questions of fruit and vegetable quality, of lack of fuel, time or space to prepare preferred food, and concerns over meat consumption and the general health of family and neighbourhoods.

Given that the study sample consisted primarily of women, the perspective of participants is highly gendered, and speaks to women's experience in the neighbourhood. Male perspectives may show marked differences: Qualitative studies of obesity in Praia in Cape Verde, for

example, emphasized the role of alcohol use in shaping health in relation to diet (Craveiro et al., 2016), which was less pronounced in our predominantly female sample. While the participant group limits the applicability of findings for men, it remains a relevant perspective in relation to food security and obesity, which are shaped by gender (Battersby, 2011b; Case & Menendez, 2009; Puoane et al., 2002). Moreover, both incidence of NCDs, and health seeking behaviours are shaped by gender (Bradshaw, Norman, Pieterse, & Levitt, 2007; Pronyk, Makhubele, Hargreaves, Tollman, & Hausler, 2001).

The multiple layers of influence on food experiences described by participants suggests the value of ecological perspectives on food systems (Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008). Such a contextual view should incorporate both historical and current food experiences, as these drive the concurrent experiences of hunger and obesity.

## 5. Conclusion

Historical and current experiences of hunger have important implications for how individuals navigate an urban food environment. These experiences impact food aspirations and preferred foods. These experiences are compounded by the types of foods available in an urban setting, as well as by the cultural expectations superimposed on rural-urban migrants towards more meat and processed food consumption. Given this complexity, health interventions related to diet would benefit from incorporating an understanding of food security as shaped by the interactions of access, availability, utilization and stability.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.appet.2019.03.012>.

## References

- Battersby, J. (2011a). *The state of urban food security in Cape town, urban food security series No. 11*. Canada: AFSUN.
- Battersby, J. (2011b). Urban food insecurity in Cape Town, South Africa: An alternative approach to food access. *Development Southern Africa*, 28(4), 545–561. <https://doi.org/10.1080/0376835X.2011.605572>.
- Battersby, J. (2012). Beyond the food desert: Finding ways to speak about urban food security in South Africa. *Geografiska Annaler - Series B: Human Geography*, 94, 141–159. <https://doi.org/10.1111/j.1468-0467.2012.00401.x>.
- Benson, K., & Nagar, R. (2006). Collaboration as resistance? Reconsidering the processes, products, and possibilities of feminist oral history and ethnography. *Gender, Place & Culture: A Journal of Feminist Geography*, 13(5), 581–592. <https://doi.org/10.1080/09663690600859083>.
- Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks: Sage.
- Bradshaw, D., Norman, R., Pieterse, D., & Levitt, N. S. (2007). Estimating the burden of disease attributable to diabetes South Africa in 2000. *South African Medical Journal*, 97(8), 700–706.
- Case, A., & Menendez, A. (2009). Sex differences in obesity rates in poor countries: Evidence from South Africa. *Economics and Human Biology*, 7(3), 271–282.
- Committee on World Food Security (2012). *Coming to terms with terminology*. Rome: Committee on World Food Security (FAO).
- Craveiro, I., Alves, D., Amado, M., Santos, Z., Fortes, A. T., Delgado, A. P., ... Gonçalves, L. (2016). Determinants, health problems, and food insecurity in urban areas of the largest city in Cape Verde. *International Journal of Environmental Research and Public Health*, 13(11) <https://doi.org/10.3390/ijerph13111155>.
- Day, C., Chaudhry, S., Van Schaik, N., Groenewald, P., Laubscher, R., & Bradshaw, D. (2014). Monitoring of non-communicable diseases such as hypertension in South Africa: Challenges for the post-2015 global development agenda. *South African Medical Journal*, 104(10), 680–687.
- Deboer, M. D., Lima, A. A. M., Oría, R. B., Scharf, R. J., Moore, S. R., Luna, M. A., et al. (2012). Early childhood growth failure and the developmental origins of adult disease: Do enteric infections and malnutrition increase risk for the metabolic syndrome? *Nutrition Reviews*, 70(11), 642–653. <https://doi.org/10.1111/j.1753-4887.2012.00543.x>.
- DeBono, N. L., Ross, N. A., & Berrang-Ford, L. (2012). Does the food stamp program cause obesity? A realist review and a call for place-based research. *Health & Place*, 18(4), 747–756. <https://doi.org/10.1016/j.healthplace.2012.03.002>.
- FAO (2009). *Declaration of the World summit on food security*. World Food Summit November 2009.
- Hunter-Adams, J. (2019). Perceptions of weight in relation to health, hunger and belonging amongst women in peri-urban South Africa. *Health Care for Women International*, 40(4).
- Hunter-Adams, J., & Rother, H.-A. (2016). Pregnant in a foreign city: A qualitative analysis of diet and nutrition for cross-border migrant women in Cape town, South Africa. *Appetite* <https://doi.org/10.1016/j.appet.2016.05.004>.
- Igumbor, E. U., Sanders, D., Puoane, T. R., Tsolekile, L., Schwarz, C., Purdy, C., ... Hawkes, C. (2012). "Big food," the consumer food environment, health, and the policy response in South Africa. *PLoS Medicine*, 9(7), 1–7. <https://doi.org/10.1371/journal.pmed.1001253>.
- Imamura, F., Micha, R., Khatibzadeh, S., Fahimi, S., Shi, P., Powles, J., et al. (2015). Dietary quality among men and women in 187 countries in 1990 and 2010: A systematic assessment. *The Lancet Global Health*, 3(3), e132–e142. [https://doi.org/10.1016/S2214-109X\(14\)70381-X](https://doi.org/10.1016/S2214-109X(14)70381-X).
- Jacobs, F. T. (2009). The status of household food security targets in South Africa. *Agrekon*, 48(4), 410–433. <https://doi.org/10.1080/03031853.2009.9523834>.
- Maxwell, D. (1999). The political economy of urban food security in sub-saharan Africa. *World Development*, 27(11), 1939–1953.
- Naghavi, M., & Forouzanfar, M. H. (2010). Burden of non-communicable diseases in sub-saharan Africa in 1990 and 2010: Global burden of diseases, injuries, and risk factors study 2010. *The Lancet*, 381, S95. [https://doi.org/10.1016/S0140-6736\(13\)61349-5](https://doi.org/10.1016/S0140-6736(13)61349-5).
- Popkin, B. M. (2006). *Technology, transport, globalization and the nutrition transition food policy*, 31, 554–569. <https://doi.org/10.1016/j.foodpol.2006.02.008>.
- Pronyk, P., Makhubele, M., Hargreaves, J., Tollman, S., & Hausler, H. (2001). Assessing health seeking behaviour among tuberculosis patients in rural South Africa. *International Journal of Tuberculosis & Lung Disease*, 5(7), 619–627.
- Puoane, T., Steyn, K., Bradshaw, D., Laubscher, R., Fourie, J., Lambert, V., et al. (2002). Obesity in South Africa: The South African demographic and health survey. *Obesity*, 10(10), 1038–1048.
- Sadler, G. R., Lee, H. C., Lim, R. S. H., & Fullerton, J. (2010). Recruitment of hard-to-reach population subgroups via adaptations of the snowball sampling strategy. *Nursing and Health Sciences*, 12(3), 369–374. <https://doi.org/10.1111/j.1442-2018.2010.00541.x>.
- Schönfeldt, H. C., Hall, N., & Bester, M. (2013). Relevance of food-based dietary guidelines to food and nutrition security: A South African perspective. *Nutrition Bulletin*, 38(2), 226–235. <https://doi.org/10.1111/nbu.12027>.
- Shisana, O., Labadarios, D., Rehle, T., Simbayi, L., Zuma, K., Dhansay, A., ... SANHANES-1 Team. (2013). *South African national health and nutrition examination survey (SANHANES-1), Vol. 2014*.
- Statistics South Africa (2017). *South Africa demographic and health survey, 2016*. Pretoria: Key Indicators.
- Steyn, N. P., & Temple, N. J. (2012). Evidence to support a food-based dietary guideline on sugar consumption in South Africa. *BMC Public Health*, 12(1), 502. <https://doi.org/10.1186/1471-2458-12-502>.
- Story, M., Kaphingst, K. M., Robinson-O'Brien, R., & Glanz, K. (2008). Creating healthy food and eating environments: Policy and environmental approaches. *Annual Review of Public Health*, 29(1), 253–272. <https://doi.org/10.1146/annurev.publhealth.29.020907.090926>.
- Temple, N. J., & Steyn, N. P. (2011). The cost of a healthy diet: A South African perspective. *Nutrition*, 27(5), 505–508. <https://doi.org/10.1016/j.nut.2010.09.005>.
- Walker, R. E., Keane, C. R., & Burke, J. G. (2010). Disparities and access to healthy food in the United States: A review of food deserts literature. *Health & Place*, 16(5), 876–884. <https://doi.org/10.1016/j.healthplace.2010.04.013>.
- Webb, P., Coates, J., Frongillo, E. a, Rogers, B. L., Swindale, A., & Bilinsky, P. (2006). Measuring household food insecurity: Why it's so important and yet so difficult to do. *Journal of Nutrition*, 136(5), 1404S–1408S. (pii) <https://doi.org/10.1093/ajph/136/5/1404S>.