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# BMJ Open

**“Children eat all things here”: a qualitative study of mothers’ perceptions and cultural beliefs about the concept, causes and community experience of under- and over-weight children and adolescents in selected communities in two Nigerian States**

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3 **“Children eat all things here”: a qualitative study of mothers’ perceptions and cultural**  
4 **beliefs about the concept, causes and community experience of under- and over-weight**  
5 **children and adolescents in selected communities in two Nigerian States**  
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## Abstract

**Introduction:** The perception of mothers about causes of under- and over-weight 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 the concept, causes, and community experience of under- and over-weight children and adolescents in selected communities in a northern and a southern Nigerian state.

**Design:** This was a qualitative study using focus group discussions. Eight focus group discussion (FGD) sessions were held. The interviews were transcribed verbatim, and the transcripts were coded and analyzed using NVivo version 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 correctly expressed perceptions on the concept, causes, and community experience of under- 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, 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 practices relating to the nutrition of children and adolescents.

**Conclusion:** Gaps and misconceptions exist in the perceptions of mothers on under- and overweight children and adolescents, and these need to be addressed through health education in the community and other settings.

**Key Words:** Mothers' perception; cultural practices; children; adolescents; qualitative study; Nutrition

### Strengths and limitations of this study

- This study, to the best of our knowledge, is the first to examine the perception of mothers on culturally-related nutritional practices and causes of both under-nutrition and over-nutrition 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 generalizable to children, adolescents or the mothers to the whole of Nigeria

### 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- and middle-income countries (LMIC) the nutritional challenge goes beyond just overweight/obesity, as they are also confronted with the persisting problem of under-nutrition.[2, 3]. This paradoxical coexistence of under- and over-nutrition is what has been called the double burden of malnutrition (DBM).[4]

Nigerian researchers had made a fair attempt to understand the determinants of under- and over-nutrition among children and adolescents in Nigeria, however almost all of these studies used a quantitative study approach. A number of existing studies have reported determinants of under- and over-nutrition 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] and will therefore be helpful, especially because of the complex nature of the determinants of childhood and adolescent nutrition.[12, 13]

Mothers' perception and cultural practices are important, yet under-studied, determinants of the nutritional status of children and/or adolescents. The understanding of mothers about malnutrition have been shown to affect their child feeding practices.[14, 15] It has also been found that some mothers could not correctly classify the nutritional status of their children and hence would not know if or when to adopt appropriate measures.[16–18] The effect of cultural

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2  
3 beliefs, on the nutritional status of children and adolescents has also not been well explored.  
4 Food taboos, food restrictions and food beliefs have been reported among pregnant women in  
5 Nigeria.[19–21] However, only little research-based information could be found in the  
6 literature on the cultural beliefs and practices relating to child/adolescent nutrition in Nigeria.  
7  
8 The information about mothers' perception and cultural practices, and how these relate to the  
9 nutrition of children and adolescents in Nigeria would be important in designing and  
10 implementing effective nutritional interventions among these children and/or adolescents.  
11 Qualitative methods are particularly important in exploring and understanding issues relating  
12 to perception and cultural beliefs about nutritional issues, but there are gaps in the literature  
13 regarding the Nigerian situation both in terms of the study approach and the thematic issues.  
14 This study, therefore, aimed to explore mothers' perceptions and cultural beliefs about the  
15 concept, causes and community experience of under- and over-weight children and adolescents  
16 in selected communities in two Nigerian states using qualitative study approach to address the  
17 existing gaps.  
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## 30 **Methods**

### 31 **Study setting and design**

32 This qualitative study was carried out in two states in Nigeria – one from the northern part and  
33 the other from the southern part of the country. Thus, this study setting takes cognisance of the  
34 broad division of Nigeria into two parts – the south and the north. Nigeria is a highly diverse  
35 and heterogeneous country in terms of ethnic, socio-cultural, and religious setting and the  
36 southern part has better socio-economic rating compared to the north. Politically, Nigeria has  
37 36 states, which are organised into 6 geo-political zones with 3 zones in the North and 3 in the  
38 South., Each geo-political zone is generally homogenous in sociocultural attributes and fairly  
39 distinct from other geo-political zones. Many ethnic groups within each zone share a common  
40 ancestry and have a high degree of similarities in terms of cultural beliefs and practices as well  
41 as socio-religious characteristics, and economic indicators.  
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52 The selection of the states used for the present study was guided by the wealth level of each  
53 geo-political zone as published by the 2018 Nigeria Demographic and Health Survey  
54 (NDHS).[22] One state each was selected from the two zones with lowest (North-East) and  
55 highest wealth index (South-West) using simple random sampling technique (Balloting  
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3 method). Gombe State and Osun State were thereby randomly selected from the North-East  
4 and South-West zones respectively.  
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6

### 7 **Participants and procedure**

8  
9 The study population for the qualitative study were mothers of children and adolescents aged  
10 6 – 19 years living in selected communities in Osun and Gombe States. A total of 8 focus group  
11 discussion (FGD) sessions were held, determined by the time data saturation was reached. The  
12 8 FGDs were carried out in 8 different communities, with 4 communities selected in each of  
13 the two states (two rural and two urban communities per state). To select the communities, two  
14 local government areas (LGAs) were selected in each of the two states (one rural and one urban  
15 LGA). The list of the communities in each LGA was obtained from the LGA headquarters, and  
16 two communities in each LGA were selected using simple random sampling technique  
17 (balloting method), making a total of 8 communities. Each FGD session consisted of 8 to 10  
18 discussants, who were women usually resident in the community, currently had at least one  
19 child between 6 and 19 years of age, had no speech or hearing defect, were at least averagely  
20 expressive and gave informed written consent. In all, a total of 76 women who met the study  
21 criteria were selected purposively and were included in the study only after the study objectives  
22 and processes had been explained to them, their questions and concerns addressed, and they  
23 voluntarily gave their consents to participate in the FGDs.  
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### 36 **Data collection**

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39 A guide was developed and used for qualitative data collection for the FGD sessions. The FGD  
40 guide was initially in English language, but translated to the native languages of the different  
41 study locations (Yoruba and Hausa languages) and back translated to English to ensure the  
42 original meaning was intact. The translations were done by Ph.D. students in the Department  
43 of Nigerian Languages in Obafemi Awolowo University, Ile-Ife, Nigeria. Each FGD session  
44 was conducted within a time frame of 90 to 120 minutes, and sessions were facilitated by one  
45 of the authors (moderator) and a research assistant (note-taker) trained for that purpose. The  
46 discussions were done in the native languages of Osun and Gombe States, which were Yoruba  
47 and Hausa languages respectively. In Gombe State, where the researcher was not fluent in the  
48 native language (Hausa language), there was an interpreter who was fluent in both English and  
49 Hausa languages. The sessions were audio-recorded after obtaining the consent of the  
50 discussants to do so.  
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## Data Analysis

The audio-recordings 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 version 11 software (QSR International Pty Ltd, 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 the present study. The FGDs used for the present 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. 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. 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 they emerged from the original materials. The detailed information about the research methods and process provided in this study is also intended to improve the overall trustworthiness of the research findings.

## Ethical Considerations

Ethical clearance was obtained from the Human Research Ethics Committee of University of the Witwatersrand (certificate No: M190514) as well as the Ministry of Health in Osun State (certificate No: OSHREC/PRS/569T/155) and Gombe State (certificate No: MOH/ADM/621/1/142). Written consent was obtained from the mothers, which included their

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3 agreement to participate in the FGD and that the interview may be audio-recorded and that the  
4 researchers may use anonymous quotes in their report.  
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## 7 **Results**

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9 A total of 76 women participated in the FGDs, and they were between 29 and 55 years of age;  
10 each of them had at least a child/adolescent who was 6 – 19 years of age.  
11  
12

### 13 **Concept of underweight**

14 The perception of the discussants about underweight children/adolescents was expressed  
15 through 4 sub-themes as described below;  
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#### 18 **Sub-theme 1: Body parts disproportion**

19 Many of the mothers perceived that underweight children/adolescents have disproportionally  
20 sized body parts such as those with disproportionally big heads, protruding or big abdomen,  
21 thin arms, legs or thin waist such that clothes do not size. One mother noted,  
22  
23

24 *“you know some child(ren), if you see them they are looking somehow, you’ll see the*  
25 *children they are slim, some you will see big head, and will also have long long legs*  
26 *like this”* (Discussant 8: Gombe, Urban 1)  
27  
28

#### 29 **Sub-theme 2: Sickly appearance**

30 Some of the discussants perceived that underweight children/adolescents have sickly  
31 appearances, even when they are not apparently sick. Some mothers noted that underweight  
32 children or adolescents have uncomely or pale skin appearances. A mother reported,  
33  
34

35 *“from the eyes, from the eyes of the child, you can easily see that this child is not really*  
36 *looking well.”* (Discussant K2: Gombe rural 1)  
37  
38

39 Another mother simply said,  
40  
41

42 *“the child will not be attractive”* (Discussant K4: Osun Urban 2)  
43  
44

#### 45 **Sub-theme 3: Weak or Sickly Children**

46 Another opinion expressed by the mothers about underweight children is that they are weak,  
47 sickly and usually having different infections. A mother opined,  
48  
49

50 *“the moment he’s playing with his colleague, from there you can know, because the*  
51 *moment they push him small, he will fall down, he’s not that strong.* (Discussant K1:  
52 Gombe Rural 1)  
53  
54

55 According to another mother,  
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1  
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3           *“some of such children with abnormal weight always have incessant cough, face*  
4           *swelled up and dry lips. Some can have swollen body with hidden illnesses.”*

5  
6           (Discussant K7: Gombe Rural 2)

#### 9           **Sub-theme 4: Growth less than children of same age**

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

12  
13           *“ such a child will not grow very well among children of same age”*(Discussant R3:  
14           Osun Rural 1)

#### 15           **Concept of Overweight/Obesity**

16           The perceptions of mothers on childhood/adolescent overweight/obesity were captured by 2  
17           sub-themes;

#### 18           **Sub-theme 1: Bigger than Age-mates**

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

23  
24           *“first sighting will make you see the child being very big with a young face structure.*  
25           *Weight will be too much for the age of the child.”* (Discussant R7: Osun Urban 2)

26  
27           *“the fatness will not be OK. The weight is too much for the age of the child we would*  
28           *know that such is not normal. From seeing the child, you will know that the weight of*  
29           *the child is too much for the age.”* (Discussant R7: Osun Urban 1)

#### 30           **Sub-theme 2: Moderate chubbiness is good**

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

35  
36           *“we like chubby children, but when it is too much it is different, the child can’t carry*  
37           *himself”* (Discussant 3: Osun Urban 1)

#### 38           **Community experience of under- and over-weight children and adolescents**

1  
2  
3 The researchers sought to know which of under – or over-weight children and adolescents were  
4 perceived by the discussants to be predominant in each of the communities, and based on the  
5 responses of the discussants, three sub-themes emerged.  
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7  
8

### 9 **Sub-theme 1: Overweight children and adolescents are predominant**

10 This sub-theme emerged exclusively from the two FGD sessions conducted in urban  
11 communities in Osun State. Some of the mothers opined that overweight was the predominant  
12 nutritional disorder in their community, and some of them were of the view that there was no  
13 underweight child or adolescent in their communities. One mother added,  
14  
15  
16

17 *“in my own opinion I think overweight is more prevalent in this area”* (Discussant 4:  
18 Osun Urban 2)  
19

20 Another mother noted,  
21  
22

23 *“I have not seen very slim children in this area”* (Discussant 2: Osun Urban 1)  
24  
25

### 26 **Sub-theme 2: Underweight children and adolescents are predominant**

27 This sub-theme emerged from the FGD sessions in rural communities, both in Osun and Gombe  
28 States. The mothers expressed the view that the prominent nutritional disorder among  
29 children/adolescents in their communities was underweight. In the words of one of the mothers,  
30  
31  
32

33 *“we do not have overweight children here but we have a lot of underweight children”*  
34 (Chorused by majority of the discussants, Gombe rural 2)  
35  
36

### 37 **Sub-theme 3: Both under- and over-weight in the community**

38 Some mothers across different discussion groups opined that there were both under- and over-  
39 weight children/adolescents in their communities, and did not think any was more predominant  
40 than the other. A mother opined,  
41  
42  
43

44 *“in my area, the population of overweight is the same as those of underweight”*  
45 (Discussant 7: Osun Urban 2)  
46  
47

48 Another mother noted,  
49  
50

51 *“there are those with less weight (underweight), and there are those overweight. The*  
52 *most common, the skinny children, hmm (thinks for some time)... no, it's interwoven”*  
53 (Discussant 7: Osun Urban 1)  
54  
55

### 56 **Perceived causes of under- and over-weight**

57 The opinions expressed by the mothers about the causes of under- and over-weight are shown  
58 in Table 1. There were seven sub-themes for the perceived causes of under-weight, which  
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60

1  
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3 include poor feeding, poverty, hereditary, sickness or ill-health, parental/family factors,  
4  
5 witches and wizards and environmental factors. For the perceived causes of overweight, four  
6  
7 sub-themes emerged namely; eating habits, hereditary, sickness and sedentary lifestyle.  
8

### 9 **Cultural beliefs and practices relating to the nutrition of children and adolescents**

10  
11 Two sub-themes emerged concerning the views of discussants about cultural beliefs and  
12  
13 practices relating to the nutrition of children and adolescents.

#### 14 **Sub-theme: No known cultural belief or practice**

15  
16 Majority of the mothers did not know of any cultural belief or practice concerning the nutrition  
17  
18 of children/adolescents in their families or communities. Even when the discussants were  
19  
20 probed for food taboos or restrictions for children and adolescents, majority of them reported  
21  
22 no food taboo or restriction for children and/or adolescents. This was the major finding in most  
23  
24 of the discussion groups. Below are some quotations from the mothers,

25 *“none, we do not have anything like that in this community”*

26 (Discussant 2: Osun Urban 2)

27  
28  
29 *“it's in the olden days that we have heard that a child does not eat meat and the likes,  
30  
31 but now such is not common anymore. It is just how much (money) you have that  
32  
33 determines what you give to the child nowadays”*

34 (Discussant 4: Osun Urban 1)

35  
36  
37 *“in our culture there is no food that a child cannot eat, if egg is available you (give the  
38  
39 child to) eat, if it's not (available), you will eat other things”*

40 (Discussant 2: Osun Rural 1)

41  
42  
43 *“Children eat all things here”*

44 (Discussant 5: Gombe Urban 2)

#### 45 **Sub-theme: Restriction for snails**

46  
47  
48 Few of the mothers from Gombe State reported that restrictions for snails existed in their  
49  
50 families and/or tribes. Other women from Gombe State, however, noted that snail eating was  
51  
52 not popular in the North because snails were scarce in the North, which may indicate that snail  
53  
54 was not really a taboo. A mother noted,

55 *“we no dey (do not) eat snail, even the adult don't eat it”*

56 (Discussant 8: Gombe Urban 1)

57  
58  
59 Another mother from the same discussion group however added,  
60

1  
2  
3 “yes, because we, we are not used to snail here. We don't eat it”  
4

5 (Discussant 1: Gombe Urban 1)  
6  
7

## 8 **Discussion**

9 The focus of the second Sustainable Development Goal (SDG 2) is to “end hunger, achieve  
10 food security and improve nutrition, and promote sustainable agriculture”. As the “Power of  
11 Nutrition” organisation notes, “ending hunger, food insecurity and malnutrition for all will  
12 require continued and focused efforts, especially in Asia and Africa.”[23] This study, to the  
13 best of our knowledge, is the first to examine the perception of mothers on culturally-related  
14 nutritional practices and causes of both under-nutrition and over-nutrition among age 6-19  
15 years as a group in the two ethnically-different states in Nigeria. Understanding the  
16 perspectives of mothers, as primary care givers, regarding their perception and beliefs about  
17 children/adolescent nutrition is particularly important for developing effective interventions.  
18  
19

20 The mothers in the present study expressed some correct perceptions about underweight  
21 children/adolescents, including physical features such as protruding abdomen, big heads, thin  
22 limbs, poor growth, and weak and sickly appearances among underweight children and  
23 adolescents. However, the mothers also exhibited some gaps in their knowledge in that most  
24 of the perspectives shared reflects severely underweight children. The mothers seemed not to  
25 understand the possibility of mild to moderate under-nutrition, which may only be known after  
26 objective assessment with some instruments. This is important as only a low proportion of  
27 under-nutrition are severe, and relevant actions need to be focused early on addressing mild  
28 and moderate cases, which constitute the majority of malnutrition problems among  
29 children/adolescent. This gap in perception could be the reason for misclassification of  
30 malnourished children at community levels as normal as reported by various authors.[24–26]  
31  
32

33 Another gap in the mothers' knowledge is that no reference was made to stunting (i.e. short for  
34 age) as a form of under-nutrition. Yet, stunting is the most prevalent form of under-nutrition in  
35 Nigeria, with the United Nations Children Fund (UNICEF) reporting that a third of Nigerian  
36 children under 18 years are stunted.[27] Therefore, if the mothers, who are principally  
37 responsible for feeding or controlling the feeding of children or adolescents are ignorant of  
38 stunting, they may be taking little or no action to address such. Furthermore, the mothers based  
39 their perception of underweight on the weight of other children of same age. Such judgement  
40 is highly subjective, and may lead to incorrect conclusion regarding perceived nutritional  
41 status, particularly in a community with a high prevalence of undernutrition. Similar findings  
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3 have previously been reported from a qualitative study among mothers in Vietnam[18] and  
4 could be associated with mother's misjudgement of the weight of their children or their  
5 nutritional status. [24–26]  
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8  
9 The perception of majority of the mothers about overweight was also mixed. The subjectivity  
10 of basing the classification of a child/adolescent's weight on that of other children as earlier  
11 noted for underweight also applies to the perception of overweight. Another point of concern  
12 is the fact that some of the mothers favoured chubby children. Mothers in Vietnam similarly  
13 expressed their love for chubby children.[18] The preference for chubby children may not be  
14 unconnected with the fact that underweight has been associated with poverty; thus, community  
15 members may tend to view chubby children as indication of wellbeing or affluence. The  
16 challenge with this perspective is that it would be objectively difficult to draw a line between  
17 “chubby” and “overweight”.  
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25 Mothers living in urban communities reported that overweight children were more prevalent,  
26 while those from rural communities reported the predominance of underweight children. This  
27 pattern is expected, and corroborates the findings of other researchers in Nigeria that have  
28 reported that overweight/obesity is predominant in the richer urban areas, while the less  
29 resourced rural areas have a high burden of under-nutrition.[28–31] The NDHS also reports  
30 that all the indicators of under-nutrition are two-times higher in rural, compared to urban  
31 communities in Nigeria.[28] While the high burden of overweight children/adolescents in the  
32 urban communities should be discouraged, the higher burden of underweight in rural  
33 communities reflects the well-documented socio-economic inequity and inequalities between  
34 rural and urban communities in Nigeria,[32] – a persistent gap that needs to be urgently  
35 bridged.  
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45 Many of the factors that have been reported as determinants of under- and over-nutrition among  
46 children and adolescents by previous authors were also mentioned by the mothers when asked  
47 about the causes of under-and over-nutrition.[5, 31, 33, 34] These include dietary/feeding  
48 habits, physical activity patterns, sickness/disease, environmental factors, socio-economic  
49 factors and household/parental factors. This level of understanding among the mothers is  
50 encouraging, because high health literacy among mothers is needed for the prevention and/or  
51 control of under- and over-weight among children and adolescents. On the other hand, it is also  
52 important to recognise some major misconceptions recorded among mothers regarding the  
53 causes of under- and over-weight among children and adolescents, such as “witches and  
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wizards". Although, a number of misconceptions have been reported among mothers about the nutritional status of their children, [24–26, 35] 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.

Studies in Nigeria and several other African communities have reported food restrictions and taboos as prevalent among women and children, [21, 36–38] but the finding of the present study is different. Majority of the women who participated in this study, across the different socio-demographic locations, knew no food restriction nor taboo for children and adolescents. Furthermore, majority of the women reported no cultural practice 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.[39] The Nigerian studies that reported food taboos are rather old,[36–38] while the more recent studies that reported restrictions/taboo did so among pregnant women.[19, 21] The finding of this present 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.[40]

The findings of this study, however, may not be generalizable to children, adolescents or the mothers to the whole of Nigeria for some reasons. Firstly, the study was carried out in two out of the 36 states in Nigeria. Secondly, even in the two selected states, discussants were recruited from only four out the total of 41 local government areas (LGAs). Lastly, the sample size (76) may not be representative, as it was not scientifically determined.

## **Conclusion**

The mothers correctly perceived some concepts, causes and community experience of under- 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 or practices were not reported by majority



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3 of the mothers. Educational programmes for mothers on child/adolescent nutrition should  
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For peer review only

## Conflicts of Interest

The authors declare no conflict of interest

## Data availability statement

The data presented in this study are available on request from the corresponding author. The data are not publicly available due to ethical considerations.

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## Author Contributions

All the authors were involved in the conceptualization of the research idea and topic, the design of the methodology and the proposal. A.A.A. carried out the study as part of his PhD work, while A.F. and K.K.-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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**Table 1: Perceived causes of under- and over-weight according to the mothers**

<b>UNDERWEIGHT</b>			
<b>Sub-theme</b>	<b>Definition</b>	<b>Illustrative Quotations</b>	<b>Discussant</b>
1	Poor feeding	<i>“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, always only one type. That will also cause a child not to reach the normal weight”</i>	Discussant 7: Gombe Rural 1
2	Poverty	<i>“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.”</i>	Discussant 6: Osun rural 1
3	Hereditary	<i>“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”</i>	Discussant 8: Gombe urban 1
4	Sickness or ill-health	<i>“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 not getting fat, but it will show that he/she is eating good food”</i>	Discussant 6: Osun Rural 2
5	Parental and family factors	<i>“you cannot compare a child brought up in the rural area and another whose parents are learned”</i>	Discussant 5: Osun rural 1
6	Witches and wizards	<i>“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”</i>	Discussant 7: Osun urban 2
7	Environmental factors	<i>“some, it’s from the environment , if the environment is not clean, it will be affecting them to be thin”</i>	Discussant 1: Gombe urban 1
<b>OVERWEIGHT</b>			
1	Eating habits	<i>“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”</i>	Discussant 7: Osun Urban 2
2	Hereditary	<i>“even I, I have mummy (a mother that is) very big, that is why I am also fat, it is heredity or genetic”</i>	Discussant 5: Gombe Urban 2
3	Sickness	<i>“(for) some it could be sickness that caused overweight, and some are just naturally endowed with stature by God”</i>	Discussant 7: Osun Rural 1
4	Sedentary lifestyle	<i>“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”</i>	Discussant 7: Osun Urban 2

# BMJ Open

## “Children eat all things here”: a qualitative study of mothers’ perceptions and cultural beliefs about under- and over-weight children and adolescents in selected communities in two Nigerian States

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3 1 **“Children eat all things here”: a qualitative study of mothers’ perceptions and cultural**  
4 **beliefs about under- and over-weight children and adolescents in selected communities**  
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3 **42 Abstract**  
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5 **43 Introduction:** The perception of mothers about causes of under- and over-weight among  
6 children or adolescents and associated cultural beliefs may influence nutritional status.  
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**Objective:** This study aimed to explore mothers' perceptions and cultural beliefs about under- and over-weight children and adolescents in selected communities in a northern and a southern Nigerian state.

**Design:** This was a qualitative study using focus group discussions. Eight focus group discussion (FGD) sessions were held. The interviews were transcribed verbatim, and the transcripts were coded and analyzed using NVivo version 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 under- 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 under- 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.

**Key Words:** Mothers' perception; cultural belief; children; adolescents; qualitative study; Nutrition

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3 71 **Strengths and limitations of this study**  
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- 6 72 • This study, to the best of our knowledge, is the first to examine the perception of  
7 73 mothers on cultural beliefs and causes of both under-nutrition and over-nutrition among  
8 74 age 6-19 years as a group in the two ethnically-different states in Nigeria  
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10  
11 75 • Unlike many other studies on the nutritional status of children and adolescents, this  
12 76 study used a qualitative design which are particularly important in exploring and  
13 77 understanding issues relating to perception and cultural beliefs  
14  
15  
16 78 • The findings of this study, however, may not be generalizable to children, adolescents  
17 79 or the mothers to the whole of Nigeria. Additionally, it is difficult to establish causality  
18 79 with the qualitative research design. The nature of the focus group discussion used, also  
19 80 creates artificiality, since the discussion was arranged, and it is not occurring naturally.  
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## 83 Introduction

84 Nutritionally, the global community is battling with the epidemic of overweight/obesity as the  
85 incidence and prevalence of overweight/obesity are on the increase in various parts of the  
86 world.[1] However, for many low- and middle-income countries (LMIC) the nutritional  
87 challenge goes beyond just overweight/obesity, as they are also confronted with the persisting  
88 problem of under-nutrition.[2, 3]. This paradoxical coexistence of under- and over-nutrition is  
89 what has been called the double burden of malnutrition (DBM).[4]

90 Nigerian researchers had made a fair attempt to understand the determinants of under- and  
91 over-nutrition among children and adolescents in Nigeria, however almost all of these studies  
92 used a quantitative study approach. A number of existing quantitative studies have reported  
93 determinants of under- and over-nutrition among Nigerian children and/or adolescents to  
94 include household and socioeconomic factors such as household income, parental education,  
95 and occupation, nutritional status of the parents, family type, and maternal characteristics.[5–  
96 10] Qualitative methods allow for a deeper understanding of the perceptions, experiences and  
97 context.[11] This is important because people’s “realities” are actually their realities, which  
98 cannot be “measured” because they are socially constructed. People’s realities are diverse and  
99 its existence is based on the people’s perceptions and peculiar experiences.[11, 12] The  
100 qualitative approach will therefore be helpful, especially because of the complex nature of the  
101 determinants of childhood and adolescent nutrition.[13, 14]

102 Mothers’ perception and cultural beliefs are important, yet under-studied, determinants of the  
103 nutritional status of children and/or adolescents. In some high income countries (HIC), the  
104 understanding of mothers about malnutrition have been shown to affect their child feeding  
105 practices.[15, 16] It has also been found that some mothers in Europe and Asia could not  
106 correctly classify the nutritional status of their children and hence would not know if or when  
107 to adopt appropriate measures.[17–19] The effect of cultural beliefs, on the nutritional status  
108 of children and adolescents has also not been well explored. Food taboos, food restrictions and  
109 food beliefs have been reported among pregnant women in Nigeria.[20–22] However, only  
110 little research-based information could be found in the literature on the cultural beliefs relating  
111 to child/adolescent nutrition in Nigeria. The information about mothers’ perception and cultural  
112 beliefs, and how these relate to the nutrition of children and adolescents in Nigeria would be  
113 important in designing and implementing effective nutritional interventions among these  
114 children and/or adolescents. Qualitative methods are particularly important in exploring and

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3 115 understanding issues relating to perception and cultural beliefs about nutritional issues, but  
4 116 there are gaps in the literature regarding the Nigerian situation both in terms of the study  
5 117 approach and the thematic issues. This study, therefore, aimed to explore mothers' perceptions  
6 118 and cultural beliefs about the concept, causes and community experience of under- and over-  
7 119 weight children and adolescents in selected communities in two Nigerian states using  
8 120 qualitative study approach to address the existing gaps.  
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## 122 **Methods**

### 123 **Study setting and design**

124 This qualitative study was carried out in two states in Nigeria – one from the northern part and  
125 the other from the southern part of the country. Thus, this study setting takes cognisance of the  
126 broad division of Nigeria into two parts – the south and the north. Nigeria is a highly diverse  
127 and heterogeneous country in terms of ethnic, socio-cultural, and religious setting and the  
128 southern part has better socio-economic rating compared to the north. Politically, Nigeria has  
129 36 states, which are organised into 6 geo-political zones with 3 zones in the North and 3 in the  
130 South., Each geo-political zone is generally homogenous in sociocultural attributes and fairly  
131 distinct from other geo-political zones. Many ethnic groups within each zone share a common  
132 ancestry and have a high degree of similarities in terms of cultural beliefs as well as socio-  
133 religious characteristics, and economic indicators.  
134

135

135 The selection of the states used for the present study was guided by the wealth level of each  
136 geo-political zone as published by the 2018 Nigeria Demographic and Health Survey  
137 (NDHS).[23] One state each was selected from the two zones with lowest (North-East) and  
138 highest wealth index (South-West) using simple random sampling technique (Balloting  
139 method). Gombe State and Osun State were thereby randomly selected from the North-East  
140 and South-West zones respectively.  
141

### 141 **Participants and procedure**

142 The study population for the qualitative study were mothers of children and adolescents aged  
143 6 – 19 years living in selected communities in Osun and Gombe States. A total of 8 focus group  
144 discussion (FGD) sessions were held, determined by the time data saturation was reached. The  
145 8 FGDs were carried out in 8 different communities, with 4 communities selected in each of  
146 the two states (two rural and two urban communities per state). To select the communities, two  
147 local government areas (LGAs) were selected in each of the two states (one rural and one urban

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3 148 LGA). The list of the communities in each LGA was obtained from the LGA headquarters, and  
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5 149 two communities in each LGA were selected using simple random sampling technique  
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7 150 (balloting method), making a total of 8 communities. Each FGD session consisted of 8 to 10  
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9 151 discussants, who were women usually resident in the community, currently had at least one  
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11 152 child between 6 and 19 years of age, had no speech or hearing defect, were at least averagely  
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13 153 expressive and gave informed written consent. In all, a total of 76 women who met the study  
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15 154 criteria were selected purposively and were included in the study only after the study objectives  
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17 155 and processes had been explained to them, their questions and concerns addressed, and they  
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19 156 voluntarily gave their consents to participate in the FGDs.

### 20 157 **Data collection**

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22 158 A guide was developed and used for qualitative data collection for the FGD sessions. The FGD  
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24 159 guide was initially in English language, but translated to the native languages of the different  
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26 160 study locations (Yoruba and Hausa languages) and back translated to English to ensure the  
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28 161 original meaning was intact. The translations were done by Ph.D. students in the Department  
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30 162 of Nigerian Languages in Obafemi Awolowo University, Ile-Ife, Nigeria. Each FGD session  
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32 163 was conducted within a time frame of 90 to 120 minutes, and sessions were facilitated by one  
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34 164 of the authors (moderator) and a research assistant (note-taker) trained for that purpose. The  
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36 165 discussions were done in the native languages of Osun and Gombe States, which were Yoruba  
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38 166 and Hausa languages respectively. In Gombe State, where the researcher was not fluent in the  
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40 167 native language (Hausa language), there was an interpreter who was fluent in both English and  
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42 168 Hausa languages. The sessions were audio-recorded after obtaining the consent of the  
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44 169 discussants to do so.

### 44 170 **Data Analysis**

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46 171 The audio-recordings were initially transcribed verbatim in Yoruba and Hausa Languages, and  
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48 172 later translated to English language. The moderator, the note taker and the interpreter checked  
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50 173 the transcripts to make sure that they matched the recordings. The English transcripts were  
51  
52 174 carefully reviewed and a set of codes were developed to describe groups of words or categories  
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54 175 with similar meanings. Initial broad coding was done according to major themes from the FGD  
55  
56 176 guide (deductive), but new codes and themes were also developed as they emerged from the  
57  
58 177 data (inductive). Fine codes were developed under each of the initial broad codes. To increase  
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60 178 reliability, 20% of the transcripts were double coded by a senior qualitative expert. The  
179  
200 179 definitions of both the broad and fine codes were put together in a code book. Once the code

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3 180 book was established, transcripts were coded using NVivo version 11 software (QSR  
4 181 International Pty Ltd, Doncaster, Australia). Direct quotations from the discussants that most  
5 182 clearly represent each theme were chosen to be included in the manuscript in italics.

### 9 183 **Trustworthiness**

11 184 Trustworthiness is a crucial requirement for all qualitative studies and this was ensured in many  
12 185 ways in the present study, and is here presented using Guba's criteria.[24, 25]

16 186 **Credibility:** The FGDs used for the present study were taken from eight randomly selected  
17 187 sites, with representation of the two major regions in the country (North and South) and also  
18 188 the rural and urban communities. To further ensure the credibility of the findings, all the authors  
19 189 independently read and commented on the findings, while a senior qualitative expert who was  
20 190 not involved in the study checked the themes and quotations to ensure the emerged from the  
21 191 original materials. The use of voice recordings and notes from the note taker, and the checking  
22 192 of the final transcripts by the moderator and note-taker all ensured that the discussions were  
23 193 accurately captured, and hence improving the credibility of the findings. Furthermore, only one  
24 194 person moderated all the FGDs and he was also the one who conducted the analysis hence he  
25 195 could easily make references to nuances in the transcripts.

34 196 **Transferability:** To ensure transferability, some background information about the study  
35 197 subject and context was given. Also, the details about the number of participants, how they  
36 198 were recruited and the data collection methods (FGD) were given. Additionally, the number  
37 199 and duration of the FGD sessions and other details about the FGD sessions were provided.

42 200 **Dependability:** The detailed information about the research methods and process provided in  
43 201 this study is also intended to improve the dependability of the research findings, such that a  
44 202 future researcher could repeat and get a similar result.

48 203 **Confirmability:** Triangulation through data sources was done in the present study, which was  
49 204 to recruit a wide range of women for the study. These were women from different states,  
50 205 residences (i.e. rural and urban dwellers) and backgrounds.

### 54 206 **Ethical Considerations**

56 207 Ethical clearance was obtained from the Human Research Ethics Committee of University of  
57 208 the Witwatersrand (certificate No: M190514) as well as the Ministry of Health in Osun State  
58 209 (certificate No: OSHREC/PRS/569T/155) and Gombe State (certificate No:

210 MOH/ADM/621/1/142). Written consent was obtained from the mothers, which included their  
211 agreement to participate in the FGD and that the interview may be audio-recorded and that the  
212 researchers may use anonymous quotes in their report.

### 213 **Patient and Public Involvement statement**

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

### 218 **Results**

219 A total of 76 women participated in the FGDs, and they were between 29 and 55 years of age,  
220 with a mean age of  $32.4 \pm 4.5$  years. Forty-six (60.5%) of them were Christians, while the  
221 remaining 30 (39.5%) were Muslims. Each of them had at least a child/adolescent who was 6  
222 – 19 years of age.

### 223 **Concept of underweight**

224 The perception of the discussants about underweight children/adolescents was expressed  
225 through 4 sub-themes as described below;

#### 226 **Sub-theme 1: Body parts disproportion**

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

230 *“you know some child(ren), if you see them they are looking somehow, you’ll see the*  
231 *children they are slim, some you will see big head, and will also have long (repeats*  
232 *“long”) legs...”* (Discussant 8: Gombe, Urban 1)

#### 233 **Sub-theme 2: Sickly appearance**

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

237 *“from the eyes (repeats “from the eyes”) of the child, you can easily see that this child*  
238 *is not really looking well.”* (Discussant K2: Gombe rural 1)

239 Another mother simply said,

240 *“the child will not be attractive”* (Discussant K4: Osun Urban 2)



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3 241 **Sub-theme 3: Weak or Sickly Children**

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5 242 Another opinion expressed by the mothers about underweight children is that they are weak,  
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7 243 sickly and usually having different infections. A mother opined,

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9 244 *“the moment he’s playing with his colleague, from there you can know, because the*  
10 245 *moment they push him small (a little), he will fall down, he’s not that strong.*

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12 246 (Discussant K1: Gombe Rural 1)

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14 247 According to another mother,

15 248 *“some of such children with abnormal weight always have incessant cough, face*  
16 249 *swelled up and dry lips. Some can have swollen body with hidden illnesses.”*

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19 250 (Discussant K7: Gombe Rural 2)

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21 251 **Sub-theme 4: Growth less than children of same age**

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23 252 Some of the women perceived underweight children/adolescents as those whose growth is less  
24  
25 253 than the growth of other children of same age. According to one mother,

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27 254 *“ such a child will not grow very well among children of same age”*(Discussant R3:  
28 255 Osun Rural 1)

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30 256 **Concept of Overweight/Obesity**

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32 257 The perceptions of mothers on childhood/adolescent overweight/obesity were captured by 2  
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34 258 sub-themes;

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36 259 **Sub-theme 1: Bigger than Age-mates**

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38 260 Majority of the discussants perceived an overweight child/adolescent as one whose physical  
39  
40 261 body is bigger than the body size of most of his/her age mates. Some of the mothers opined  
41  
42 262 that overweight/obese children/adolescents appear big, but from their behaviour it will be  
43  
44 263 obvious that they are younger than how they look. The mothers opined that,

45 264 *“first sighting will make you see the child being very big with a young face structure.*  
46 265 *Weight will be too much for the age of the child.”* (Discussant R7: Osun Urban 2)

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49 266 *“the fatness will not be OK. The weight is too much for the age of the child (and) we*  
50 267 *would know that such is not normal. From seeing the child, you will know that the*  
51 268 *weight of the child is too much for the age.”* (Discussant R7: Osun Urban 1)

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55 269 **Sub-theme 2: Moderate chubbiness is good**

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57 270 Some of the women expressed an opinion that favoured chubby children or adolescents. They  
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59 271 felt that a moderately chubby child is beautiful, and that it only becomes a problem if the  
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3 272 chubbiness is excessive. This view was more prevalent among women in urban communities  
4 of Osun State. One of the mothers opined,  
5 273  
6 274 *“we like chubby children, but when it is too much it is different, the child can’t carry*  
7 *himself”* (Discussant 3: Osun Urban 1)  
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For peer review only

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3 277 **Community experience of under- and over-weight children and adolescents**

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5 278 The researchers sought to know which of under – or over-weight children and adolescents were  
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7 279 perceived by the discussants to be predominant in each of the communities, and based on the  
8  
9 280 responses of the discussants, three sub-themes emerged.

10  
11 281 **Sub-theme 1: Overweight children and adolescents are predominant**

12  
13 282 This sub-theme emerged exclusively from the two FGD sessions conducted in urban  
14  
15 283 communities in Osun State. Some of the mothers opined that overweight was the predominant  
16  
17 284 nutritional disorder in their community, and some of them were of the view that there was no  
18  
19 285 underweight child or adolescent in their communities. One mother added,

20 286 *“in my own opinion I think overweight is more prevalent in this area”* (Discussant 4:  
21  
22 287 Osun Urban 2)

23 288 Another mother noted,

24  
25 289 *“I have not seen very slim children in this area”* (Discussant 2: Osun Urban 1)

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28 290 **Sub-theme 2: Underweight children and adolescents are predominant**

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30 291 This sub-theme emerged from the FGD sessions in rural communities, both in Osun and Gombe  
31  
32 292 States. The mothers expressed the view that the prominent nutritional disorder among  
33  
34 293 children/adolescents in their communities was underweight. In the words of one of the mothers,

35 294 *“we do not have overweight children here but we have a lot of underweight children”*  
36  
37 295 (Chorused by majority of the discussants, Gombe rural 2)

38  
39 296 **Sub-theme 3: Both under- and over-weight in the community**

40  
41 297 Some mothers across different discussion groups opined that there were both under- and over-  
42  
43 298 weight children/adolescents in their communities, and did not think any was more predominant  
44  
45 299 than the other. A mother opined,

46 300 *“in my area, the population of overweight is the same as those of underweight”*  
47  
48 301 (Discussant 7: Osun Urban 2)

49 302 Another mother noted,

50  
51 303 *“there are those with less weight (underweight), and there are those overweight. The*  
52  
53 304 *most common, the skinny children, hmm (thinks for some time)... no, it's interwoven”*  
54  
55 305 (Discussant 7: Osun Urban 1)

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### 307 **Perceived causes of under- and over-weight**

308 The opinions expressed by the mothers about the causes of under- and over-weight are shown  
309 in Table 1. There were seven sub-themes for the perceived causes of under-weight, which  
310 include poor feeding, poverty, hereditary, sickness or ill-health, parental/family factors,  
311 witches and wizards and environmental factors. For the perceived causes of overweight, four  
312 sub-themes emerged namely; eating habits, hereditary, sickness and sedentary lifestyle.

### 313 **Cultural beliefs relating to the nutrition of children and adolescents**

314 Two sub-themes emerged concerning the views of discussants about cultural beliefs relating to  
315 the nutrition of children and adolescents.

#### 316 **Sub-theme: No known cultural belief**

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

322 *“none, we do not have anything like that in this community”*

323 (Discussant 2: Osun Urban 2)

324 *“it's in the olden days that we have heard that a child does not eat meat and the likes,  
325 but now such is not common anymore. It is just how much (money) you have that  
326 determines what you give to the child nowadays”*

327 (Discussant 4: Osun Urban 1)

328 *“in our culture there is no food that a child cannot eat, if egg is available you (give the  
329 child to) eat, if it's not (available), you will eat other things”*

330 (Discussant 2: Osun Rural 1)

331 *“Children eat all things here”*

332 (Discussant 5: Gombe Urban 2)

#### 333 **Sub-theme: Restriction for snails**

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

1  
2  
3 338 *“we no dey (do not) eat snail, even the adult don’t eat it”*

4  
5 339 (Discussant 8: Gombe Urban 1)

6  
7 340 Another mother from the same discussion group however added,

8 341 *“yes, because we, we are not used to snail here. We don’t eat it”*

9  
10 342 (Discussant 1: Gombe Urban 1)

### 11 12 13 343 **Discussion**

14 344 The focus of the second Sustainable Development Goal (SDG 2) is to “end hunger, achieve  
15 345 food security and improve nutrition, and promote sustainable agriculture”. As the “Power of  
16 346 Nutrition” organisation notes, “ending hunger, food insecurity and malnutrition for all will  
17 347 require continued and focused efforts, especially in Asia and Africa.”[26] This study, to the  
18 348 best of our knowledge, is the first to examine the perception of mothers and cultural beliefs  
19 349 about under- and over-weight children and adolescents in two ethnically-different states in  
20 350 Nigeria. Understanding the perspectives of mothers, as primary care givers, is particularly  
21 351 important for developing effective interventions for under- and over-nutrition among children  
22 352 and adolescents.

### 23 353 **Mothers’ Perceptions about the concept, causes and community experience of under- and** 24 354 **over-weight children**

25 355 The mothers in the present study expressed some perceptions about underweight  
26 356 children/adolescents, including physical features such as protruding abdomen, big heads, thin  
27 357 limbs, poor growth, and weak and sickly appearances among underweight children and  
28 358 adolescents. However, the mothers also exhibited some gaps in their knowledge in that most  
29 359 of the perspectives shared reflects severely underweight children. The mothers seemed not to  
30 360 understand the possibility of mild to moderate under-nutrition, which may only be known after  
31 361 objective assessment with some instruments. This is important as only a low proportion of  
32 362 under-nutrition are severe, and relevant actions need to be focused early on addressing mild  
33 363 and moderate cases, which constitute the majority of malnutrition problems among  
34 364 children/adolescent. This gap in perception could be the reason for misclassification of  
35 365 malnourished children at community levels as normal as reported by various authors.[27–29]

36 366 Another gap in the mothers’ knowledge is that no reference was made to stunting (i.e. short for  
37 367 age) as a form of under-nutrition. Yet, stunting is the most prevalent form of under-nutrition in  
38 368 Nigeria, with the United Nations Children Fund (UNICEF) reporting that a third of Nigerian  
39 369 children under 18 years are stunted.[30] Therefore, if the mothers, who are principally  
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3 370 responsible for feeding or controlling the feeding of children or adolescents are ignorant of  
4 371 stunting, they may be taking little or no action to address such. Furthermore, the mothers based  
5 372 their perception of underweight on the weight of other children of same age. Such judgement  
6  
7 373 is highly subjective, and may lead to incorrect conclusion regarding perceived nutritional  
8  
9 374 status, particularly in a community with a high prevalence of undernutrition. Similar findings  
10  
11 375 have previously been reported from a qualitative study among mothers in Vietnam[19] and  
12  
13 376 could be associated with mother's misjudgement of the weight of their children or their  
14  
15 377 nutritional status. [27–29]

16  
17 378 The perception of majority of the mothers about overweight was also mixed. The subjectivity  
18  
19 379 of basing the classification of a child/adolescent's weight on that of other children as earlier  
20  
21 380 noted for underweight also applies to the perception of overweight. Another point of concern  
22  
23 381 is the fact that some of the mothers favoured chubby children. Mothers in Vietnam similarly  
24  
25 382 expressed their love for chubby children.[19] The preference for chubby children may not be  
26  
27 383 unconnected with the fact that underweight has been associated with poverty; thus, community  
28  
29 384 members may tend to view chubby children as indication of wellbeing or affluence. The  
30  
31 385 challenge with this perspective is that it would be objectively difficult to draw a line between  
32  
33 386 "chubby" and "overweight".

34 387 Mothers living in urban communities reported that overweight children were more prevalent,  
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36 388 while those from rural communities reported the predominance of underweight children. This  
37  
38 389 pattern is expected, and corroborates the findings of other researchers in Nigeria that have  
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40 390 reported that overweight/obesity is predominant in the richer urban areas, while the less  
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42 391 resourced rural areas have a high burden of under-nutrition.[31–34] The NDHS also reports  
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44 392 that all the indicators of under-nutrition are two-times higher in rural, compared to urban  
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46 393 communities in Nigeria.[31] While the high burden of overweight children/adolescents in the  
47  
48 394 urban communities should be discouraged, the higher burden of underweight in rural  
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50 395 communities reflects the well-documented socio-economic inequity and inequalities between  
51  
52 396 rural and urban communities in Nigeria,[35] – a persistent gap that needs to be urgently  
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54 397 bridged.

55 398 Many of the factors that have been reported as determinants of under- and over-nutrition among  
56  
57 399 children and adolescents by previous authors were also mentioned by the mothers when asked  
58  
59 400 about the causes of under-and over-nutrition.[5, 34, 36, 37] These include dietary/feeding  
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401 habits, physical activity patterns, sickness/disease, environmental factors, socio-economic

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3 402 factors and household/parental factors. This level of understanding among the mothers is  
4  
5 403 encouraging, because high health literacy among mothers is needed for the prevention and/or  
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7 404 control of under- and over-weight among children and adolescents. On the other hand, it is also  
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9 405 important to recognise some major misconceptions recorded among mothers regarding the  
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11 406 causes of under- and over-weight among children and adolescents, such as “witches and  
12  
13 407 wizards”. Although, a number of misconceptions have been reported among mothers about the  
14  
15 408 nutritional status of their children, [27–29, 38] previous authors have not specifically reported  
16  
17 409 witches and wizards, although the role of the “spiritual forces” or the “supernatural” as causes  
18  
19 410 of mortality and morbidity is known to have been prevalent in local communities across  
20  
21 411 Nigeria, particularly in the past. It is disturbing that these opinions were not only expressed in  
22  
23 412 the rural areas, but also in the urban communities where mothers would be expected to be better  
24  
25 413 educated and more enlightened. Misconceptions relating to the role of the supernatural forces  
26  
27 414 pose a challenge to efforts aimed at encouraging mothers to take actions to prevent or control  
28  
29 415 malnutrition since they are associated with the belief that addressing the cause is out of their  
30  
31 416 reach.

### 32 417 **Cultural beliefs relating to the nutrition of children and adolescents**

33 418 Studies in Nigeria and several other African communities have reported food restrictions and  
34  
35 419 taboos as prevalent among women and children, [22, 39–41] but the finding of the present  
36  
37 420 study is different. Majority of the women who participated in this study, across the different  
38  
39 421 socio-demographic locations, knew no food restriction nor taboo for children and adolescents.  
40  
41 422 Furthermore, majority of the women reported no cultural beliefs relating to child or adolescent  
42  
43 423 nutrition that they knew of. A study carried out in Kano State, Nigeria that aimed to describe  
44  
45 424 the nutritional taboos among pregnant women also similarly found that food taboos were not  
46  
47 425 much reported among the women.[42] The Nigerian studies that reported food taboos are rather  
48  
49 426 old,[39–41] while the more recent studies that reported restrictions/taboo did so among  
50  
51 427 pregnant women.[20, 22] The finding of this present study probably reflects the present reality  
52  
53 428 in Nigeria that food taboo has reduced significantly, which may be associated with increased  
54  
55 429 education and health awareness among the population.[43]

56 430 The findings of this study, however, may not be generalizable to children, adolescents or the  
57  
58 431 mothers to the whole of Nigeria for some reasons. Firstly, the study was carried out in two out  
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60 432 of the 36 states in Nigeria. Secondly, even in the two selected states, discussants were recruited  
433 from only four out the total of 41 local government areas (LGAs). Lastly, the sample size (76)

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3 434 may not be representative, as it was not scientifically determined. It is also difficult to establish  
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5 435 causality with the qualitative research design. The nature of the focus group discussion used,  
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7 436 also creates artificiality, since the discussion was arranged, and it is not occurring naturally.  
8

9 437 **Conclusion**

10  
11 438 The mothers identified concepts, causes and community experience of under- and overweight  
12  
13 439 children and adolescents, but some gaps and misconceptions still exist among them, one of  
14  
15 440 which is the perception that underweight is caused by witches and wizards. Food taboos, food  
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17 441 restrictions and other cultural beliefs were not reported by majority of the mothers. Educational  
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19 442 programmes for mothers on child/adolescent nutrition should target identified gaps and  
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21 443 misconceptions.  
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3 445 **Conflicts of Interest**  
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5 446 The authors declare no conflict of interest  
6  
7

8 447 **Data availability statement**  
9

10 448 The data presented in this study are available on request from the corresponding author. The  
11 data are not publicly available due to ethical considerations.  
12  
13

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35 461 **Author Contributions**  
36

37 462 All the authors were involved in the conceptualization of the research idea and topic, the design  
38 463 of the methodology and the proposal. A.A.A. carried out the study as part of his PhD work,  
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40 465 to shape the study into the present form. All the authors read and approved the final version of  
41 466 the manuscript  
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**Table 1: Perceived causes of under- and over-weight according to the mothers**

<b>UNDERWEIGHT</b>			
<b>Sub-theme</b>	<b>Definition</b>	<b>Illustrative Quotations</b>	<b>Discussant</b>
1	Poor feeding	<i>“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”</i>	Discussant 7: Gombe Rural 1
2	Poverty	<i>“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.”</i>	Discussant 6: Osun rural 1
3	Hereditary	<i>“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)”</i>	Discussant 8: Gombe urban 1
4	Sickness or ill-health	<i>“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”</i>	Discussant 6: Osun Rural 2
5	Parental and family factors	<i>“you cannot compare a child brought up in the rural area and another whose parents are learned”</i>	Discussant 5: Osun rural 1
6	Witches and wizards	<i>“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”</i>	Discussant 7: Osun urban 2
7	Environmental factors	<i>“some, it’s from the environment (environmental factors), (for example) if the environment is not clean, it will be affecting them to be thin”</i>	Discussant 1: Gombe urban 1
<b>OVERWEIGHT</b>			
1	Eating habits	<i>“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”</i>	Discussant 7: Osun Urban 2
2	Hereditary	<i>“even I, I have mummy (a mother that is) very big, that is why I am also fat, it is hereditary or genetic”</i>	Discussant 5: Gombe Urban 2
3	Sickness	<i>“(for) some it could be sickness that caused overweight, and some are just naturally endowed with stature by God”</i>	Discussant 7: Osun Rural 1
4	Sedentary lifestyle	<i>“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”</i>	Discussant 7: Osun Urban 2

**SRQR checklist for reporting of qualitative research, indicating the line numbers in the manuscript where the relevant information can be found**

<b>Main topic</b>	<b>Sub-topic</b>	<b>Location in the Study</b>
<b>Title and abstract</b>		
	Title	Lines 1 - 3
	Abstract	Lines 42 - 68
<b>Introduction</b>		
	Problem formulation	Lines 83 – 116
	Purpose or research question	Lines 116 - 119
<b>Methods</b>		
	Qualitative approach and research paradigm	Lines 123 -155
	Researcher characteristics and reflexivity	Lines 8 – 15; 24 - 30
	Context	Lines 122 - 139
	Sampling strategy	Lines 143 – 155
	Ethical issues pertaining to human subjects	Lines 205 - 211
	Data collection methods	Lines 161 – 168
	Data collection instruments and technologies	Lines 157 – 161
	Units of study	Lines 140 - 155
	Data processing	Lines 169 - 181
	Data analysis	Lines 169 - 181
	Techniques to enhance trustworthiness	Lines 182 - 204
<b>Results/findings</b>		
	Synthesis and interpretation	Lines 212 - 334
	Links to empirical data	Lines 212 - 334
<b>Discussion</b>		
	Integration with prior work, implications, transferability, and contribution(s) to the field	Lines 325 – 421
	Limitations	Lines 422 - 428
<b>Other</b>		
	Conflicts of interest	Lines 437 – 438
	Funding	Lines 442 - 452

# BMJ Open

## “Children eat all things here”: a qualitative study of mothers’ perceptions and cultural beliefs about under- and over-weight children and adolescents in selected communities in two Nigerian States

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<b>Primary Subject Heading</b>:	Qualitative research
Secondary Subject Heading:	Nutrition and metabolism
Keywords:	Nutrition < TROPICAL MEDICINE, Community child health < PAEDIATRICS, PUBLIC HEALTH, QUALITATIVE RESEARCH

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3 1 **“Children eat all things here”: a qualitative study of mothers’ perceptions and cultural**  
4 **beliefs about under- and over-weight children and adolescents in selected communities**  
5 **2**  
6 **3**  
7 **in two Nigerian States**  
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1  
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3 **42 Abstract**  
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5 **43 Introduction:** The perception of mothers about causes of under- and over-weight among  
6 children or adolescents and associated cultural beliefs may influence nutritional status.  
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11 **44** However, data from qualitative studies on this subject and regarding age 6 -19 are scarce in  
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**Objective:** This study aimed to explore mothers' perceptions and cultural beliefs about under- and over-weight children and adolescents in selected communities in a northern and a southern Nigerian state.

**Design:** This was a qualitative study using focus group discussions. Eight focus group discussion (FGD) sessions were held. The interviews were transcribed verbatim, and the transcripts were coded and analyzed using NVivo version 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 under- 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 under- 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.

**Key Words:** Mothers' perception; cultural belief; children; adolescents; qualitative study; Nutrition

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71 **Strengths and limitations of this study**

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

## 82 Introduction

83 Nutritionally, the global community is battling with the epidemic of overweight/obesity as the  
84 incidence and prevalence of overweight/obesity are on the increase in various parts of the  
85 world.[1] However, for many low- and middle-income countries (LMIC) the nutritional  
86 challenge goes beyond just overweight/obesity, as they are also confronted with the persisting  
87 problem of under-nutrition.[2, 3]. This paradoxical coexistence of under- and over-nutrition is  
88 what has been called the double burden of malnutrition (DBM).[4]

89 Nigerian researchers had made a fair attempt to understand the determinants of under- and  
90 over-nutrition among children and adolescents in Nigeria, however almost all of these studies  
91 used a quantitative study approach. A number of existing quantitative studies have reported  
92 determinants of under- and over-nutrition among Nigerian children and/or adolescents to  
93 include household and socioeconomic factors such as household income, parental education,  
94 and occupation, nutritional status of the parents, family type, and maternal characteristics.[5–  
95 10] Qualitative methods allow for a deeper understanding of the perceptions, experiences and  
96 context.[11] This is important because people’s “realities” are actually their realities, which  
97 cannot be “measured” because they are socially constructed. People’s realities are diverse and  
98 its existence is based on the people’s perceptions and peculiar experiences.[11, 12] The  
99 qualitative approach will therefore be helpful, especially because of the complex nature of the  
100 determinants of childhood and adolescent nutrition.[13, 14]

101 Mothers’ perception and cultural beliefs are important, yet under-studied, determinants of the  
102 nutritional status of children and/or adolescents. In some high income countries (HIC), the  
103 understanding of mothers about malnutrition have been shown to affect their child feeding  
104 practices.[15, 16] It has also been found that some mothers in Europe and Asia could not  
105 correctly classify the nutritional status of their children and hence would not know if or when  
106 to adopt appropriate measures.[17–19] The effect of cultural beliefs, on the nutritional status  
107 of children and adolescents has also not been well explored. Food taboos, food restrictions and  
108 food beliefs have been reported among pregnant women in Nigeria.[20–22] However, only  
109 little research-based information could be found in the literature on the cultural beliefs relating  
110 to child/adolescent nutrition in Nigeria. The information about mothers’ perception and cultural  
111 beliefs, and how these relate to the nutrition of children and adolescents in Nigeria would be  
112 important in designing and implementing effective nutritional interventions among these  
113 children and/or adolescents. Qualitative methods are particularly important in exploring and

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3 114 understanding issues relating to perception and cultural beliefs about nutritional issues, but  
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5 115 there are gaps in the literature regarding the Nigerian situation both in terms of the study  
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7 116 approach and the thematic issues. This study, therefore, aimed to explore mothers' perceptions  
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9 117 and cultural beliefs about the concept, causes and community experience of under- and over-  
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11 118 weight children and adolescents in selected communities in two Nigerian states using  
12  
13 119 qualitative study approach to address the existing gaps.

## 14 120 **Methods**

### 15 121 **Study setting and design**

16 122 This qualitative study was carried out in two states in Nigeria – one from the northern part and  
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18 123 the other from the southern part of the country. Thus, this study setting takes cognisance of the  
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20 124 broad division of Nigeria into two parts – the south and the north. Nigeria is a highly diverse  
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22 125 and heterogeneous country in terms of ethnic, socio-cultural, and religious setting and the  
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24 126 southern part has better socio-economic rating compared to the north. Politically, Nigeria has  
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26 127 36 states, which are organised into 6 geo-political zones with 3 zones in the North and 3 in the  
27  
28 128 South., Each geo-political zone is generally homogenous in sociocultural attributes and fairly  
29  
30 129 distinct from other geo-political zones. Many ethnic groups within each zone share a common  
31  
32 130 ancestry and have a high degree of similarities in terms of cultural beliefs as well as socio-  
33  
34 131 religious characteristics, and economic indicators.

35 132  
36  
37 133 The selection of the states used for the present study was guided by the wealth level of each  
38  
39 134 geo-political zone as published by the 2018 Nigeria Demographic and Health Survey  
40  
41 135 (NDHS).[23] One state each was selected from the two zones with lowest (North-East) and  
42  
43 136 highest wealth index (South-West) using simple random sampling technique (Balloting  
44  
45 137 method). Gombe State and Osun State were thereby randomly selected from the North-East  
46  
47 138 and South-West zones respectively.

### 48 139 **Participants and procedure**

49 140 The study population for the qualitative study were mothers of children and adolescents aged  
50  
51 141 6 – 19 years living in selected communities in Osun and Gombe States. A total of 8 focus group  
52  
53 142 discussion (FGD) sessions were held, determined by the time data saturation was reached. The  
54  
55 143 8 FGDs were carried out in 8 different communities, with 4 communities selected in each of  
56  
57 144 the two states (two rural and two urban communities per state). To select the communities, two  
58  
59 145 local government areas (LGAs) were selected in each of the two states (one rural and one urban  
60  
146 LGA). The list of the communities in each LGA was obtained from the LGA headquarters, and

1  
2  
3 147 two communities in each LGA were selected using simple random sampling technique  
4  
5 148 (balloting method), making a total of 8 communities. Each FGD session consisted of 8 to 10  
6  
7 149 discussants, who were women usually resident in the community, currently had at least one  
8  
9 150 child between 6 and 19 years of age, had no speech or hearing defect, were at least averagely  
10  
11 151 expressive and gave informed written consent. In all, a total of 76 women who met the study  
12  
13 152 criteria were selected purposively and were included in the study only after the study objectives  
14  
15 153 and processes had been explained to them, their questions and concerns addressed, and they  
16  
17 154 voluntarily gave their consents to participate in the FGDs.

### 18 155 **Data collection**

19  
20  
21 156 A guide was developed and used for qualitative data collection for the FGD sessions  
22  
23 157 (Supplementary file). The FGD guide was initially in English language, but translated to the  
24  
25 158 native languages of the different study locations (Yoruba and Hausa languages) and back  
26  
27 159 translated to English to ensure the original meaning was intact. The translations were done by  
28  
29 160 Ph.D. students in the Department of Nigerian Languages in Obafemi Awolowo University, Ile-  
30  
31 161 Ife, Nigeria. Each FGD session was conducted within a time frame of 90 to 120 minutes, and  
32  
33 162 sessions were facilitated by one of the authors (moderator) and a research assistant (note-taker)  
34  
35 163 trained for that purpose. The discussions were done in the native languages of Osun and Gombe  
36  
37 164 States, which were Yoruba and Hausa languages respectively. In Gombe State, where the  
38  
39 165 researcher was not fluent in the native language (Hausa language), there was an interpreter who  
40  
41 166 was fluent in both English and Hausa languages. The sessions were audio-recorded after  
42  
43 167 obtaining the consent of the discussants to do so.

### 44 168 **Data Analysis**

45  
46 169 The audio-recordings were initially transcribed verbatim in Yoruba and Hausa Languages, and  
47  
48 170 later translated to English language. The moderator, the note taker and the interpreter checked  
49  
50 171 the transcripts to make sure that they matched the recordings. The English transcripts were  
51  
52 172 carefully reviewed and a set of codes were developed to describe groups of words or categories  
53  
54 173 with similar meanings. Initial broad coding was done according to major themes from the FGD  
55  
56 174 guide (deductive), but new codes and themes were also developed as they emerged from the  
57  
58 175 data (inductive). Fine codes were developed under each of the initial broad codes. To increase  
59  
60 176 reliability, 20% of the transcripts were double coded by a senior qualitative expert. The  
177  
178 178 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 version 11 software (QSR

1  
2  
3 179 International Pty Ltd, Doncaster, Australia). Direct quotations from the discussants that most  
4  
5 180 clearly represent each theme were chosen to be included in the manuscript in italics.  
6  
7

### 8 181 **Trustworthiness**

9  
10 182 Trustworthiness is a crucial requirement for all qualitative studies and this was ensured in many  
11  
12 183 ways in the present study, and is here presented using Guba's criteria.[24, 25]  
13

14 184 **Credibility:** The FGDs used for the present study were taken from eight randomly selected  
15  
16 185 sites, with representation of the two major regions in the country (North and South) and also  
17  
18 186 the rural and urban communities. To further ensure the credibility of the findings, all the authors  
19  
20 187 independently read and commented on the findings, while a senior qualitative expert who was  
21  
22 188 not involved in the study checked the themes and quotations to ensure they emerged from the  
23  
24 189 original materials. The use of voice recordings and notes from the note taker, and the checking  
25  
26 190 of the final transcripts by the moderator and note-taker all ensured that the discussions were  
27  
28 191 accurately captured, and hence improving the credibility of the findings. Furthermore, only one  
29  
30 192 person moderated all the FGDs and he was also the one who conducted the analysis hence he  
31  
32 193 could easily make references to nuances in the transcripts.

33 194 **Transferability:** To ensure transferability, some background information about the study  
34  
35 195 subject and context was given. Also, the details about the number of participants, how they  
36  
37 196 were recruited and the data collection methods (FGD) were given. Additionally, the number  
38  
39 197 and duration of the FGD sessions and other details about the FGD sessions were provided.

40 198 **Dependability:** The detailed information about the research methods and process provided in  
41  
42 199 this study is also intended to improve the dependability of the research findings, such that a  
43  
44 200 future researcher could repeat and get a similar result.

45  
46  
47 201 **Confirmability:** Triangulation through data sources was done in the present study, which was  
48  
49 202 to recruit a wide range of women for the study. These were women from different states,  
50  
51 203 residences (i.e. rural and urban dwellers) and backgrounds.

### 52 53 204 **Ethical Considerations**

54 205 Ethical clearance was obtained from the Human Research Ethics Committee of University of  
55  
56 206 the Witwatersrand (certificate No: M190514) as well as the Ministry of Health in Osun State  
57  
58 207 (certificate No: OSHREC/PRS/569T/155) and Gombe State (certificate No:  
59  
60 208 MOH/ADM/621/1/142). Written consent was obtained from the mothers, which included their

209 agreement to participate in the FGD and that the interview may be audio-recorded and that the  
210 researchers may use anonymous quotes in their report.

### 211 **Patient and Public Involvement statement**

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

### 216 **Results**

217 A total of 76 women participated in the FGDs, and they were between 29 and 55 years of age,  
218 with a mean age of  $32.4 \pm 4.5$  years. Forty-six (60.5%) of them were Christians, while the  
219 remaining 30 (39.5%) were Muslims. Each of them had at least a child/adolescent who was 6  
220 – 19 years of age.

### 221 **Concept of underweight**

222 The perception of the discussants about underweight children/adolescents was expressed  
223 through 4 sub-themes as described below;

#### 224 **Sub-theme 1: Body parts disproportion**

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

228 *“you know some child(ren), if you see them they are looking somehow, you’ll see the*  
229 *children they are slim, some you will see big head, and will also have long (repeats*  
230 *“long”) legs...”* (Discussant 8: Gombe, Urban 1)

#### 231 **Sub-theme 2: Sickly appearance**

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

235 *“from the eyes (repeats “from the eyes”) of the child, you can easily see that this child*  
236 *is not really looking well.”* (Discussant K2: Gombe rural 1)

237 Another mother simply said,

238 *“the child will not be attractive”* (Discussant K4: Osun Urban 2)

239



### 240 **Sub-theme 3: Weak or Sickly Children**

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

243 *“the moment he’s playing with his colleague, from there you can know, because the*  
244 *moment they push him small (a little), he will fall down, he’s not that strong.*

245 (Discussant K1: Gombe Rural 1)

246 According to another mother,

247 *“some of such children with abnormal weight always have incessant cough, face*  
248 *swelled up and dry lips. Some can have swollen body with hidden illnesses.”*

249 (Discussant K7: Gombe Rural 2)

### 250 **Sub-theme 4: Growth less than children of same age**

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

253 *“ such a child will not grow very well among children of same age”*(Discussant R3:  
254 Osun Rural 1)

### 255 **Concept of Overweight/Obesity**

256 The perceptions of mothers on childhood/adolescent overweight/obesity were captured by 2  
257 sub-themes;

#### 258 **Sub-theme 1: Bigger than Age-mates**

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

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

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

#### 268 **Sub-theme 2: Moderate chubbiness is good**

269 Some of the women expressed an opinion that favoured chubby children or adolescents. They  
270 felt that a moderately chubby child is beautiful, and that it only becomes a problem if the

1  
2  
3 271 chubbiness is excessive. This view was more prevalent among women in urban communities  
4  
5 272 of Osun State. One of the mothers opined,

6  
7 273 *“we like chubby children, but when it is too much it is different, the child can’t carry*  
8  
9 274 *himself”* (Discussant 3: Osun Urban 1)

### 10 11 275 **Community experience of under- and over-weight children and adolescents**

12  
13 276 The researchers sought to know which of under – or over-weight children and adolescents were  
14  
15 277 perceived by the discussants to be predominant in each of the communities, and based on the  
16  
17 278 responses of the discussants, three sub-themes emerged.

#### 18 19 279 **Sub-theme 1: Overweight children and adolescents are predominant**

20  
21 280 This sub-theme emerged exclusively from the two FGD sessions conducted in urban  
22  
23 281 communities in Osun State. Some of the mothers opined that overweight was the predominant  
24  
25 282 nutritional disorder in their community, and some of them were of the view that there was no  
26  
27 283 underweight child or adolescent in their communities. One mother added,

28 284 *“in my own opinion I think overweight is more prevalent in this area”* (Discussant 4:  
29  
30 285 Osun Urban 2)

31 286 Another mother noted,

32  
33 287 *“I have not seen very slim children in this area”* (Discussant 2: Osun Urban 1)

#### 34 35 288 **Sub-theme 2: Underweight children and adolescents are predominant**

36  
37 289 This sub-theme emerged from the FGD sessions in rural communities, both in Osun and Gombe  
38  
39 290 States. The mothers expressed the view that the prominent nutritional disorder among  
40  
41 291 children/adolescents in their communities was underweight. In the words of one of the mothers,

42 292 *“we do not have overweight children here but we have a lot of underweight children”*  
43  
44 293 (Chorused by majority of the discussants, Gombe rural 2)

#### 45 46 47 294 **Sub-theme 3: Both under- and over-weight in the community**

48  
49 295 Some mothers across different discussion groups opined that there were both under- and over-  
50  
51 296 weight children/adolescents in their communities, and did not think any was more predominant  
52  
53 297 than the other. A mother opined,

54 298 *“in my area, the population of overweight is the same as those of underweight”*  
55  
56 299 (Discussant 7: Osun Urban 2)

57 300 Another mother noted,

1  
2  
3 301 *“there are those with less weight (underweight), and there are those overweight. The*  
4 *most common, the skinny children, hmm (thinks for some time)... no, it’s interwoven”*  
5 302  
6 303 (Discussant 7: Osun Urban 1)  
7  
8

9  
10 304 **Perceived causes of under- and over-weight**

11 305 The opinions expressed by the mothers about the causes of under- and over-weight are shown  
12 in Table 1. There were seven sub-themes for the perceived causes of under-weight, which  
13 306 include poor feeding, poverty, hereditary, sickness or ill-health, parental/family factors,  
14 307 witches and wizards and environmental factors. For the perceived causes of overweight, four  
15 308 sub-themes emerged namely; eating habits, hereditary, sickness and sedentary lifestyle.  
16 309  
17  
18  
19  
20

21 310 **Cultural beliefs relating to the nutrition of children and adolescents**

22 311 Two sub-themes emerged concerning the views of discussants about cultural beliefs relating to  
23 312 the nutrition of children and adolescents.

24 313 **Sub-theme: No known cultural belief**

25  
26 314 Majority of the mothers did not know of any cultural belief or practice concerning the nutrition  
27 315 of children/adolescents in their families or communities. Even when the discussants were  
28 316 probed for food taboos or restrictions for children and adolescents, majority of them reported  
29 317 no food taboo or restriction for children and/or adolescents. This was the major finding in most  
30 318 of the discussion groups. Below are some quotations from the mothers,  
31  
32  
33  
34  
35

36 319 *“none, we do not have anything like that in this community”*

37  
38 320 (Discussant 2: Osun Urban 2)  
39

40  
41 321 *“it’s in the olden days that we have heard that a child does not eat meat and the likes,*  
42 322 *but now such is not common anymore. It is just how much (money) you have that*  
43 323 *determines what you give to the child nowadays”*  
44  
45

46 324 (Discussant 4: Osun Urban 1)  
47

48 325 *“in our culture there is no food that a child cannot eat, if egg is available you (give the*  
49 326 *child to) eat, if it’s not (available), you will eat other things”*  
50  
51

52 327 (Discussant 2: Osun Rural 1)  
53

54 328 *“Children eat all things here”*

55 329 (Discussant 5: Gombe Urban 2)  
56  
57  
58  
59  
60

1  
2  
3 331 **Sub-theme: Restriction for snails**

4  
5 332 Few of the mothers from Gombe State reported that restrictions for snails existed in their  
6  
7 333 families and/or tribes. Other women from Gombe State, however, noted that snail eating was  
8  
9 334 not popular in the North because snails were scarce in the North, which may indicate that snail  
10 335 was not really a taboo. A mother noted,

11 336 *“we no dey (do not) eat snail, even the adult don’t eat it”*

12 337 (Discussant 8: Gombe Urban 1)

13  
14  
15 338 Another mother from the same discussion group however added,

16  
17 339 *“yes, because we, we are not used to snail here. We don’t eat it”*

18  
19 340 (Discussant 1: Gombe Urban 1)

20  
21 341 **Discussion**

22 342 The focus of the second Sustainable Development Goal (SDG 2) is to “end hunger, achieve  
23 343 food security and improve nutrition, and promote sustainable agriculture”. As the “Power of  
24 344 Nutrition” organisation notes, “ending hunger, food insecurity and malnutrition for all will  
25 345 require continued and focused efforts, especially in Asia and Africa.”[26] This study, to the  
26 346 best of our knowledge, is the first to examine the perception of mothers and cultural beliefs  
27 347 about under- and over-weight children and adolescents in two ethnically-different states in  
28 348 Nigeria. Understanding the perspectives of mothers, as primary care givers, is particularly  
29 349 important for developing effective interventions for under- and over-nutrition among children  
30 350 and adolescents.

31  
32  
33 351 **Mothers’ Perceptions about the concept, causes and community experience of under- and**  
34 352 **over-weight children**

35  
36  
37 353 The mothers in the present study expressed some perceptions about underweight  
38 354 children/adolescents, including physical features such as protruding abdomen, big heads, thin  
39 355 limbs, poor growth, and weak and sickly appearances among underweight children and  
40 356 adolescents. However, the mothers also exhibited some gaps in their knowledge in that most  
41 357 of the perspectives shared reflects severely underweight children. The mothers seemed not to  
42 358 understand the possibility of mild to moderate under-nutrition, which may only be known after  
43 359 objective assessment with some instruments. This is important as only a low proportion of  
44 360 under-nutrition are severe, and relevant actions need to be focused early on addressing mild  
45 361 and moderate cases, which constitute the majority of malnutrition problems among

1  
2  
3 362 children/adolescent. This gap in perception could be the reason for misclassification of  
4  
5 363 malnourished children at community levels as normal as reported by various authors.[27–29]  
6

7 364 Another gap in the mothers' knowledge is that no reference was made to stunting (i.e. short for  
8  
9 365 age) as a form of under-nutrition. Yet, stunting is the most prevalent form of under-nutrition in  
10  
11 366 Nigeria, with the United Nations Children Fund (UNICEF) reporting that a third of Nigerian  
12  
13 367 children under 18 years are stunted.[30] Therefore, if the mothers, who are principally  
14  
15 368 responsible for feeding or controlling the feeding of children or adolescents are ignorant of  
16  
17 369 stunting, they may be taking little or no action to address such. Furthermore, the mothers based  
18  
19 370 their perception of underweight on the weight of other children of same age. Such judgement  
20  
21 371 is highly subjective, and may lead to incorrect conclusion regarding perceived nutritional  
22  
23 372 status, particularly in a community with a high prevalence of undernutrition. Similar findings  
24  
25 373 have previously been reported from a qualitative study among mothers in Vietnam[19] and  
26  
27 374 could be associated with mother's misjudgement of the weight of their children or their  
28  
29 375 nutritional status. [27–29]

30  
31 376 The perception of majority of the mothers about overweight was also mixed. The subjectivity  
32  
33 377 of basing the classification of a child/adolescent's weight on that of other children as earlier  
34  
35 378 noted for underweight also applies to the perception of overweight. Another point of concern  
36  
37 379 is the fact that some of the mothers favoured chubby children. Mothers in Vietnam similarly  
38  
39 380 expressed their love for chubby children.[19] The preference for chubby children may not be  
40  
41 381 unconnected with the fact that underweight has been associated with poverty; thus, community  
42  
43 382 members may tend to view chubby children as indication of wellbeing or affluence. The  
44  
45 383 challenge with this perspective is that it would be objectively difficult to draw a line between  
46  
47 384 "chubby" and "overweight".

48  
49 385 Mothers living in urban communities reported that overweight children were more prevalent,  
50  
51 386 while those from rural communities reported the predominance of underweight children. This  
52  
53 387 pattern is expected, and corroborates the findings of other researchers in Nigeria that have  
54  
55 388 reported that overweight/obesity is predominant in the richer urban areas, while the less  
56  
57 389 resourced rural areas have a high burden of under-nutrition.[31–34] The NDHS also reports  
58  
59 390 that all the indicators of under-nutrition are two-times higher in rural, compared to urban  
60  
391 communities in Nigeria.[31] While the high burden of overweight children/adolescents in the  
392 urban communities should be discouraged, the higher burden of underweight in rural  
393 communities reflects the well-documented socio-economic inequity and inequalities between

394 rural and urban communities in Nigeria,[35] – a persistent gap that needs to be urgently  
395 bridged.

396 Many of the factors that have been reported as determinants of under- and over-nutrition among  
397 children and adolescents by previous authors were also mentioned by the mothers when asked  
398 about the causes of under-and over-nutrition.[5, 34, 36, 37] These include dietary/feeding  
399 habits, physical activity patterns, sickness/disease, environmental factors, socio-economic  
400 factors and household/parental factors. This level of understanding among the mothers is  
401 encouraging, because high health literacy among mothers is needed for the prevention and/or  
402 control of under- and over-weight among children and adolescents. On the other hand, it is also  
403 important to recognise some major misconceptions recorded among mothers regarding the  
404 causes of under- and over-weight among children and adolescents, such as “witches and  
405 wizards”. Although, a number of misconceptions have been reported among mothers about the  
406 nutritional status of their children, [27–29, 38] previous authors have not specifically reported  
407 witches and wizards, although the role of the “spiritual forces” or the “supernatural” as causes  
408 of mortality and morbidity is known to have been prevalent in local communities across  
409 Nigeria, particularly in the past. It is disturbing that these opinions were not only expressed in  
410 the rural areas, but also in the urban communities where mothers would be expected to be better  
411 educated and more enlightened. Misconceptions relating to the role of the supernatural forces  
412 pose a challenge to efforts aimed at encouraging mothers to take actions to prevent or control  
413 malnutrition since they are associated with the belief that addressing the cause is out of their  
414 reach.

#### 415 **Cultural beliefs relating to the nutrition of children and adolescents**

416 Studies in Nigeria and several other African communities have reported food restrictions and  
417 taboos as prevalent among women and children, [22, 39–41] but the finding of the present  
418 study is different. Majority of the women who participated in this study, across the different  
419 socio-demographic locations, knew no food restriction nor taboo for children and adolescents.  
420 Furthermore, majority of the women reported no cultural beliefs relating to child or adolescent  
421 nutrition that they knew of. A study carried out in Kano State, Nigeria that aimed to describe  
422 the nutritional taboos among pregnant women also similarly found that food taboos were not  
423 much reported among the women.[42] The Nigerian studies that reported food taboos are rather  
424 old,[39–41] while the more recent studies that reported restrictions/taboo did so among  
425 pregnant women.[20, 22] The finding of this present study probably reflects the present reality

1  
2  
3 426 in Nigeria that food taboo has reduced significantly, which may be associated with increased  
4  
5 427 education and health awareness among the population.[43]  
6

7 428 The findings of this study, however, may not be generalizable to children, adolescents or the  
8  
9 429 mothers to the whole of Nigeria for some reasons. Firstly, the study was carried out in two out  
10  
11 430 of the 36 states in Nigeria. Secondly, even in the two selected states, discussants were recruited  
12  
13 431 from only four out the total of 41 local government areas (LGAs). Lastly, the sample size (76)  
14  
15 432 may not be representative, as it was not scientifically determined. It is also difficult to establish  
16  
17 433 causality with the qualitative research design. The nature of the focus group discussion used,  
18  
19 434 also creates artificiality, since the discussion was arranged, and it is not occurring naturally.

20 435 This study has, however, provided new and important qualitative data on perception of mothers  
21  
22 436 and cultural beliefs about under- and over-weight children and adolescents that have not been  
23  
24 437 previously reported, especially because most previous studies used quantitative approaches.  
25  
26 438 These findings could be used to generate some important research ideas which could be  
27  
28 439 pursued using both qualitative or quantitative methods. An important research idea, for  
29  
30 440 instance, is the “prevalence of the gaps and/or mis-conceptions noticed among a larger  
31  
32 441 population of mothers, and their associations with dietary practices/patterns and nutritional  
33  
34 442 status of children”, and this could be pursued using a quantitative study. Additionally, the  
35  
36 443 findings of this study would be important in designing nutritional education for mothers on  
37  
38 444 child/adolescent nutrition, especially in the study area. This is because the study has made  
39  
40 445 known some concepts and perceptions that could be built on, and important gaps and  
41  
42 446 misconceptions that need to be addressed.

## 43 447 **Conclusion**

44 448 The mothers identified concepts, causes and community experience of under- and overweight  
45  
46 449 children and adolescents, but some gaps and misconceptions still exist among them, one of  
47  
48 450 which is the perception that underweight is caused by witches and wizards. Food taboos, food  
49  
50 451 restrictions and other cultural beliefs were not reported by majority of the mothers. Educational  
51  
52 452 programmes for mothers on child/adolescent nutrition should target identified gaps and  
53  
54 453 misconceptions.  
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1  
2  
3 454 **Conflicts of Interest**  
4

5  
6 455 The authors declare no conflict of interest  
7

8 456 **Data availability statement**  
9

10 457 The data presented in this study are available on request from the corresponding author. The  
11  
12 458 data are not publicly available due to ethical considerations.  
13

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15

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34  
35 469 expressed are solely the responsibility of the Fellow

36  
37 470 **Author Contributions**  
38

39 471 All the authors were involved in the conceptualization of the research idea and topic, the design  
40  
41 472 of the methodology and the proposal. A.A.A. carried out the study as part of his PhD work,  
42  
43 473 while A.F. and K.K.-G. supervised, provided useful suggestions and the mentorship that helped  
44  
45 474 to shape the study into the present form. All the authors read and approved the final version of  
46  
47 475 the manuscript  
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**Table 1: Perceived causes of under- and over-weight according to the mothers**

<b>UNDERWEIGHT</b>			
<b>Sub-theme</b>	<b>Definition</b>	<b>Illustrative Quotations</b>	<b>Discussant</b>
1	Poor feeding	<i>“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”</i>	Discussant 7: Gombe Rural 1
2	Poverty	<i>“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.”</i>	Discussant 6: Osun rural 1
3	Hereditary	<i>“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)”</i>	Discussant 8: Gombe urban 1
4	Sickness or ill-health	<i>“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”</i>	Discussant 6: Osun Rural 2
5	Parental and family factors	<i>“you cannot compare a child brought up in the rural area and another whose parents are learned”</i>	Discussant 5: Osun rural 1
6	Witches and wizards	<i>“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”</i>	Discussant 7: Osun urban 2
7	Environmental factors	<i>“some, it’s from the environment (environmental factors), (for example) if the environment is not clean, it will be affecting them to be thin”</i>	Discussant 1: Gombe urban 1
<b>OVERWEIGHT</b>			
1	Eating habits	<i>“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”</i>	Discussant 7: Osun Urban 2
2	Hereditary	<i>“even I, I have mummy (a mother that is) very big, that is why I am also fat, it is hereditary or genetic”</i>	Discussant 5: Gombe Urban 2
3	Sickness	<i>“(for) some it could be sickness that caused overweight, and some are just naturally endowed with stature by God”</i>	Discussant 7: Osun Rural 1
4	Sedentary lifestyle	<i>“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”</i>	Discussant 7: Osun Urban 2

### Focus group discussion guide

- 1) Arrival and welcoming of discussants
- 2) Introduction of researcher/moderator and recorder/note taker.
- 3) Introduction of project topic and briefly explaining the rationale for the study

#### 4) Questions for discussion

- a. What do you understand by an underweight child or adolescent?
- b. What do you understand by an overweight child or adolescent?
- c. Which of underweight and overweight children/adolescents, in your opinion is more common in your community?
- d. What do you think causes some children/adolescents to be underweight?
- e. What do you think causes some children/adolescents to be overweight?
- f. What beliefs exist in your culture that relate to the nutrition of children?

NB: Depending on the responses, further probing will be done to understand the restrictions/taboo

Appreciate the discussants and disperse them

**SRQR checklist for reporting of qualitative research, indicating the line numbers in the manuscript where the relevant information can be found**

<b>Main topic</b>	<b>Sub-topic</b>	<b>Location in the Study</b>
<b>Title and abstract</b>		
	Title	Lines 1 - 3
	Abstract	Lines 42 - 68
<b>Introduction</b>		
	Problem formulation	Lines 83 – 116
	Purpose or research question	Lines 116 - 119
<b>Methods</b>		
	Qualitative approach and research paradigm	Lines 120 -154
	Researcher characteristics and reflexivity	Lines 8 – 15; 24 - 30
	Context	Lines 121 - 138
	Sampling strategy	Lines 142 – 154
	Ethical issues pertaining to human subjects	Lines 204 - 210
	Data collection methods	Lines 160 – 167
	Data collection instruments and technologies	Lines 155 – 160
	Units of study	Lines 139 - 154
	Data processing	Lines 168 - 180
	Data analysis	Lines 168 - 180
	Techniques to enhance trustworthiness	Lines 181 - 203
<b>Results/findings</b>		
	Synthesis and interpretation	Lines 216 – 340
	Links to empirical data	Lines 216 – 340
<b>Discussion</b>		
	Integration with prior work, implications, transferability, and contribution(s) to the field	Lines 341 – 446
	Limitations	Lines 428 - 434
<b>Other</b>		
	Conflicts of interest	Lines 454 – 455
	Funding	Lines 459 – 469