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'Children eat all things here': a qualitative study of mothers' perceptions and cultural beliefs about underweight and overweight children and adolescents in selected communities in two Nigerian states

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ABSTRACT

Introduction The perception of mothers about causes of underweight and overweight among children or adolescents and associated cultural beliefs may influence nutritional status. However, data from qualitative studies on this subject and regarding age 6–19 are scarce in Nigeria.

Objective This study aimed to explore mothers' perceptions and cultural beliefs about underweight and overweight children and adolescents in selected communities in a northern and a southern Nigerian state.

Design This was a qualitative study using focus group discussions (FGD). Eight FGD sessions were held. The interviews were transcribed verbatim, and the transcripts were coded and analysed using NVivo V.11, and direct quotations representing the themes generated from the perspectives were cited as appropriate.

Setting The study was carried out in eight randomly selected rural and urban communities in Gombe and Osun states of Nigeria.

Participants Seventy-six mothers of children and adolescents aged 6–19 years.

Results The mothers identified concepts, causes and community experience of underweight and overweight children and adolescents, however, some gaps and misconceptions were observed. These included perspectives that suggest a limited understanding of the concepts of mild and moderate malnutrition and stunting and citing of 'witches and wizards' as causes of malnutrition. The mothers observed that being underweight was more prevalent in rural communities of Osun and Gombe states, while overweight was more prevalent in urban communities in Osun state. The majority of the women reported no known food taboo or restrictions, and no cultural beliefs relating to the nutrition of children and adolescents.

Conclusion Gaps and misconceptions exist in the perceptions of mothers on underweight and overweight children and adolescents. Food taboos, food restrictions and other cultural beliefs were not reported by majority of the mothers. Educational programmes for mothers on child/adolescent nutrition should target identified gaps and misconceptions.

Strengths and limitations of this study

- This study, to the best of our knowledge, is the first to examine the perception of mothers on cultural beliefs and causes of both undernutrition and overnutrition among age 6–19 years as a group in the two ethnically different states in Nigeria.
- Unlike many other studies on the nutritional status of children and adolescents, this study used a qualitative design which are particularly important in exploring and understanding issues relating to perception and cultural beliefs.
- The findings of this study, however, may not be generalisable to children, adolescents or the mothers to the whole of Nigeria. Additionally, it is difficult to establish causality with the qualitative research design. The nature of the focus group discussion used, also creates artificiality, since the discussion was arranged, and it is not occurring naturally.

INTRODUCTION

Nutritionally, the global community is battling with the epidemic of overweight/obesity as the incidence and prevalence of overweight/obesity are on the increase in various parts of the world.[1] However, for many low-income and middle-income countries the nutritional challenge goes beyond just overweight/obesity, as they are also confronted with the persisting problem of undernutrition.[2 3] This paradoxical coexistence of undernutrition and overnutrition is what has been called the double burden of malnutrition.[4]

Nigerian researchers had made a fair attempt to understand the determinants of

undernutrition and overnutrition among children and adolescents in Nigeria, however, almost all of these studies used a quantitative study approach. A number of existing quantitative studies have reported determinants of undernutrition and overnutrition among Nigerian children and/or adolescents to include household and socioeconomic factors such as household income, parental education and occupation, nutritional status of the parents, family type and maternal characteristics.[5–10] Qualitative methods allow for a deeper understanding of the perceptions, experiences and context.[11] This is important because people's 'realities' are actually their realities, which cannot be 'measured' because they are socially constructed. People's realities are diverse and its existence is based on the people's perceptions and peculiar experiences.[11 12] The qualitative approach will, therefore, be helpful, especially because of the complex nature of the determinants of childhood and adolescent nutrition.[13 14]

Mothers' perception and cultural beliefs are important, yet understudied, determinants of the nutritional status of children and/or adolescents. In some high-income countries, the understanding of mothers about malnutrition have been shown to affect their child feeding practices.[15 16] It has also been found that some mothers in Europe and Asia could not correctly classify the nutritional status of their children and hence would not know if or when to adopt appropriate measures.[17–19] The effect of cultural beliefs, on the nutritional status of children and adolescents has also not been well explored. Food taboos, food restrictions and food beliefs have been reported among pregnant women in Nigeria.[20–22] However, only little research-based information could be found in the literature on the cultural beliefs relating to child/adolescent nutrition in Nigeria. The information about mothers' perception and cultural beliefs, and how these relate to the nutrition of children and adolescents in Nigeria would be important in designing and implementing effective nutritional interventions among these children and/or adolescents. Qualitative methods are particularly important in exploring and understanding issues relating to perception and cultural beliefs about nutritional issues, but there are gaps in the literature regarding the Nigerian situation both in terms of the study approach and the thematic issues. This study, therefore, aimed to explore mothers' perceptions and cultural beliefs about the concept, causes and community experience of underweight and overweight children and adolescents in selected communities in two Nigerian states using qualitative study approach to address the existing gaps.

METHODS

Study setting and design

This qualitative study was carried out in two states in Nigeria—one from the northern part and the other from the southern part of the country. Thus, this study setting takes cognisance of the broad division of Nigeria into two parts—the south and the north. Nigeria is a highly diverse and heterogeneous country in terms of ethnic, sociocultural and religious setting and the southern part has better socio-economic rating compared with the north. Politically, Nigeria has 36 states, which are organised into 6 geopolitical zones with 3 zones in the North and 3 in the South., Each geopolitical zone is generally homogeneous in sociocultural attributes and fairly distinct from other geopolitical zones. Many ethnic groups within each zone share a common ancestry and have a high degree of similarities in terms of cultural beliefs as well as socioreligious characteristics and economic indicators.

The selection of the states used for this study was guided by the wealth level of each geo-political zone as published by the 2018 Nigeria Demographic and Health Survey (NDHS).[23] One state each was selected from the two zones with lowest (North-East) and highest wealth index (South-West) using simple random sampling technique (Balloting method). Gombe State and Osun State were thereby randomly selected from the North-East and South-West zones, respectively.

Participants and procedure

The study population for the qualitative study were mothers of children and adolescents aged 6–19 years living in selected communities in Osun and Gombe States. A total of eight focus group discussion (FGD) sessions were held, determined by the time data saturation was reached. The eight FGDs were carried out in eight different communities, with four communities selected in each of the two states (two rural and two urban communities per state). To select the communities, two local government areas (LGAs) were selected in each of the two states (one rural and one urban LGA). The list of the communities in each LGA was obtained from the LGA headquarters, and two communities in each LGA were selected using simple random sampling technique (balloting method), making a total of eight communities. Each FGD session consisted of 8–10 discussants, who were women usually resident in the community, currently had at least one child between 6 and 19 years of age, had no speech or hearing defect, were at least averagely expressive and gave informed written consent. In all, a total of 76 women who met the study criteria were selected purposively and were included in the study only after the study objectives and processes had been explained to them, their questions and concerns addressed, and they voluntarily gave their consents to participate in the FGDs.

Data collection

A guide was developed and used for qualitative data collection for the FGD sessions (online supplemental file). The FGD guide was initially in English language, but translated to the native languages of the different study locations (Yoruba and Hausa languages) and back translated to English to ensure the original meaning was intact. The translations were done by Ph.D. students in the Department of Nigerian Languages in Obafemi Awolowo University, Ile-Ife, Nigeria. Each FGD session was conducted within a time frame of 90–120 min, and sessions were facilitated by one of the authors (moderator) and a research assistant (note-taker) trained for that purpose. The discussions were done in the native languages of Osun and Gombe States, which were Yoruba and Hausa

languages respectively. In Gombe state, where the researcher was not fluent in the native language (Hausa language), there was an interpreter who was fluent in both English and Hausa languages. The sessions were audiorecorded after obtaining the consent of the discussants to do so.

Data analysis

The audiorecordings were initially transcribed verbatim in Yoruba and Hausa Languages, and later translated to English language. The moderator, the note taker and the interpreter checked the transcripts to make sure that they matched the recordings. The English transcripts were carefully reviewed and a set of codes were developed to describe groups of words or categories with similar meanings. Initial broad coding was done according to major themes from the FGD guide (deductive), but new codes and themes were also developed as they emerged from the data (inductive). Fine codes were developed under each of the initial broad codes. To increase reliability, 20% of the transcripts were double coded by a senior qualitative expert. The definitions of both the broad and fine codes were put together in a code book. Once the code book was established, transcripts were coded using NVivo V.11 software (QSR International, Doncaster, Australia). Direct quotations from the discussants that most clearly represent each theme were chosen to be included in the manuscript in italics.

Trustworthiness

Trustworthiness is a crucial requirement for all qualitative studies and this was ensured in many ways in this study, and is here presented using Guba's criteria.[24 25]

Credibility

The FGDs used for this study were taken from eight randomly selected sites, with representation of the two major regions in the country (North and South) and also the rural and urban communities. To further ensure the credibility of the findings, all the authors independently read and commented on the findings, while a senior qualitative expert who was not involved in the study checked the themes and quotations to ensure the emerged from the original materials. The use of voice recordings and notes from the note taker, and the checking of the final transcripts by the moderator and note-taker all ensured that the discussions were accurately captured, and hence improving the credibility of the findings. Furthermore, only one person moderated all the FGDs and he was also the one who conducted the analysis hence he could easily make references to nuances in the transcripts.

Transferability

To ensure transferability, some background information about the study subject and context was given. Also, the details about the number of participants, how they were recruited and the data collection methods (FGD) were given. Additionally, the number and duration of the FGD sessions and other details about the FGD sessions were provided.

Dependability

The detailed information about the research methods and process provided in this study is also intended to improve the dependability of the research findings, such that a future researcher could repeat and get a similar result.

Confirmability

Triangulation through data sources was done in this study, which was to recruit a wide range of women for the study. These were women from different states, residences (ie, rural and urban dwellers) and backgrounds.

Patient and public involvement statement

The study participants and the public were not involved in the conceptualisation, design and recruitment to and conduct of the study. However, they will be involved in the plans to, and the actual dissemination of the study results by choosing when, where and in what form the dissemination should be.

RESULTS

A total of 76 women participated in the FGDs, and they were between 29 and 55 years of age, with a mean age of 32.4±4.5 years. Forty-six (60.5%) of them were Christians, while the remaining 30 (39.5%) were Muslims. Each of them had at least a child/adolescent who was 6–19 years of age.

Concept of underweight

The perception of the discussants about underweight children/adolescents was expressed through four subthemes as described below;

Subtheme 1: body parts disproportion

Many of the mothers perceived that underweight children/adolescents have disproportionally sized body parts such as those with disproportionally big heads, protruding or big abdomen, thin arms, legs or thin waist such that clothes do not size. One mother noted,

> you know some child(ren), if you see them they are looking somehow, you'll see the children they are slim, some you will see big head, and will also have long (repeats "long") legs… (Discussant 8: Gombe, Urban 1)

Subtheme 2: sickly appearance

Some of the discussants perceived that underweight children/adolescents have sickly appearances, even when they are not apparently sick. Some mothers noted that underweight children or adolescents have uncomely or pale skin appearances. A mother reported,

> from the eyes (repeats "from the eyes") of the child, you can easily see that this child is not really looking well. (Discussant K2: Gombe rural 1)

Another mother simply said,

the child will not be attractive (Discussant K4: Osun Urban 2)

Subtheme 3: weak or sickly children

Another opinion expressed by the mothers about underweight children is that they are weak, sickly and usually having different infections. A mother opined,

> the moment he's playing with his colleague, from there you can know, because the moment they push him small (a little), he will fall down, he's not that strong. (Discussant K1: Gombe Rural 1)

According to another mother,

> some of such children with abnormal weight always have incessant cough, face swelled up and dry lips. Some can have swollen body with hidden illnesses. (Discussant K7: Gombe Rural 2)

Subtheme 4: growth less than children of same age

Some of the women perceived underweight children/adolescents as those whose growth is less than the growth of other children of same age. According to one mother,

> such a child will not grow very well among children of same age(Discussant R3: Osun Rural 1)

Concept of Overweight/Obesity

The perceptions of mothers on childhood/adolescent overweight/obesity were captured by two subthemes:

Subtheme 1: bigger than Age-mates

Majority of the discussants perceived an overweight child/adolescent as one whose physical body is bigger than the body size of most of his/her age mates. Some of the mothers opined that overweight/obese children/adolescents appear big, but from their behaviour it will be obvious that they are younger than how they look. The mothers opined that,

> first sighting will make you see the child being very big with a young face structure. Weight will be too much for the age of the child. (Discussant R7: Osun Urban 2)

> the fatness will not be OK. The weight is too much for the age of the child (and) we would know that such is not normal. From seeing the child, you will know that the weight of the child is too much for the age. (Discussant R7: Osun Urban 1)

Subtheme 2: moderate chubbiness is good

Some of the women expressed an opinion that favoured chubby children or adolescents. They felt that a moderately chubby child is beautiful, and that it only becomes a problem if the chubbiness is excessive. This view was more prevalent among women in urban communities of Osun State. One of the mothers opined,

> we like chubby children, but when it is too much it is different, the child can't carry himself (Discussant 3: Osun Urban 1)

Community experience of underweight and overweight children and adolescents

The researchers sought to know which of underweight or overweight children and adolescents were perceived by the discussants to be predominant in each of the communities, and based on the responses of the discussants, three subthemes emerged.

Subtheme 1: overweight children and adolescents are predominant

This subtheme emerged exclusively from the two FGD sessions conducted in urban communities in Osun State. Some of the mothers opined that overweight was the predominant nutritional disorder in their community, and some of them were of the view that there was no underweight child or adolescent in their communities. One mother added,

> in my own opinion I think overweight is more prevalent in this area (Discussant 4: Osun Urban 2)

Another mother noted,

> I have not seen very slim children in this area (Discussant 2: Osun Urban 1)

Subtheme 2: underweight children and adolescents are predominant

This subtheme emerged from the FGD sessions in rural communities, both in Osun and Gombe states. The mothers expressed the view that the prominent nutritional disorder among children/adolescents in their communities was underweight. In the words of one of the mothers,

> we do not have overweight children here but we have a lot of underweight children (Chorused by majority of the discussants, Gombe rural 2)

Subtheme 3: both underweight and overweight in the community

Some mothers across different discussion groups opined that there were both underweight and overweight children/adolescents in their communities, and did not think any was more predominant than the other. A mother opined,

> in my area, the population of overweight is the same as those of underweight (Discussant 7: Osun Urban 2)

Another mother noted,

> there are those with less weight (underweight), and there are those overweight. The most common, the skinny children, hmm (thinks for some time)… no, it's interwoven (Discussant 7: Osun Urban 1)

Table 1 Perceived causes of underweight and overweight according to the mothers

Subtheme	Definition	Illustrative Quotations	Discussant
		Underweight	
1	Poor feeding	*'the quality of the food…. well, most of the time, he eats only one type of food. No change of food, always only one type of food,(repeats 'always only one type'). That will also cause a child not to reach the normal weight'*	Discussant 7: Gombe Rural 1
2	Poverty	*'yes, we have people that don't have much money in this area, even some of us here just packaged ourselves in this country. Some that gave birth and don't have much will not be able to give such a child the right diet and this could cause underweight.'*	Discussant 6: Osun rural 1
3	Hereditary	*'for some of them, (it is) lack of food, (for)some (it) is sick(ness) or sometimes you know the parents are thin. Both the parents are thin, so the child will come like that (will also be thin)'*	Discussant 8: Gombe urban 1
4	Sickness or ill-health	*'The first is that it could be stomach worms' problem, or a kind of sickness or that it is the gene in his/her body. Though eating (adequately, but) not getting fat, but it will show that he/she is eating good food'*	Discussant 6: Osun Rural 2
5	Parental and family factors	*'you cannot compare a child brought up in the rural area and another whose parents are learned'*	Discussant 5: Osun rural 1
6	Witches and wizards	*'It is witches and wizards (that cause underweight), but to the glory of God, there is no such thing in this community, in my own view'*	Discussant 7: Osun urban 2
7	Environmental factors	*'some, it's from the environment (environmental factors), (for example) if the environment is not clean, it will be affecting them to be thin'*	Discussant 1: Gombe urban 1
		Overweight	
1	Eating habits	*'yes. food like carbohydrate, like swallows (starchy food), yam, garri (cassava flakes), pounded yam, semo (maize meal). When carbohydrate is too much on (in) a diet, it can lead to overweight. if it's taken all the time. It can cause overweight'*	Discussant 7: Osun Urban 2
2	Hereditary	*'even I, I have mummy (a mother that is) very big, that is why I am also fat, it is hereditary or genetic'*	Discussant 5: Gombe Urban 2
3	Sickness	*'(for) some it could be sickness that caused overweight, and some are just naturally endowed with stature by God'*	Discussant 7: Osun Rural 1
4	Sedentary lifestyle	*'what about excessive comfortability, where a child does nothing, only the house maid that does all the work while the child is lazing around, could lead to overweight., the child is just watching films, just waking up and sleeping, not doing any work. Because there are plenty of those people in this area'*	Discussant 7: Osun Urban 2

Perceived causes of underweight and overweight

The opinions expressed by the mothers about the causes of underweight and overweight are shown in table 1. There were seven subthemes for the perceived causes of underweight, which include poor feeding, poverty, hereditary, sickness or ill health, parental/family factors, witches and wizards and environmental factors. For the perceived causes of overweight, four subthemes emerged namely; eating habits, hereditary, sickness and sedentary lifestyle.

Cultural beliefs relating to the nutrition of children and adolescents

Two subthemes emerged concerning the views of discussants about cultural beliefs relating to the nutrition of children and adolescents.

Subtheme: no known cultural belief

Majority of the mothers did not know of any cultural belief or practice concerning the nutrition of children/adolescents in their families or communities. Even when the discussants were probed for food taboos or restrictions for children and adolescents, majority of them reported no food taboo or restriction for children and/or adolescents. This was the major finding in most of the discussion groups. Below are some quotations from the mothers,

> none, we do not have anything like that in this community (Discussant 2: Osun Urban 2)
>
> it's in the olden days that we have heard that a child does not eat meat and the likes, but now such is not common anymore. It is just how much (money) you have that determines what you give to the child nowadays (Discussant 4: Osun Urban 1)
>
> in our culture there is no food that a child cannot eat, if egg is available you (give the child to) eat, if it's not (available), you will eat other things (Discussant 2: Osun Rural 1)
>
> Children eat all things here (Discussant 5: Gombe Urban 2).

Subtheme: restriction for snails

Few of the mothers from Gombe State reported that restrictions for snails existed in their families and/or tribes. Other women from Gombe state, however, noted that snail eating was not popular in the North because snails were scarce in the North, which may indicate that snail was not really a taboo. A mother noted,

we no dey (do not) eat snail, even the adult don't eat it (Discussant 8: Gombe Urban 1)

Another mother from the same discussion group however added,

yes, because we, we are not used to snail here. We don't eat it (Discussant 1: Gombe Urban 1).

DISCUSSION

The focus of the second Sustainable Development Goal 2 is to 'end hunger, achieve food security and improve nutrition, and promote sustainable agriculture'. As the 'Power of Nutrition' organisation notes, 'ending hunger, food insecurity and malnutrition for all will require continued and focused efforts, especially in Asia and Africa.'[26] This study, to the best of our knowledge, is the first to examine the perception of mothers and cultural beliefs about underweight and overweight children and adolescents in two ethnically different states in Nigeria. Understanding the perspectives of mothers, as primary care givers, is particularly important for developing effective interventions for undernutrition and overnutrition among children and adolescents.

Mothers' perceptions about the concept, causes ad community experience of underweight and overweight children

The mothers in this study expressed some perceptions about underweight children/adolescents, including physical features such as protruding abdomen, big heads, thin limbs, poor growth, and weak and sickly appearances among underweight children and adolescents. However, the mothers also exhibited some gaps in their knowledge in that most of the perspectives shared reflects severely underweight children. The mothers seemed not to understand the possibility of mild to moderate undernutrition, which may only be known after objective assessment with some instruments. This is important as only a low proportion of undernutrition are severe, and relevant actions need to be focused early on addressing mild and moderate cases, which constitute the majority of malnutrition problems among children/adolescent. This gap in perception could be the reason for misclassification of malnourished children at community levels as normal as reported by various authors.[27–29]

Another gap in the mothers' knowledge is that no reference was made to stunting (ie, short for age) as a form of undernutrition. Yet, stunting is the most prevalent form of undernutrition in Nigeria, with the UNICEF reporting that a third of Nigerian children under 18 years are stunted.[30] Therefore, if the mothers, who are principally responsible for feeding or controlling the feeding of children or adolescents are ignorant of stunting, they may be taking little or no action to address such. Furthermore, the mothers based their perception of underweight on the weight of other children of same age. Such judgement is highly subjective, and may lead to incorrect conclusion regarding perceived nutritional status, particularly in a community with a high prevalence of undernutrition. Similar findings have previously been reported from a qualitative study among mothers in Vietnam[19] and could be associated with mother's misjudgement of the weight of their children or their nutritional status.[27–29]

The perception of majority of the mothers about overweight was also mixed. The subjectivity of basing the classification of a child/adolescent's weight on that of other children as earlier noted for underweight also applies to the perception of overweight. Another point of concern is the fact that some of the mothers favoured chubby children. Mothers in Vietnam similarly expressed their love for chubby children.[19] The preference for chubby children may not be unconnected with the fact that underweight has been associated with poverty; thus, community members may tend to view chubby children as indication of well-being or affluence. The challenge with this perspective is that it would be objectively difficult to draw a line between 'chubby' and 'overweight'.

Mothers living in urban communities reported that overweight children were more prevalent, while those from rural communities reported the predominance of underweight children. This pattern is expected, and corroborates the findings of other researchers in Nigeria that have reported that overweight/obesity is predominant in the richer urban areas, while the less resourced rural areas have a high burden of undernutrition.[31–34] The NDHS also reports that all the indicators of undernutrition are two-times higher in rural, compared with urban communities in Nigeria.[31] While the high burden of overweight children/adolescents in the urban communities should be discouraged, the higher burden of underweight in rural communities reflects the well-documented socioeconomic inequity and inequalities between rural and urban communities in Nigeria,[35]—a persistent gap that needs to be urgently bridged.

Many of the factors that have been reported as determinants of undernutrition and overnutrition among children and adolescents by previous authors were also mentioned by the mothers when asked about the causes of undernutritionand overnutrition.[5 34 36 37] These include dietary/feeding habits, physical activity patterns, sickness/disease, environmental factors, socioeconomic factors and household/parental factors. This level of understanding among the mothers is encouraging, because high health literacy among mothers is needed for the prevention and/or control of underweight and overweight among children and adolescents. On the other hand, it is also important to recognise some major misconceptions recorded among mothers regarding the causes of underweight and overweight among children and adolescents, such as 'witches and wizards'. Although, a number of misconceptions have been reported among mothers about the nutritional status of their children,[27–29 38] previous authors have not specifically reported witches and wizards, although the role of the 'spiritual forces' or the 'supernatural' as causes

of mortality and morbidity is known to have been prevalent in local communities across Nigeria, particularly in the past. It is disturbing that these opinions were not only expressed in the rural areas, but also in the urban communities where mothers would be expected to be better educated and more enlightened. Misconceptions relating to the role of the supernatural forces pose a challenge to efforts aimed at encouraging mothers to take actions to prevent or control malnutrition since they are associated with the belief that addressing the cause is out of their reach.

Cultural beliefs relating to the nutrition of children and adolescents

Studies in Nigeria and several other African communities have reported food restrictions and taboos as prevalent among women and children,[22 39–41] but the finding of this study is different. Majority of the women who participated in this study, across the different sociodemographic locations, knew no food restriction nor taboo for children and adolescents. Furthermore, majority of the women reported no cultural beliefs relating to child or adolescent nutrition that they knew of. A study carried out in Kano State, Nigeria that aimed to describe the nutritional taboos among pregnant women also similarly found that food taboos were not much reported among the women.[42] The Nigerian studies that reported food taboos are rather old,[39–41] while the more recent studies that reported restrictions/taboos did so among pregnant women.[20 22] The finding of this study probably reflects the present reality in Nigeria that food taboo has reduced significantly, which may be associated with increased education and health awareness among the population.[43]

The findings of this study, however, may not be generalisable to children, adolescents or the mothers to the whole of Nigeria for some reasons. First, the study was carried out in 2 out of the 36 states in Nigeria. Second, even in the two selected states, discussants were recruited from only four out the total of 41LGAs. Lastly, the sample size (76) may not be representative, as it was not scientifically determined. It is also difficult to establish causality with the qualitative research design. The nature of the FGD used, also creates artificiality, since the discussion was arranged, and it is not occurring naturally.

This study has, however, provided new and important qualitative data on perception of mothers and cultural beliefs about underweight and overweight children and adolescents that have not been previously reported, especially because most previous studies used quantitative approaches. These findings could be used to generate some important research ideas which could be pursued using both qualitative or quantitative methods. An important research idea, for instance, is the 'prevalence of the gaps and/or misconceptions noticed among a larger population of mothers, and their associations with dietary practices/patterns and nutritional status of children', and this could be pursued using a quantitative study. Additionally, the findings of this study would be important in designing nutritional education for mothers on child/adolescent nutrition, especially in the study area. This is because the study has made known some concepts and perceptions that could be built on, and important gaps and misconceptions that need to be addressed.

CONCLUSION

The mothers identified concepts, causes and community experience of underweight and overweight children and adolescents, but some gaps and misconceptions still exist among them, one of which is the perception that underweight is caused by witches and wizards. Food taboos, food restrictions and other cultural beliefs were not reported by majority of the mothers. Educational programmes for mothers on child/adolescent nutrition should target identified gaps and misconceptions.

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Contributors All the authors were involved in the conceptualisation of the research idea and topic, the design of the methodology and the proposal. AAA carried out the study as part of his PhD work, and he is the one responsible for the overall content as guarantor. AF and KK-G supervised, provided useful suggestions and the mentorship that helped to shape the study into the present form. All the authors read and approved the final version of the manuscript.

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Patient consent for publication Not applicable.

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REFERENCES

1 Popkin BM, Corvalan C, Grummer-Strawn LM. Dynamics of the double burden of malnutrition and the changing nutrition reality. *The Lancet* 2020;395:65–74.
2 Mokdad A, Kassebaum N, Lim S. Progress in adolescent health and well-being: tracking 12 headline indicators for 195 countries and territories, 1990–2016; global burden of disease (GBD) project. *Lancet* 2019;6736:32427–9.
3 Muthuri SK, Francis CE, Wachira L-JM, *et al*. Evidence of an overweight/obesity transition among school-aged children and youth in sub-Saharan Africa: a systematic review. *PLoS One* 2014;9:e92846.
4 Doak CM, Adair LS, Bentley M, *et al*. The dual burden household and the nutrition transition paradox. *Int J Obes* 2005;29:129–36.
5 Ayogu RN, Nnam NM, Ibemesi O, *et al*. Prevalence and factors associated with anthropometric failure, vitamin A and iron deficiency among adolescents in a Nigerian urban community. *Afr Health Sci* 2016;16:389–98.
6 Ben-Bassey UP, Oduwole AO, Ogundipe OO. Prevalence of overweight and obesity in Eti-Osa LGA, Lagos, Nigeria. *Obes Rev* 2007;8:475–9.
7 Adesina AF, Peterside O, Anochie I, *et al*. Weight status of adolescents in secondary schools in Port Harcourt using body mass index (BMI). *Ital J Pediatr* 2012;38
8 Abu HO, Oguejiofor EO, Gbarage MT. Feeding practices and determinants of the nutritional status of pupils in a public primary school in Aladinma 2016;4:12–18.
9 Bamidele J, AsekunOlarinmoye E, Olajide F, *et al*. Prevalence and Socio-demografic determinants of Under-Weight and Pre-obesity among in -School adolescents in Olorunda local Goverment area, Osun state, Nigeria. *TAF Prev Med Bull* 2011;10:397–402.
10 Igbokwe O, Adimorah G, Ikefuna A, *et al*. Socio-Demographic determinants of malnutrition among primary school aged children in Enugu, Nigeria. *Pan Afr Med J* 2017;28:248.
11 Cleland JA. The qualitative orientation in medical education research. *Korean J Med Educ* 2017;29:61–71.
12 Carson D, Gilmore A, Perry C. *Qualitative marketing research*. London: SAGE Publications, Inc., 2001.
13 Bronfenbrenner U. Ecology of the family as a context for human development: research perspectives. *Dev Psychol* 1986;22:723–42.
14 Bronfenbrenner U, Morris PA. The Bioecological Model of Human Development. In: Damon W, Lerner RM, eds. *Child and adolescent development: an advanced course*. 6th edition. New York, 2006: 793–828.
15 Tiggemann M, Lowes J. Predictors of maternal control over children's eating behaviour. *Appetite* 2002;39:17
16 Francis LA, Hofer SM, Birch LL. Predictors of maternal child-feeding style: maternal and child characteristics. *Appetite* 2001;37:23143
17 Shirasawa T, Ochiai H, Ohtsu T, *et al*. Parental perceptions and childhood overweight/obesity: a population-based study among school children in Japan. *Health* 2012;04:506–13.
18 Bossink-Tuna HN, L'Hoir MP, Beltman M, *et al*. Parental perception of weight and weight-related behaviour in 2- to 4-year-old children in the eastern part of the Netherlands. *Eur J Pediatr* 2009;168:333–9.
19 LM D, Larsson V, Tran TK. Vietnamese mother ' s conceptions of childhood overweight : findings from a qualitative study. *Glob Health Action* 2016;1:1–11.
20 Oni OA, Tukur J. Identifying pregnant women who would adhere to food taboos in a rural community: a community-based study. *Afr J Reprod Health* 2012;16:68–76.
21 Onuorah CE, Ayo JA. Food taboos and their nutritional implications on developing nations like Nigeria – a review. *Nutr Food Sci* 2003;33:235–40.
22 Ekwochi U, Osuorah CDI, Ndu IK, *et al*. Food taboos and myths in South Eastern Nigeria: the belief and practice of mothers in the region. *J Ethnobiol Ethnomed* 2016;12:1–6.
23 National Population Commission (NPC) [Nigeria] and ICF International. *Nigeria demographic and health survey 2013*. Abuja, Nigeria, and Rockville, Maryland, USA, 2014.
24 Guba EG. Criteria for assessing the trustworthiness of naturalistic inquiries. *ECTJ* 1981;29:75–91.
25 Shenton AK. Strategies for ensuring trustworthiness in qualitative research projects. *EFI* 2004;22:63–75.
26 The power of nutrition. The sustainable development goals. Available: https://www.powerofnutrition.org/nutrition-and-the-sustainable-development-goals/ [Accessed 4 Nov 2021].
27 SMPL G, Gubbels JS, Dagnelie PC. Parental perception of child's weight status and subsequent BMIz change: The KOALA birth cohort study. *BMC Public Health* 2014;14.
28 Parkinson KN, Reilly JJ, Basterfield L, *et al*. Mothers' perceptions of child weight status and the subsequent weight gain of their children: a population-based longitudinal study. *Int J Obes* 2017;41:801–6.
29 McDonald SW, Ginez HK, Vinturache AE, *et al*. Maternal perceptions of underweight and overweight for 6-8 years olds from a Canadian cohort: reporting weights, concerns and conversations with healthcare providers. *BMJ Open* 2016;6:e012094.
30 United Nations Children's Fund(UNICEF). State of the world children (SOWC), 2019. Available: https://www.unicef.org/media/63016/file/SOWC-2019.pdf [Accessed 5 May 2020].
31 National Population Commission (NPC) Nigeria, Federal Republic of Abuja N. Nigeria demographic and health survey, 2018
32 Omisore AG, Omisore B, Abioye-Kuteyi EA, *et al*. In-school adolescents' weight status and blood pressure profile in south-western Nigeria: urban-rural comparison. *BMC Obes* 2018;5:2.
33 Bello B, Ekekezie O, Afolabi OT. Dietary pattern and nutritional status of primary school pupils in a South Western Nigerian state : A rural urban Comparison. *African J Food Sci* 2016;10:203–12.
34 Adeomi A, Adeoye O, Bamidele J. Pattern and determinants of the weight status of school-age children from rural and urban communities of Osun state, Nigeria: a comparative study. *J Med Nutr Nutraceuticals* 2015;4:107–14.
35 National Bureau of Statistics. Poverty and inequality in Nigeria. Natl Bur STAT, 20192020. Available: www.nigerianstat.gov.ng
36 Otuneye AT, Ahmed PA, Abdulkarim AA, *et al*. Relationship between dietary habits and nutritional status among adolescents in Abuja municipal area Council of Nigeria. *Niger J Paediatr* 2017;44:128–35.
37 Oyeyemi AL, Ishaku CM, Oyekola J, *et al*. Patterns and associated factors of physical activity among adolescents in Nigeria. *PLoS One* 2016;11:e0150142–16.
38 Shrewsbury VA, Garnett SP, Campbell K, *et al*. Maternal misconceptions of weight status among Nepean adolescents. *J Acad Nutr Diet* 2012;112:2007–13.
39 Madiforo A. Superstition and nutrition among pregnant women in Nwangele local government area of IMO state. *J Res Natl Dev* 2010;8:16–20.
40 Ojofeitimi EO, Elegbe I, Babafemi J. Diet restriction by pregnant women in Nigeria. *Int J Gynaecol Obstet* 1982;20:99–103.
41 Ebomoyi E. Nutritional beliefs among rural Nigerian mothers. *Ecol Food Nutr* 1988;22:43–52.
42 Ugwa EA. Nutritional practices and taboos among pregnant women attending antenatal care at General Hospital in Kano, northwest Nigeria. *Ann Med Health Sci Res* 2016;6:109.
43 Odinye I, Odinye I. Western influence on Chinese and Nigerian cultures. *Og J. Af Stud* 2013;9:108–15.