Infant and young child feeding practices and behaviours of positive deviants among caregivers of children (6 - 18 months) at risk of stunting in informal settlements in Harrismith, Free State Province, South Africa

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Background. The positive deviance approach has been used to identify infant and young child feeding (IYCF) practices associated with a reduction in stunting, but this research is limited in South Africa (SA).

Objective. To identify strategies among positive deviant (PD) caregivers of non-stunted children aged 6 - 18 months that influence infant and young child feeding (IYCF) practices and raise well-nourished children in two informal settlements in Harrismith.

Methods. This study employed a mixed-method design using a PD approach. Demographic questionnaires were administered to 28 purposefully sampled caregiver-child pairs to determine caregiver, child and household characteristics. Socioeconomic scores were obtained from these interviews and used to select six PD and six non-positive deviant (NPD) caregivers for semi-structured qualitative interviews between March and June 2019.

Results. Nutritional PD behaviours included consuming 'flesh foods' (meat) more often and practising responsive feeding and family eating. Non-nutritional PD behaviours included coping strategies involving health-seeking behaviour, financial strategy and social capital of caregivers. All caregivers displayed poor breastfeeding practices and an early introduction of solid foods. Primary healthcare nurses were reported to frequently provide breastfeeding advice from outdated prevention of mother-to-child transmission policy.

Conclusions. Poor IYCF practices highlight the need for continued advocacy and promotion of IYCF in SA. Nutritional PD behaviours are key to health promotional messages relayed within the local community where the research was conducted. The presence of nutritional and non-nutritional PD behaviours highlights the need for a multi-sectoral response to addressing stunting and improving IYCF practices.

The prevalence of stunting in South Africa (SA) has remained persistently high over the past 40 years,[1] despite political commitment, economic growth and social change. In 2016, 27% of children under 5 years were stunted.[2] Addressing infant and young child feeding (IYCF) practices has been identified as necessary to address childhood malnutrition.[3] Optimal IYCF practice is defined as the early initiation of breastfeeding after birth, exclusive breastfeeding for the first 6 months of life, with safe, age-appropriate foods introduced at 6 months and continued breastfeeding up to 2 years and beyond.[4] In SA, poor IYCF practices are common.[5] SA's large HIV-positive population coupled with changes in breastfeeding guidelines over time for HIV-positive mothers, along with the dissemination of outdated guidelines, have contributed to poor breastfeeding practices.[6] The potential impact of increased levels of hunger and food insecurity due to the COVID-19 pandemic[7] on child nutrition further highlights the need to identify strategies to address suboptimal IYCF and stunting.

The positive deviant (PD) model has been used to identify which IYCF practices are associated with a reduction in stunting.[8,9] This model aims to provide insight into how caregivers are succeeding in raising non-stunted children in resource-poor settings with high stunting rates. It seeks to identify the characteristics and behaviours of PD caregivers and how they function within their environments to achieve an improved nutritional status for their children.

Stunting prevalence in the Free State province is high.[2] In SA, the incidence of stunting is highest in urban informal areas.[2] Understanding the context of stunting within urban informal areas in the Free State, such as the informal settlements of Intabazwe and 42nd Hill is therefore, valuable. The purpose of this research was to identify how PD caregivers of children aged 6 - 18 months, compared with non-positive deviant (NPD) caregivers, function within individual, household and community-level contexts that influence IYCF practices.

Methods

Study design and sample

The study followed a mixed-method design using a PD approach. We administered questionnaires to determine caregiver, child and household characteristics and conducted semi-structured interviews to explore behaviours related to IYCF of caregivers with non-stunted children (PD) compared with those of caregivers with stunted children (NPD). Sensitivity to stunting is heightened between 6 - 24 months. Children aged 18 - 24 months were not included as the window to effectively address stunting closes at 24 months, making interventions less impactful beyond this point.[10]

The research was conducted in the informal settlements of Intabazwe and 42nd Hill in Harrismith, Maluti-a-Phofung municipality, Free State province, from March to June 2019.

Caregivers who attended the primary healthcare clinic, which serves both settlements, for a routine child health visit were screened and selected according to the criteria (Fig. 1).

Children were measured by the first author, and anthropometric data, collected according to standardised procedures, were used to calculate height-for-age z-scores (HAZ) and weight-for-height z-scores (WHZ) according to age and sex-appropriate World Health Organization growth standards.[11] The following classifications were applied:

- PD: children who met the screening criteria and had HAZ and WHZ scores above 0 standard deviations (SD), i.e. non-stunted children from poor households (as identified by screening criteria).
- NPD: children who met the screening criteria and had a HAZ <-2 SD, i.e. stunted children from poor households.
- Negative deviants (ND): children who did not meet the screening criteria pertaining to income and had a HAZ <-2 SD, i.e., stunted children from non-poor households.
- The usage of both HAZ and WHZ for NPDs excluded children who were both underweight (W/H <-2SD) and stunted (HAZ < 2SD) and therefore, only HAZ scores were used to classify stunted children. NPD and ND groups were combined for subsequent data collection and analysis and referred to as NPDs, representing the group of children with poor growth.
- Socioeconomic status was used as a screening tool for qualitative interviews. This composite score, determined from demographic questionnaires, incorporates various measures of economic, social and work status, and has been previously used in resource-constrained settings.[12,13] Box 1 provides a summary of the scoring system and a more detailed explanation is provided in the supplementary material. Caregivers with scores ranging from 11 - 26 (middle range of scores) were selected.

Data collection and analysis
Interviews were conducted in a private room at a community centre by the first author and a trained fieldworker. Interviews followed a semi-structured interview guide (available in supplementary material) that included topics on current and past feeding behaviours and components related to behaviour change.

Audio recordings of each interview were transcribed and translated from seSotho or isiZulu into English by a second field worker. Content analysis, using an inductive approach, was performed using Atlas.ti 8 software (Atlas ti., Germany). Preliminary codes were created and defined. Interviews were reread to ensure consistency of usage. This process was repeated twice to ensure reliability. The final list of themes was created by either grouping codes or using an existing code as a theme and analysing co-occurring codes within a theme. For every theme, a comparison between PD and NPD groups assisted in data analysis. A summary of these themes is available in the supplementary material.

Ethics approval
This study was conducted according to the Declaration of Helsinki guidelines. All procedures involving participants were approved by the Health Research Ethics Committee of Stellenbosch University (ref. no. S17/10/196). Permission to recruit participants was obtained from the Free State Department of Health. Written informed consent was obtained from all caregivers.

Results
A total of 28 demographic questionnaires were administered. Table 1 presents caregiver, child and household characterises used to determine socioeconomic scores. Most caregivers (80%) cited social grants as their primary source of income (NPD=13; PD=9). Of these caregivers, 12 interviews (6 PD and 6 NPD) were conducted.

Common feeding practices displayed by PD caregivers were the inclusion of the 'flesh' of meat (a term used to define the concept of including the actual tissue of the meat), responsive feeding and family eating. Poor breastfeeding practices and the early introduction of solids were common among all caregivers. Key themes that emerged as common among PD mothers included (*i*) health-seeking behaviour, (*ii*) financial strategies, (*iii*) social support and (*iv*) a minor role of child food preference. The advice provided by primary healthcare (PHC) nurses regarding IYCF was mentioned by all caregivers.

PD caregivers included the 'flesh of meat'
PD caregivers reported higher weekly protein intake when detailing the daily and weekly protein consumption of children. The inclusion of gravy or the 'soup of meat' was more common in NPDs. As one NPD explained:

'Let's say I've cooked; maybe I've cooked chicken I take the soup from the chicken relish and use it as soup'. Caregivers expressed using this 'soup' from the prepared meal for the child instead of including the 'flesh' of the meat that was consumed by the family.

PD caregivers practised responsive feeding and were less influenced by child food preference and satiety
PD caregivers affectionately described mealtimes as a time when children were allowed to 'play' with their food and where caregivers exhibited patience. In contrast, NPD caregivers listed the length of mealtimes and their child 'playing' with food as signs of satiety. PD caregivers indicated responsive feeding styles by expressing:

'I have to give her a spoon and relax and then she will play and then I will give her, and she will play and then she finishes her food that way'.

PD caregivers responded to a wider variety of hunger cues, such as sound effects, tugging at the caregivers and fetching feeding utensils, and were more responsive to the child's hunger and satiety cues, providing the opportunity for children to request additional food.

A common reason for the restriction of foods was the child's preference, particularly for NPD caregivers. Refusal to accept breastmilk or formula milk was a reason for discontinuing breastfeeding and formula feeding for both groups of caregivers. NPD caregivers defined good feeding practices as compliance with the child's preference. A child's preference was more influential in purchasing decisions. As one NPD expressed:

Box 1: Socioeconomic scoring system
A total socioeconomic status score can be calculated for each participant by summing the category scores for each of the 6 domains:
- family income (1 – 6),
- reversed employment category of participant's parent with the highest employment rank (Hollingshead reversed) (1 – 9),
- parent education (0 – 6),
- total assets (0 – 7),
- dwelling type (1 – 6),
- bedroom cohabitation (1 – 7),
Maximum score=41

'While giving him what he doesn't like, he spits it out so I cannot force him to eat. That's why I end up giving him what he prefers'.

In contrast, PD children were reported to be less fussy and more accepting of new foods.

Foods that were perceived by caregivers to provide satiety to their children were deemed to be of higher value, especially among NPD caregivers. The perception that children were 'not satisfied' with formula milk or breastmilk alone was expressed as a reason for the early introduction of solid foods.

PD caregivers practised family eating and expressed less value for commercial infant foods

Commerical infant foods (iron-fortified cereals and pureed infant foods) were the most common first foods introduced. Although both PD and NPD caregivers expressed value for infant foods, NPD caregivers more frequently indicated that these foods were of superior value compared with foods not marketed as infant foods. One NPD caregiver explained:

'Because I see from the shops the Nestum and Cerelac (commercial iron-fortified infant foods) is the baby's food. And it's right for them'.

Eating as a family was practised in five PD households. Including children in family meals was described as 'easy' and 'important', impacted purchasing behaviour and was linked to the inclusion of proteins. As one PD caregiver indicated: 'In the household when we are about to eat meat, I would see that he wants it and so I would give him his own dish'.

PD caregivers displayed health-seeking behaviours

Both groups of caregivers indicated following and valuing guidelines from PHC nurses. However, PDs more often explicitly expressed

value for PHC nurses by stating that nurses could be trusted and had more knowledge regarding children. One PD caregiver indicated: 'She's [the PHC nurse] saving your child'.

A concern for caregivers was poor appetite. Although both sets of caregivers acted to address this concern, PD caregivers expressed more varied and frequent actions, including changing foods, offering more frequent meals and displaying health-seeking behaviours, such as using the clinic as a source of knowledge and assistance. Only NPD caregivers indicated apathy in response to a poor appetite.

PD caregivers displayed financial coping strategies

Lack of finance was the most common barrier to the inclusion of food. Caregivers were able to mitigate this by prioritising feeding their children over themselves, seeking temporary employment, borrowing money from family members or exhibiting financial strategies such as purchasing cheaper items or budgeting. Although adaptability was present in all caregivers, PD caregivers were able to act to address circumstances more often and proposed a wider variety of solutions. In contrast, NPD caregivers more often expressed apathy, indicating that they would 'just sit and do nothing', or that 'At times I can't see what really happens to the money'.

PD caregivers had social support structures

Support was given in the form of advice, food and financial assistance from family and community members, such as neighbours. PD caregivers expressed receiving assistance more often, stability in support structures and conveyed appreciation for the support
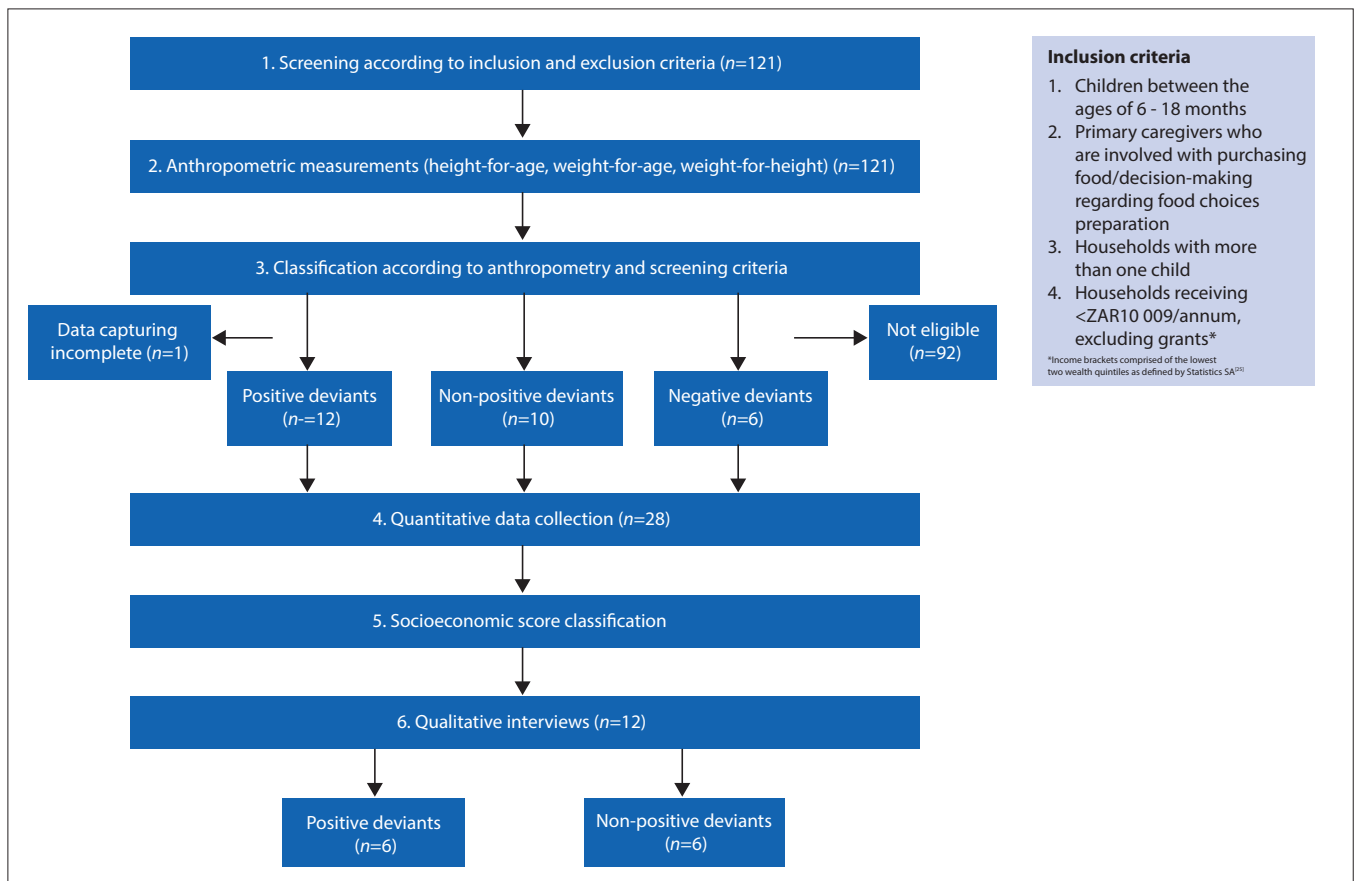

Fig. 1. Flow chart of data collection process.

Table 1. Child, caregiver and household characteristics from demographic questionnaires			
	Non-positive deviant (N=16) n (%)	Positive deviant (N=12) n (%)	Total (N=28) n (%)
Child characteristics			
Age months			
6 - 8	5 (31.3)	7 (58.3)	12 (42.9)
9 - 12	4 (25.0)	2 (16.7)	6 (21.4)
13 - 15	4 (25.0)	0	4 (14.3)
16 - 18	3 (18.8)	3 (25.0)	6 (21.4)
Sex			
Boy	12 (75.0)	5 (41.7)	17 (60.7)
Girl	4 (25.0)	7 (58.3)	11 (39.3)
Birthweight, kg			
<1.5	1 (6.3)	0	1 (3.6)
1.5 - 2.49	7 (43.8)	0	7 (25)
2.5 - 2.9	2 (12.5)	6 (50.0)	8 (28.5)
3.5 - 3.9	2 (12.5)	4 (33.4)	6 (21.4)
Do not know	4 (25.0)	2 (16.7)	6 (21.4)
Gestational age, weeks			
<28	0	0	0
28 - 36	6 (37.5)	0	6 (21.4)
37 - 40	4 (25.0)	7 (58.3)	11 (39.3)
>40	0	1 (8.3)	1 (3.6)
Unknown	6 (37.5)	4 (33.3)	10 (35.7)
HIV status			
HIV positive	0	0	0
HIV negative	12 (75.0)	11 (91.7)	23 (82.1)
Chose not to disclose	1 (6.3)	0 (0.0)	1 (3.6)
Do not know	3 (18.8)	1 (8.3)	4 (14.3)
Caregiver characteristics			
Mother's age, years			
18 - 25	4 (25.0)	2 (16.7)	6 (21.4)
26 - 35	7 (43.8)	3 (25.0)	10 (35.7)
36 - 45	4 (25.0)	6 (50.0)	10 (35.7)
>45	1 (6.3)	0	1 (3.6)
Do not know	0	1 (8.3)	1 (3.6)
Caregiver's age, years			
18 - 25	4 (25.0)	2 (16.7)	6 (21.4)
26 - 35	7 (43.8)	4 (33.3)	11 (39.3)
36 - 45	3 (18.8)	5 (41.7)	8 (28.6)
46 - 55	1 (6.3)	0 (0.0)	1 (3.6)
>55	1 (6.2)	1 (8.3)	2 (7.2)
Number of previous children			
0	3 (18.8)	5 (41.7)	8 (28.6)
1	3 (18.8)	1 (8.3)	4 (14.3)
2	4 (25.0)	3 (25.0)	7 (25.0)
3	4 (25.0)	2 (16.7)	6 (21.4)
≥4	1 (6.3)	1 (8.3)	2 (7.2)
Do not know	1 (6.3)	0	1 (3.6)

(continued)

Table 1. (continued) Child, caregiver and household characteristics from demographic questionnaires			
	Non-positive deviant (*N*=16) *n* (%)	Positive deviant (*N*=12) *n* (%)	Total (*N*=28) *n* (%)
Birth spacing, months			
12 - 24	3 (18.8)	1 (8.3)	4 (14.3)
25 - 36	1 (6.3)	0	1 (3.6)
37 - 48	0	0	0
49 - 60	3 (18.8)	4 (33.3)	7 (25.0)
>60	5 (31.3)	2 (16.7)	7 (25.0)
Do not know	1 (6.3)	0	1 (3.6)
n/a	3 (18.8)	5 (41.7)	8 (28.6)
Maternal education			
No schooling	0	0	0
Grade 1 - 7	4 (25.0)	1 (8.3)	5 (17.8)
Grade 8 - 11	11 (68.8)	5 (41.7)	16 (57.1)
Grade 12	1 (6.3)	4 (33.3)	5 (17.9)
Tertiary	0	2 (16.7)	2 (7.1)
Household characteristics			
Annual household income, ZAR			
<5 553	3 (18.8)	3 (25.0)	6 (21.4)
5 554 – 10 009	4 (25.0)	4 (33.3)	8 (28.6)
10 010 – 18 544	3 (18.8)	3 (25.0)	6 (21.4)
18 5454 – 44 948	5 (31.3)	2 (16.7)	7 (25.0)
>44 949	1 (6.3)	0	1 (3.6)
Employment status and skill level of the primary caregiver			
Unemployed	15 (93.8)	11 (91.7)	26 (92.9)
Employed, unskilled	1 (6.3)	1 (8.3)	2 (7.1)
Employment status and skill level of the father of the child			
Unemployed	4 (25.0)	8 (66.7)	12 (42.9)
Employed, unskilled	1 (6.3)	1 (8.3)	2 (7.1)
Employed, semi-skilled	3 (18.8)	0	3 (10.7)
Employed, skilled	0	1 (8.3)	1 (3.6)
Father not involved in the household	8 (50.0)	2 (16.7)	10 (35.7)
Maternal education			
No grades	0	0	0
Grade 1 - 7	4 (25)	1 (8.3)	5 (17.8)
Grade 8 - 11	11 (68.8)	5 (41.7)	16 (57.1)
Grade 12	1 (6.3)	4 (33.3)	5 (17.9)
Tertiary	0	2 (16.7)	2 (7.1)
Total number of household assets (inside tap water, inside flushing toilet, electricity, telephone, TV, computer and car)			
1 - 2	9 (56.3)	3 (25.0)	12 (42.8)
3 - 4	3 (18.8)	2 (16.7)	5 (17.9)
5 - 6	4 (25.1)	6 (50.0)	10 (35.7)
7	0	1 (8.3)	1 (3.6)
Type of dwelling			
Shack	8 (50.0)	4 (33.3)	12 (42.9)
Wendy house	0	1 (8.3)	1 (3.6)
Tent/traditional dwelling	1 (6.3)	0	1 (3.6)
Flat/apartment	0	0	0
Townhouse	0	0	0
Freestanding house	7 (43.8)	7 (58.3)	14 (50.0)

(continued)

Table 1. (continued) Child, caregiver and household characteristics from demographic questionnaires			
	Non-positive deviant (N=16) n (%)	Positive deviant (N=12) n (%)	Total (N=28) n (%)
Number of people living in the same room			
1 - 2	3 (18.8)	3 (25.0)	6 (21.4)
3 - 4	7 (43.8)	7 (58.3)	14 (50.0)
5	2 (12.5)	2 (16.7)	4 (14.3)
>5	4 (25.0)	0	4 (14.3)
Socioeconomic status			
1 - 5	0	0	0
6 - 10	5 (31.3)	0	5 (17.9)
11 - 15	3 (18.8)	2 (16.7)	5 (17.9)
16 - 20	3 (18.8)	3 (25.9)	6 (21.4)
21 - 25	2 (12.5)	5 (41.7)	7 (25.0)
>25	3 (18.8)	2 (16.7)	5 (17.9)

n/a = not applicable.

provided. These caregivers described how family members assisted with feeding, taught them responsive feeding practices and elaborated on how feeding decisions were made in consultation with other family members.

In contrast to the stability experienced by PD caregivers, NPD caregivers more often expressed instability in support structures and isolation as a barrier, as seen in the following quote:

'But at times I don't have money because I'm unemployed. I have no parents and there is no one else to maintain me because, even myself, I'm living off the grant money which is for the kids'.

Poor IYCF practices across PD and NPD households

Low exclusive and continued breastfeeding rates were reported. A perceived lack of milk production and the perception that breastmilk does not satisfy the infant were prominent reasons for the discontinuation of breastfeeding before 6 months. The most common reason for discontinuing breastfeeding at 6 months was advice from PHC nurses, urging mothers to stop breastfeeding due to the mother's HIV-positive status. This advice stems from an outdated pre-2013 IYCF policy.[14]

The early introduction of solids and liquids, predominately tea and water, was common among all caregivers. However, PD caregivers were more likely to introduce these items at a later stage. The age of introduction of solids ranged from 3 to 6 months. The introduction of liquids was often a replacement for breastmilk or formula milk.

Frequent intake of maize-based starch and low intake of vegetables, fruits and animal-source foods were reported. Daily intake of non-recommended foods (chips, sweets or biscuits) or liquids (tea and juice) was reported more frequently.

Advice from PHC nurses

Advice most often given to caregivers by PHC nurses was to discontinue breastfeeding at 6 months due to the mother's HIV-positive status and to introduce solids at 6 months. One caregiver explained her decision to discontinue breastfeeding and not introduce formula milk or any alternative milk:

'They [the PHC nurse] said it [formula milk and breastmilk] shouldn't be mixed. If he was drink[ing] formula milk it should be it for 6 months, if it's breastmilk it should be it for 6 months. So I didn't use formula milk'.

Other advice provided to caregivers by PHC nurses was varied and ranged from meal frequency to the inclusion of soft foods and foods such as eggs, pumpkin and maize meal.

Discussion

This study aimed to identify strategies among PD caregivers of non-stunted children that influence complementary feeding practices and allow them to raise children with an improved nutritional status.

PD studies investigating IYCF and stunting found that PD caregivers exclusively breastfed for 6 months[8] and introduced solid foods at the appropriate time.[15] In contrast, poor breastfeeding rates and the early introduction of liquids and solids were common among all caregivers in this research.

The poor feeding practices reported by all caregivers highlight the critical need to address and improve IYCF practices. PD caregivers reported giving their children protein more regularly, especially the 'flesh' from protein sources. Whether the perception that gravy is considered a protein source is specific to this community or held by a larger portion of the population should be established. Current SA infant feeding guidelines, Paediatric Food-based Dietary Guidelines (PFBDG) and messages in the Road-to-Health Booklet, specifically mention the different animal protein sources and protein-rich foods but do not mention soup or gravy.[16,17]

Responsive feeding and feeding cues

Responsive feeding refers to the interaction between the child and caregiver at meals which facilitates an appropriate response by the caregiver to hunger and satiety cues.[18] It has been identified as a behaviour practised by PD caregivers in the context of stunting.[9,19]

Repeated exposure to foods in a positive social environment has been linked to an increased willingness to try new foods.[20] The practice of family eating and responsive feeding in PD households may, therefore, explain why PD children's food preferences appeared to play a minor role in food decisions.

Responsive feeding is a skill that could allow caregivers to follow IYCF guidelines. Recommendations regarding responsive feeding practices form part of SA PFBDG,[16] but it has not been included in the most recent update to the Road-to-Health Booklet launched in 2018.[17]

Family eating

Parents modelling healthy eating behaviours to children has been shown to play a role in developing a child's food preference and willingness to try new foods.[20] The practice of family eating, present in most PD households, was linked to the introduction of new foods and the inclusion of proteins.

In contrast, NPD caregivers expressed the value of commercial infant foods as a superior food choice for children. These results, in the context of the high cost of infant cereals and the reported usage of inadequate portion sizes in SA,[21] are concerning.

Non-nutritional PD behaviours

Coping strategies

Health-seeking behaviour and implementing financial strategies were actions displayed more commonly by PD caregivers in response to challenging circumstances. Health-seeking behaviours have been specifically linked to a decreased stunting risk.[22] Improved financial literacy among SA caregivers receiving the child support grant has been found to improve the growth trajectories of children; however, this was not seen to affect height.[23] In the context of high grant usage in this community, improving financial literacy may be an effective way to improve the efficacy of the child support grant.

Social capital

A stable support network was a resource present in all PD households. Social capital has been shown to act as a buffer for households against the negative impact of poverty on HAZ scores.[24] and was present among PD caregivers in India.[15]

Action taken by PD caregivers in this study was often enabled by support, which prompts the question of whether NPD caregivers' lack of response to difficulties was due to a lack of social capital. An understanding of how PD caregivers access social capital is needed.

PHC nurse advice

Caregivers indicated receiving and following advice from PHC nurses, highlighting the important role of healthcare workers as a primary source of information.[14] It is concerning to note that, as found in our study, advice was given to HIV-positive mothers to discontinue breastfeeding at 6 months, based on the outdated 2013 IYCF policy.[14] Low levels of training among healthcare workers regarding updated HIV and IYCF guidelines and confusion regarding these guidelines remain in SA.[6,14]

Health promotional messages regarding complementary feeding practices were received less frequently than advice on breastfeeding. SA PFBDG, which have been field-tested, serve as an example of health promotional messages regarding complementary feeding that should be used within the SA context.[16]

Study limitations

The PD approach, although valuable in capturing complex behaviours, is limited to the local context. This should be considered before determining the transferability of data to other settings. The difficulty in controlling for all risk factors, due to the multifactorial nature of stunting, presents a challenge in obtaining a population with the same risk factors. The selection of children from the same disadvantaged population and usage of selection criteria aimed to identify true PDs with similar risk factors for stunting.

The cross-sectional nature of this research is limited in its ability to adequately capture the chronic nature of stunting. The impact of maternal nutritional status, gestational age and birthweight and length were beyond the scope of the qualitative nature of this study.

Thus, their influence on the stunting status of the child is, therefore, undetermined in this study. A larger sample size would have allowed for assessing the statistical significance of these factors, demographic data collected and a more precise selection of caregivers according to socioeconomic score classification.

Recall bias may have been present among caregivers. However, the main focus of the discussions was based on current feeding practices, except for recalling previous breastfeeding practices, thus this risk was minimised.

Conclusion and recommendations

Poor IYCF practices were present among all caregivers, highlighting the need for continued advocacy and promotion of breastfeeding and complementary feeding. Nutritional PD behaviours identified, including responsive feeding, more frequent inclusion of proteins and the 'flesh' of meat, are key health promotional messages that can be relayed within the local community through social media platforms which are in use, or by establishing mother-to-mother support programmes. These messages are all inherent to the SA PFBDGs and could be disseminated to the broader population. Attention should be given to information on what and how to feed. Outdated HIV and IYCF guidelines and a lack of IYCF guidelines provided by PHC nurses within the local community signified the need for capacitating these nurses in IYCF, specifically regarding HIV-positive mothers and breastfeeding. More research is required to understand the role of non-nutritional PD behaviours, such as the role of child preference, social capital and the influence of improving caregivers' financial literacy on stunting. The presence of nutritional and non-nutritional PD behaviours highlights the need for a multi-sectoral response to addressing stunting and improving IYCF practices.

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