
CHAPTER 10

EXECUTIVE SUMMARY AND RECOMMENDATIONS FROM THE QUALITATIVE AND QUANTITATIVE RESEARCH



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"People cannot be developed, but can be supported to develop themselves" Kavishe (1995:371)(109)

10.1 BACKGROUND

This research study was undertaken to obtain baseline data on the nutritional status and feeding practices of two rural communities. Two health care clinics in the Moretele District in the Hammanskraal area north of Pretoria were identified for the investigation. Children between the ages of naught to 36 months, who were visiting the baby clinic with their mothers / caregivers, were targeted.

This exploratory investigation can primarily be described as cross sectional, prospective and descriptive in the qualitative and quantitative research domains. The study aimed to examine, explore and describe the feeding practices of the studied children and to determine whether or not malnutrition existed in the identified communities. The results of the investigation could be used to substantiate recommendations aimed at the improvement of the feeding practices and the nutritional status of the children, if and where applicable.

Two health care clinics, the Makapanstad and Mathibestad clinics, within the Moretele district / Hammanskraal area which is approximately 45 kilometres outside Pretoria, were identified as ideal for the purpose of the study. These clinics were situated in the non-urban more rural part of the district, approximately 30 kilometres outside the Hammanskraal-proper town area. Individual interviews, using structured questionnaires, and anthropometry were done in the quantitative research domain, and structured focus group interviews in the qualitative research domain. The research was conducted by the researcher and two field workers from September 1995 to March 1996. The two field workers/interviewers (one per clinic) of the same ethnicity as the study group were used to overcome the cultural, literacy and language problems associated with cross cultural research. Convenience sampling was used to draw the sample from mothers / caregivers and their children (six age categories) that visited the baby / child or immunisation clinic on a Tuesday morning in the two areas. Incentives (food parcels), for participating in the research study, were handed out.

Descriptive statistics were done on the quantitative data and the data were presented as frequencies, means, standard deviations and percentages. Inferential statistics were done to test for differences between the two clinics. Content analysis and ethnography were used to analyze the qualitative data. Systematic coding of data as part of the content analysis produced numerical descriptions, while ethnography provided descriptive data / results.

This research study was in line with the conceptual framework and "Triple-A Approach" for addressing malnutrition, which has been adopted as a general developmental strategy (109) (see Chapter 3). The conceptual framework is based on the UNICEF-framework (see Figure 5 in Chapter 3) which is useful in reflecting the many dimensions of the malnutrition problem. It also encourages understanding of the ethical and scientific positions which it encompasses and emphasises good nutrition as an outcome of food security, health and care (109, 110). The

"Triple-A approach" (see Figure 16) is a cyclic process of assessment of the situation, analysis of the problem, and action to solve the problem(s) (12, 32, 109, 110).

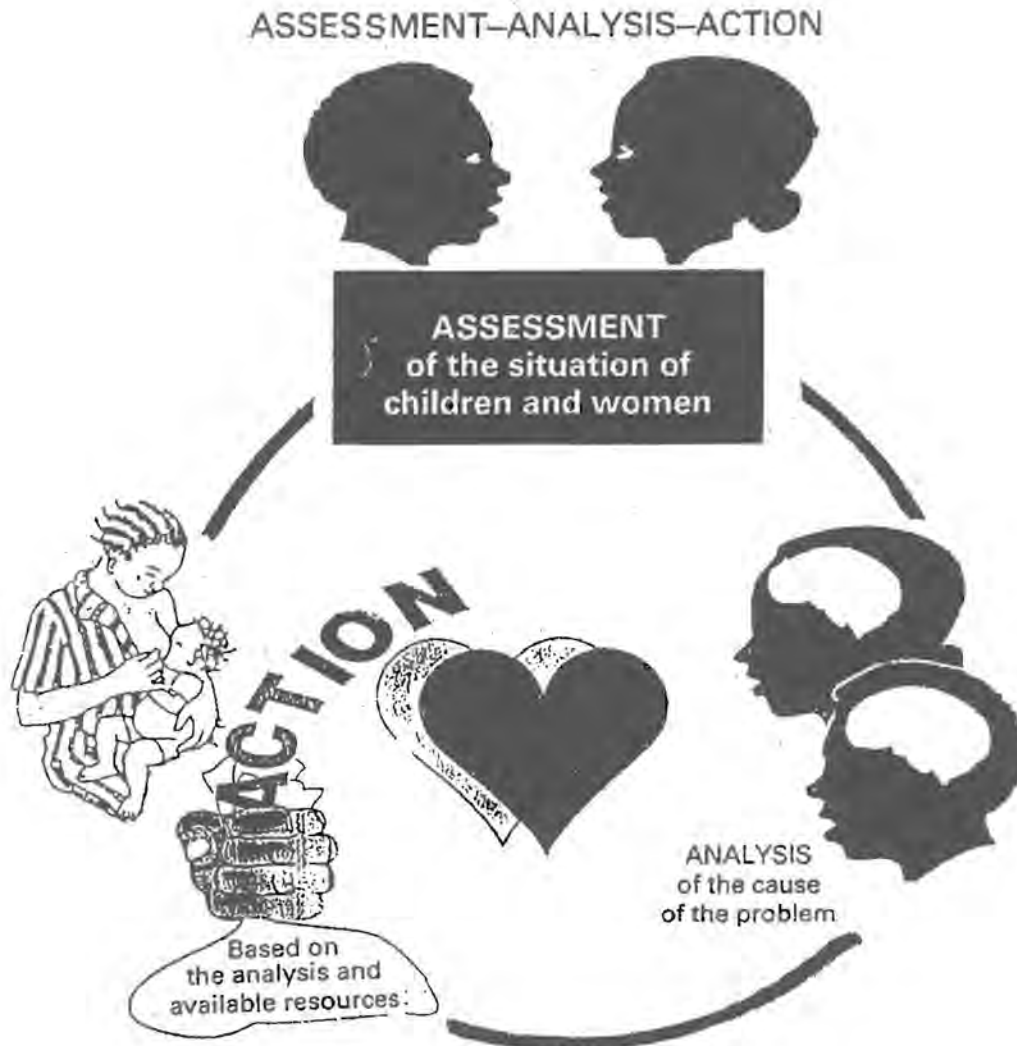


FIGURE 16: "TRIPLE-A" CYCLIC PROCESS OF ASSESSMENT, ANALYSIS AND ACTION USED IN THE DEVELOPMENT OF THE NUTRITION STRATEGY APPROACH TO ADDRESSING MALNUTRITION (109).

The "Triple-A approach" provides a good basis for adaptive programming, which is essential in dynamic situations, and it also indicates where resources should be allocated for maximum quality and impact. The cyclic process avoids delays in taking action and focuses better on each (i.e. assessment, analysis and action) (109, 110). The process uses nutrition information at community level which in turn enables the community to analyse their own problems and utilize their own resources more effectively. It therefore facilitates "adaptive coping" processes, and put the community in control of their own situation, which is an essential ingredient of programme ownership (23, 38, 109). The ultimate aim being the creation of behaviour conducive to nutrition improvement up to the national level by each individual from the household and will help to improve and support care practices (109, 110).

end point of the history with the birth data as the starting point. Calculated averages are reported.

Weight The results for weight showed that the weights of the children of both sexes increased in the first three years of life. At the age of three years the children's weights were on the same percentile as their birth percentile (or even higher), thus indicating that wasting (low weight-for-height) seemed not to be a serious problem in this community (21, 95). However, at the age of 12-24 months there was a slight decline in the percentile curve. The children from the Makapanstad area mostly had lower weights than those in the Mathibestad area. This corresponded with previous research findings indicating that wasting occurred only in a very small percentage of children in South Africa (5). The South African Vitamin A Consultative Group (SAVACG) also reported that wasting was less prevalent than stunting (111).

Length The children from the Makapanstad area showed an initial increase in length (according to the growth percentiles) with a slight decline in the 12-24 month period. However, it recovered to the birth percentile (girls) and to the fifth percentile (boys). The Mathibestad area children had stature problems with the most severe decline in the 12-24 month age groups. At the age of three years the girls' lengths almost recovered to their birth percentile, but the boys' lengths remained below the fifth percentile. These values indicated a lower than normal height-for-age (stunting), but should be interpreted as sub-optimal growth rather than pronounced stunting (21, 95). This finding differed from previous findings indicating pronounced stunting among three to five year old black children (5). However, Steyn et al (5) also reported that the prevalence of stunting was greater than that of underweight, which is similar to the pattern of growth in the children in this study group. SAVACG reported a similar pattern of growth for children aged 6-71 months in a national South African survey, where one in four children was stunted and one in ten children was underweight (111). It was reported that the prevalence of stunting (23% or one in four children) peaked in the 12-23 month group which is similar to the findings in this study group (111).

Head circumference These results appeared to be more favourable in the Makapanstad area than in the Mathibestad area. The measurement of the boys and girls from the Mathibestad area followed the growth curve up to the age of six months. Thereafter the curves flattened out considerably to below the fifth centile. The measurements of the boys recovered to the 25th centile, but that of the girls remained below the fifth centile. The measurement of the boys and girls from the Makapanstad area followed their initial growth curve well, but both groups also showed a decline in the 12-24 month age period. However, at three years of age the average measurement was either similar to the birth percentile or even higher.

Weight-for-height These percentiles showed less dramatic results. Children from the Makapanstad area showed a growth curve similar to the percentiles. Abnormal percentiles were more evident in the children from the Mathibestad area. Both sexes had higher weight values relative to their growth in length, which is an indication of lower growth in height. A normal weight-for-height indicates either normal or stunted growth (6, 95).

In conclusion: it appeared that the children in both areas grew according to their birth percentiles. At the age of three years they were very close to their birth percentiles for weight and head circumference. For length the average measurement was lower than the birth percentile, and the weight-for-height was higher than the birth percentile. The abnormalities reported in the growth pattern seemed to occur at a similar stage in the life of the child, namely between the ages of 12-24 months, peaking at 18 months. These results corresponded with previous research done in South Africa (112) and could probably be associated with changes in the food intake which impacts the growth profile at this specific time in the life cycle; e.g. the sudden almost complete exclusion of milk from the diet, and / or the lack of other sources of high biological value protein in the diet. It was found that the children in these groups were initially not allowed to eat much additional protein like meat, due to the fact that it was culturally believed to cause worms (see qualitative results: 9.1.1.3 in Chapter 9) (12, 107). Inappropriate feeding practices, like too early introduction of solids, giving solid food before breast feeding and infrequent consumption of micronutrient rich foods might also have contributed to the poor growth pattern (111). This pattern of growth confirmed the theory on the weanling's dilemma (8, 12, 13, 63), which is associated with poor growth occurring at the age of six months to two years whereafter the nutritional status stabilizes again (8, 12). The growth pattern appeared to be worse in the Mathibestad area indicating more growth faltering, although pronounced wasting and stunting were not found.

10.2.1.2 Dietary adequacy

The **second research objective** addressed within the **quantitative** research domain was about the feeding practices of the children:

"How nutritionally adequate is the diet of children (0-36 months old) in the Moretele district?"

A detailed 24-hour recall of usual food intake was done for each child (in terms of types, methods, portion sizes). The food intake data were coded as previously described and analyzed by means of a software program (Foodfinder)(129)(see Chapter 5). The nutrient calculations were compared to both the RDA (1989) and WHO dietary reference standards.

Energy and all the macronutrients were consumed in adequate quantities. The protein intake (10-11% of total energy intake) compared well with the research findings of Steyn et al (5)(15%), Walker (17)(10-14%) and Van Staden et al (101)(13%) in black rural communities; the carbohydrates (67-75% of total energy intake) to that of Steyn et al (68%)(5), Walker (65-80%)(17) and Van Staden et al (50-54%)(101); and the fat (21-25% of total energy intake) to Steyn et al (19%)(5), Walker (10-25%)(17) and Van Staden et al (35-39%)(101). The main recommendation would be to decrease the intake of starch rich foods to 60-65% and to increase the animal / plant protein intake. Emphasis should be on the sources of protein in the diet, focusing on high biological value proteins that would be affordable to sustain growth and development.

The vitamin A intakes were adequate except for the 13-36 month age groups (both areas) who had an inadequate intake. The intake of iron-rich foods was fairly low, but still adequate if fixed cut-off points were implemented in the RDA-analysis. The research findings of Van Staden et al (101) confirmed that 70-80% of their study group had iron intakes lower than 67% of the RDA, and SAVACG(111) found a high prevalence of anaemia and poor iron status in the national South African survey. The South African National Nutritional Status Study Group (SANNSS) also reported that the intake of iron was low in population groups vulnerable for iron deficiency, namely young children, adolescent girls and women (113). It may, however, be of value to consider the sources of iron consumed in these communities. Intakes should be evaluated in terms of the bioavailability of iron (14), as most of the diets were composed of low bioavailable iron sources like cereals, as well as containing polyphenols (tannins in tea) which inhibit iron absorption (7, 114). The intake of zinc was also low in all the age groups according to both sets of standards. SANNSS (113) similarly found that the zinc intake was low in all population groups of all ages.

The intakes of the other micronutrients were adequate (in terms of both sets of standards) except for vitamin B₃, vitamin D and calcium. Niacin intakes were either low or just above the fixed cut-off level RDA (reference standards). It may be of value to look into the niacin intakes of the children in these communities, and to ensure that adequate niacin is consumed in all age groups, due to the fact that pellagra is still found in countries where corn/maize is a major staple, such as South Africa (35).

Vitamin D was consumed to a level of about 35% of the reference value, which indicated a very low food intake. Generally this is not considered a problem due to the high sunlight availability in SA. But it must be taken into consideration that the dark pigmentation of the skin (similar to the children in this study group) may prevent sufficient ultraviolet light from penetrating the skin (14). The vitamin D status of these children needs to be evaluated more closely to prevent rickets or osteomalacia that could occur at a later stage in their lives.

The calcium intake should be considered in conjunction with that of vitamin D. The calcium intakes hardly reached a level of 50% of the reference values in all age groups. This finding confirmed previous research findings of poor calcium intakes (39-48% with intakes <67%RDA)(101), low milk intakes (7), and low calcium intakes in black rural and urban settings due to infrequent consumption of milk and milk products (113). For infants and children vitamin D is an essential vitamin that ought to be present in the body to absorb and use calcium effectively (14). If both calcium and vitamin D are continuously deficient, rickets (reduced bone quality and normal bone quantity), reduced growth or osteomalacia may result eventually. It is therefore imperative to give attention to the intakes of iron, zinc and calcium and vitamin D) on the whole in these communities as they play such an important role in growth (114). Even though the protein and kilojoule intakes were sufficient, it was only marginally so. For growth to occur optimally, all the nutrients implicated in the process need to be present simultaneously (14).

10.2.1.3 Food security

The **third research objective addressed within the quantitative** research domain dealt with the feeding practices of the children:

"What are the mothers / caregivers perceptions of hunger and food security with reference to the household, themselves and their children?"

The adapted Radimer hunger scale (42, 48) was implemented to evaluate the food security of the mothers / caregivers. Each mother / caregiver completed a hungerscale questionnaire during the individual interviews. Household hunger, as well as the individual hunger of the mother / caregiver and her child was evaluated. Three response categories, namely "never", "sometimes" and "most times", existed as possible options.

A summary was compiled from the mean responses in each subtype of hunger in order to present an overview on food security / insecurity (Table 78). For example in the household hunger category five questions were asked. The responses, indicating the worst scenario ("never", "sometimes" or "most times"), were summated and a mean value for each scenario was calculated.

TABLE 78: SUMMARY OF THE RESPONSE RATES OF THE TWO CLINICS CONCERNING THE DIFFERENT TYPES OF HUNGER ON THE HUNGER SCALE

TYPE OF HUNGER	RESPONSE RATE (%)					
	WORST SCENARIO		INTERMEDIATE SCENARIO		BEST SCENARIO	
	MP	MT	MP	MT	MP	MT
HOUSEHOLD HUNGER	46.59	15.95	29.41	54.16	24.00	29.89
WOMEN'S HUNGER	60.68	24.72	23.24	45.23	16.08	30.05
CHILDREN'S HUNGER	65.79	33.43	17.70	42.70	16.51	23.87
TOTAL HUNGER (MEAN OF THREE HUNGER TYPE MEANS)	57.69	24.70	23.45	47.36	18.86	27.94

DIFFERENTIATED BY CLINIC: MAKAPANSTAD = MP, MATHIBESTAD = MT

It can be concluded that the mothers / caregivers from the Makapanstad area responded more often to the worst possible scenario in each of the three categories on the hunger scale. The mothers / caregivers from the Makapanstad area could be perceived as being food insecure to a percentage of 57.69% (mean of the responses to the worst scenario [food insecurity] for each question for all three hunger types). The perception of the prevalence of children's hunger was the highest (65.79%), followed by women's hunger (60.68%) and household hunger (46.59%). This is different to the findings of Radimer(1990)(60) and Keane & Willetts (1994)(68), indicating that when money is tight in a family situation, parents (specifically the mothers) would frequently go without food (becoming food insecure) to ensure that their children are fed.

The mothers / caregivers from the two clinics responded significantly different ($P < 0.05$) to the

questions in the three categories. The mothers / caregivers from the Mathibestad area could be perceived as being food insecure to a percentage of 24.70% (mean of the responses to the worst scenario [food insecurity] for each question for all three hunger types). In this area the perception of the prevalence of children's hunger was the highest (33.43%), followed by women's hunger (24.72%) and lastly household hunger (15.95%). The results from the Makapanstad area revealed a similar tendency; the frequency rates however differed and food insecurity appeared to be worse. However, anthropometrically the children from the Makapanstad area were less affected as their growth profile appeared to be better than that of the Mathibestad area children, and nutritionally their dietary evaluation did not show a significant difference.

The results from the hunger scale should however be interpreted with caution. The hungerscale was used on a totally different cultural and language group as the standardization group (48). Uncontrolled, even uncontrollable misunderstanding and / or difference(s) in interpretation of the questions could influence the results. These results however could be regarded as indicative of existing perceptions regarding food security in the two communities.

10.2.2 QUALITATIVE RESULTS

Focus groups were used to discuss various aspects concerning feeding practices and nutritional knowledge and attitudes. A structured interview schedule had been developed, including six major topics on nutrition of the child. Four topics covered the feeding practices and two topics the nutrition knowledge and attitudes towards nutrition. All the questions / probes included in the interview schedule were identified from the literature as being appropriate to best explore the feeding practices, nutrition knowledge and attitudes towards nutrition of the mothers / caregivers included in the study group. Content analysis and ethnography were used in the analysis of data.

10.2.2.1 General knowledge on infant feeding and health

Many of the responses given by the mothers / caregivers were restructured into physical units referring to the micro environment and meso environment. An interesting observation was that the responses referring to the micro environment (own experiences) mostly came from the Makapanstad area, and that the responses referring to the meso environment (clinic) mostly came from the Mathibestad area. This supported the observation that the mothers / caregivers from the Mathibestad area made more use of the clinic. This observation was further supported by the fact that the mothers / caregivers in the Mathibestad area practiced the weaning age (three months) as recommended by the clinic staff correctly, in contrast to the mothers / caregivers from the Makapanstad area who used a variety of weaning ages. Weaning / introduction of complementary foods was usually not started before the age of three months.

Breast feeding was the choice feeding that most mothers gave to their newborn babies. Bottle feeding was only given in cases where breast feeding was physiologically or clinically impossible. It became evident from these general discussions that mothers / caregivers were not fully informed

on the advantages and disadvantages of bottle feeding, since they did not consider bottle feeding as a financial burden (11.8%) when implemented. Formula powder was used by these mothers / caregivers, though not as bottle feeding, but scoops of formula powder as such were added to the soft porridge of the babies.

The importance of the clinic to the people in the community was noticeable. It was stated clearly that the people went to the clinic to get help if their children were sick with any type of illness, as the purpose of the clinic was to help cure diseases. When a child became sick, mothers / caregivers would implement the knowledge gained from the clinic first, but if these curative measures (like "motswako") did not take effect, the general practice was to take the child to the clinic for other medical treatment. The credibility of the clinic staff in terms of information received with reference to baby feeding was very high. All the mothers / caregivers had a highly positive view of the clinic in their area and they felt that the information gained from the clinic was useful and made them knowledgeable on previously unknown matters. It could be concluded that the clinics played an invaluable role in the communities and that they could be used positively to train the staff even more in terms of health care practices and nutrition. They could then train the mothers / caregivers of the children during their clinic visits to get them involved in the health care of their children. This is important as most of the mothers / caregivers did not consider nutrition or the actual food intake behaviour as being important in evaluating the health status of their babies. No consideration was given to the type of foods, variety, nutritional value or quantity of foods given to the child. Only the general appearance of the child and the weight measurements recorded on the growth chart during clinic visits were considered as important indices of good nutritional status. Education regarding general baby care, the growth progress of babies, their nutritional needs and food intake behaviour could benefit the nutritional status and general wellbeing of communities.

10.2.2.2 Breast feeding

The **first research objective** addressed within the **qualitative** research domain was about the feeding practices of children:

"What are the breast feeding practices of mothers in the Moretele district?"

Initiation of breast feeding was discussed at length by the focus groups. It was concluded that the mothers / caregivers from the Makapanstad area experienced a delay of one or more days in the initiation of breast feeding (due to a perceived lack of milk as colostrum was not viewed as milk), while the mothers / caregivers from the Mathibestad area were implementing breast feeding within half a day after the birth of the baby. This is similar to the research findings in KwaZulu-Natal and in the Western Cape, where breast fed infants were only put to the breast for the first time the day after birth (112).

Information on the duration of breast feeding sessions remained vague. Mothers / caregivers could not tell how long a child was breast fed during each session. Obtaining accurate breast milk intakes in these communities were thus very difficult. This was similar to the results obtained from

the quantitative questionnaires (24h-recall of food intake)(see 7.3 in Chapter 7). Mothers / caregivers were not concerned about the volume of milk taken in by the baby during breast feeding, but rather with the happiness and physical appearance of the child. The child received breast feeding for several reasons: to stop crying, to quench thirst, to feed, to be put to sleep. If the breast feeding alone would not keep the child happy, food was immediately added to the milk feeds.

All the focus groups responded positively to giving the baby something to eat / drink together with breast feeding. Exclusive breast feeding was rarely practised in these communities which is similar to previous research findings (115, 116). Babies were mostly given additional food / drinks about three times per day. Most mothers / caregivers indicated that the ideal time of the day to give a baby something additional was after a breast feeding session. The age of three months was indicated as being the appropriate age for the introduction of solid foods. A total of 63% of mothers / caregivers gave solid food to their babies between the ages of two and three months, and a mixed family diet by the age of 7-9/12. It can be concluded that mothers / caregivers were adding foods to the diets of their small babies far too soon and mostly unnecessarily.

Recommendations from this research study concerning breast feeding is that a nutrition education program in this regard should be developed and implemented. It is of the utmost importance to make the mothers / caregivers attentive of the value of breast feeding to the child, and to refine the actual practices. Nutrition education, concerning the value of initiating breast feeding soon after birth, exclusive breast feeding, the value of a specific breast feeding routine, ad lib breast feeding (various purposes), the correct age to add complementary foods with the correct reasons for it, the nutritional value and functions of specific foods in the diets of babies and the weaning procedure, is recommended (14, 35).

10.2.2.3 Bottle feeding

The **second research objective** addressed within the **qualitative** research domain was also about the feeding practices of children:

"What are the formula feeding practices of mothers / caregivers in the Moretele district?"

It was clear from the discussions in the focus groups that the mothers / caregivers involved in this research study preferred breast feeding over bottle feeding. The reasons given dealt mainly with the physiological suitability of the feed. Hygiene was also mentioned as a concern / or reason to avoid bottle feeding. Some of the reasons given for giving bottle feeding to a baby were acceptable (illness and breast illness) and were medically / clinically substantiated. Some of the other reasons mentioned, however, were unjustifiable (free choice, perceived lack of milk, low milk production).

Cow's milk was seldomly used in bottle feeding. Reasons why cow's milk was not used, was mainly twofold: not being of a suitable composition and being unpasteurized. The conclusion was made that some mothers / caregivers misinterpreted the term "cows' milk" as that one should have

one's own cow to milk, hence the concern about pasteurization and the reported reaction that they did not own any cows.

Formula milk and full cream milk powders were frequently used by the mothers / caregivers. The preparation of bottle feeds was also investigated. The source of information for mixing procedures seemed correct and adequate (reading instructions from the tin), but the actual mixing method practiced was questionable. Only about half of the recipes reported were of the correct/ideal measurement (one scoop of formula per 25mL water). Two-thirds of the remainder of recipes reported were too weak and a third were too strong, therefore altering the quality of the feed. In both instances the mothers / caregivers were unaware of the consequences of the over dilution / under dilution to the child. Further investigation into the reasons for making feeds either too weak or too strong is indicated.

Choosing the ideal type of feed for a baby is an issue that each mother has to address when she is pregnant. It is thus very important to inform all mothers / caregivers of the choices available, the situations indicated for the use thereof, as well as about the advantages and disadvantages of each (14, 117). If it is unavoidable to introduce bottle feeding, mothers / caregivers should be informed about the appropriate choice and the correct mixing procedures. However, knowing the correct mixing procedure, will not necessarily lead to it being practiced. Knowledge is just one part of the decision making process; the mother's / caregiver's values, experiences and problems are part of the process (118).

Recommendations concerning bottle feeding are that a clients-centered interactive nutrition education program should be implemented. With interactive nutrition education the learners share their problems, knowledge and experience with the other group members (118). When feeding practices are discussed, issues such as breast feeding or bottle feeding problems would be addressed. Ultimately such an educational training program would aid in the advancement of proper breast feeding practices and avoidance of introducing bottle feeding. Training of the clinic staff on these issues would be the ideal approach. They could in turn become educators / group facilitators responsible for the education of the mothers / caregivers who have to introduce bottle feeding (118). Other topics that should be included are: the suitability, advantages and disadvantages of all the available feeds, proper training on mixing procedures and problems with over dilution or under dilution of feeds, hygiene practices, purifying water, ideal handling techniques and the keeping of leftover feeds.

The **third research objective** addressed within the **qualitative** research domain was also about the feeding practices of children:

"What are the weaning practices of mothers / caregivers in the Moretele district?"

Mothers / caregivers did not know the reasoning behind the sequence for the introduction of solid foods into the diet of the baby. Vague reasons were given and a lot of misconceptions were reported. Soft porridge was mostly given to babies due to its soft texture, its satiety value, its perceived nutritional value and its availability. It seemed that the food for children was often overcooked; usually with a lot of water in order to achieve a soft textured product. The maize meal was washed and thinned with water and also boiled for a long period of time. With continual washing and adding of water a very soft textured product was achieved. This finding supported previous findings which indicated that traditional starchy staple porridges were usually diluted with water to achieve an appropriate consistency, but which consequently compromised the nutritional intake due to the decreased energy density of the food (12, 13, 64, 66).

A few additions were made to the food of the children. Margarine and formula powder were mostly added to the soft porridge. This practice should be encouraged as margarine could improve the kilojoule content of the child's diet and the formula powder could improve the protein and micronutrient content of the diet. The volume of milk drunk by these children when weaned was poor. Most of the children did not even consume 250mL milk additional to their weaning foods. This does not comply to the needs for growth and could eventually lead to suboptimal bone growth. The milk (other than breast milk) given to children was also often made too weak and thus contributed suboptimally to the nutritional requirements and growth needs of these children.

Children's food was prepared separately in their own pot according to the cultural belief. The main reason being that children ate at different times of the day than the adults. It was also reported that when the mother was pregnant, the child would get sick if eating from the same pot. It became evident that the mothers / caregivers in these communities still adhered to their cultural beliefs in terms of food choices and cooking practices for babies and young weaning age children.

In Table 79 the results from this research study are compared to the weaning recommendations (10).

TABLE 79 : COMPARISON OF RESULTS TO THE BASIC WEANING RECOMMENDATIONS (10)

Weaning foods	Months									
	0	3	6	9	12	15	18	21	24	
Breast milk	----- *****									
Staple weaning food and other grains	----- *****									
Soft fruits and vegetables	----- *****									
Meats and other protein rich foods	----- *****									
	Transitional period			ideal			study group			
	Given regularly			-----			*****			
	-----			-----			-----			
Reflections										
1. Breast milk should be given exclusively for the first four to six months. In developing countries breast feeding should be encouraged throughout the first two years, even if it provides only a small part of total intake. <i>In this study group breast milk was given exclusively for the first one to two months only, but continued to the age of eighteen to twenty-four months.</i>										
2. Beginning at four months and no later than six months, the infant is gradually introduced to complementary / weaning foods. The sequence of introduction is not precise and schedules will vary since each infant will progress at his/her own rate. A staple food that is kilojoule dense and adequate in protein is important and variety is essential in providing for complete nutritional needs. Iron, zinc, vitamin D, and vitamin A-rich foods should be emphasized. Initially, complementary foods are given once a day, then gradually the frequency is increased so that the infant is eating two to four meals per day by about six months of age. Infants over six months of age need to eat meals and snacks about four to six times a day in addition to breast feeding. <i>In this study group cereals were introduced as early as two months. The next two types of foods introduced were fruits and vegetables. Meat was generally not given to small children. Children followed a regime of three meals a day from very early on and snacks were not introduced to the diets of children.</i>										
3. To avoid bacterial contamination, only freshly cooked or freshly peeled or washed foods should be used. The hands of both the food provider and child should be washed before handling food. <i>In this study group foods not finished at one mealtime were kept for later use under unsuitable conditions, increasing the risk for infection.</i>										
4. Throughout the latter half of the first year of life, variety in taste and texture of diet is expanded. As the child approaches one year of age, he should be encouraged to feed himself, and by two years of age, he should be consuming a varied diet from the family diet with choices from each of the food groups. <i>In this study group the children were introduced to the full family diet by the age of twelve to eighteen months. However cultural practices were adhered to with regard to the inclusion of a limited variety of nutritious foods.</i>										

Recommendations concerning weaning are that an interactive nutrition education program regarding food preparation will be of value in these communities. Sharing problems, knowledge and experience about weaning could have a positive effect on the practices (114). Nutrition education, especially about the use of milk other than breast milk (powder milks / formulas) after weaning, its value in the diet and its importance for growth and health in specified quantities, needs to be implemented in these communities.

10.2.2.5 Nutrition knowledge

The **fourth research objective** addressed within the **qualitative** research domain was about the nutrition knowledge of the mothers / caregivers:

"What is the nutrition knowledge regarding infant feeding of the mothers / caregivers of children (0-36 months old) in the Moretele district?"

The children in these communities appeared to be eating an acceptable number of meals. Most mothers / caregivers knew the reasons for giving three or more meals to their children. Meal frequencies were best explained by remarks on hunger and satiety, stomach capacity and adequate growth. Poor between meal snacking was identified which might contribute to a lower total energy intake. This finding supported findings in the literature indicating that weaning foods were not given three times per day in developing countries (12, 13, 66). Van Staden et al (1994:93)(101), however, reported that about one-third of daily energy and nutrient intakes came from between-meal eating. Children, especially in the older age groups where the children are more active, should receive snacks in-between meals. Mothers / caregivers should take age and inclusion of solid foods in the diet of the baby into consideration when planning the frequency of their children's meals. For the small babies it would mean less meals and no snacks, and for the older children it might mean two to three meals with snacks in-between.

The evaluation of the diets of the children showed that only 6.0% of the children had an adequate intake of milk. Poor nutrition knowledge concerning foods that aid in building strong teeth and bones was identified, as well as misconceptions concerning food choices in this regard, probably due to the misinterpretation of product advertisements and media coverage. Meat intake was poor, and mothers / caregivers hardly had any knowledge on the nutritional value of meat and other proteins in the diet of the child, and did not know any of the functions proteins fulfill in the body. Adequate energy foods were consumed, but the mothers / caregivers did not have a clear idea about the different suitable energy-rich foods and why they should be included in the daily diet. The variety of foods included in the diet of the child seemed to be very limited. Foods rich in vitamin A and carotene were consumed infrequently. These results confirmed that the children, aged naught to three years old, did not have a nutritionally balanced diet, considering the protein, carbohydrate, fat, vitamin and mineral content of the diet, which could probably partially be explained in terms of the revealed lack of knowledge, as well as the limited variety in the diet.

Recommendations concerning nutrition knowledge are that the mothers (and adults) in these communities should be educated about the value of a balanced food intake and suitable meal and snacking patterns, taking the budget into consideration. The focus of the nutrition intervention needs to be on the value of children's diets, how to balance their intakes correctly, nutritionally sound food choices and the compilation of a suitable diet, as well as reasons for implementing these recommendations. Nutrition education concerning food choices should address cultural beliefs as well. There also seemed to be a need for education on hygiene concerning food preparation and food storing practices. Leftover food or milk was kept in the shade or some other storage space, and unboiled water was used frequently in the preparation of milk feeds. Although most of the mothers / caregivers were aware of the causes of vomiting and diarrhoea, some culturally accepted misconceptions were also still perceived as causes. Education is necessary to eradicate these misconceptions and to establish the correct nutrition knowledge concerning hygiene, which would then hopefully be implemented as sound practices.

10.2.2.6 Attitudes on nutrition

The fifth research objective addressed within the **qualitative research** domain was about attitudes:

"What is the attitudes towards nutrition of the mothers / caregivers of children (0-36 months old) in the Moretele district?"

Most mothers / caregivers considered money an important factor in order to be healthy. They also considered all the foods that they consumed as being unhealthy, which was not the case. Their perception was that the food that they had available to them was not good for them since they did not have enough money to buy healthy foods (own perceptions). Although this could be regarded a valid response to a certain extent, some misconceptions concerning the role of money in healthy eating need to be addressed, and people should be guided to make healthy food choices even with the small amount of money available to them.

The mother's / caregiver's perception of the relationship between food and health could be summarized as follows: "we are healthy, therefore the foods we eat are healthy", which is the opposite to the known and accepted reasoning that one should eat healthy foods in order to be healthy. This is in agreement with findings from previous research (46). Food as a common concept was considered important and not specific types of foods with their specific functions. This finding is in agreement with previous findings that the functions of foods and their importance for consumption were not really known nor practised (46).

The focus group results showed that the mothers / caregivers had been exposed to information associating poor health with obesity, but that they did not understand the reasons for it. It would also be necessary to include nutrition education on PEM and the symptoms of malnutrition in order to clear up all the misconceptions regarding body weight and health.

Traditions and cultural beliefs were still adhered to in these communities. However, some mothers / caregivers indicated that they thought that some of these practices were old fashioned and needed to be changed. The traditions mentioned, concerned the allocation of food to different family members which could also contribute to household food insecurity. Having enough food at household level does not guarantee the nutritional wellbeing of every household member, especially the children, as has been reported previously (see conclusions on food security, 10.2.1.3) (119). Most of the mothers / caregivers in the Makapanstad area still had a positive attitude towards cultural issues while the mothers / caregivers from the Mathibestad area were more open to change.

Nutrition knowledge concerning the use of healthy foods, and reasons for overweight and underweight were poor and should be included in a nutrition education programme. An increase in knowledge on nutrition and nutrition related matters could positively influence the attitudes on nutrition, and more positive attitudes will probably improve nutrition practices (113, 114, 120). If the people participate in an interactive nutrition education program by discovering their problems and finding solutions to their problems, they will probably change their attitude towards the aspects involved and agree to the changes recommended. They will also be able to make informed decisions about their diet, since they will be empowered to take control of their eating habits and the associated outcomes by changing their practices (118, 120).

A summary of the forementioned results on the nutritional status and feeding practices is presented in Figure 18, based on the UNICEF model (causes of child malnutrition / survival and development; see Chapter 3; Figure 5).

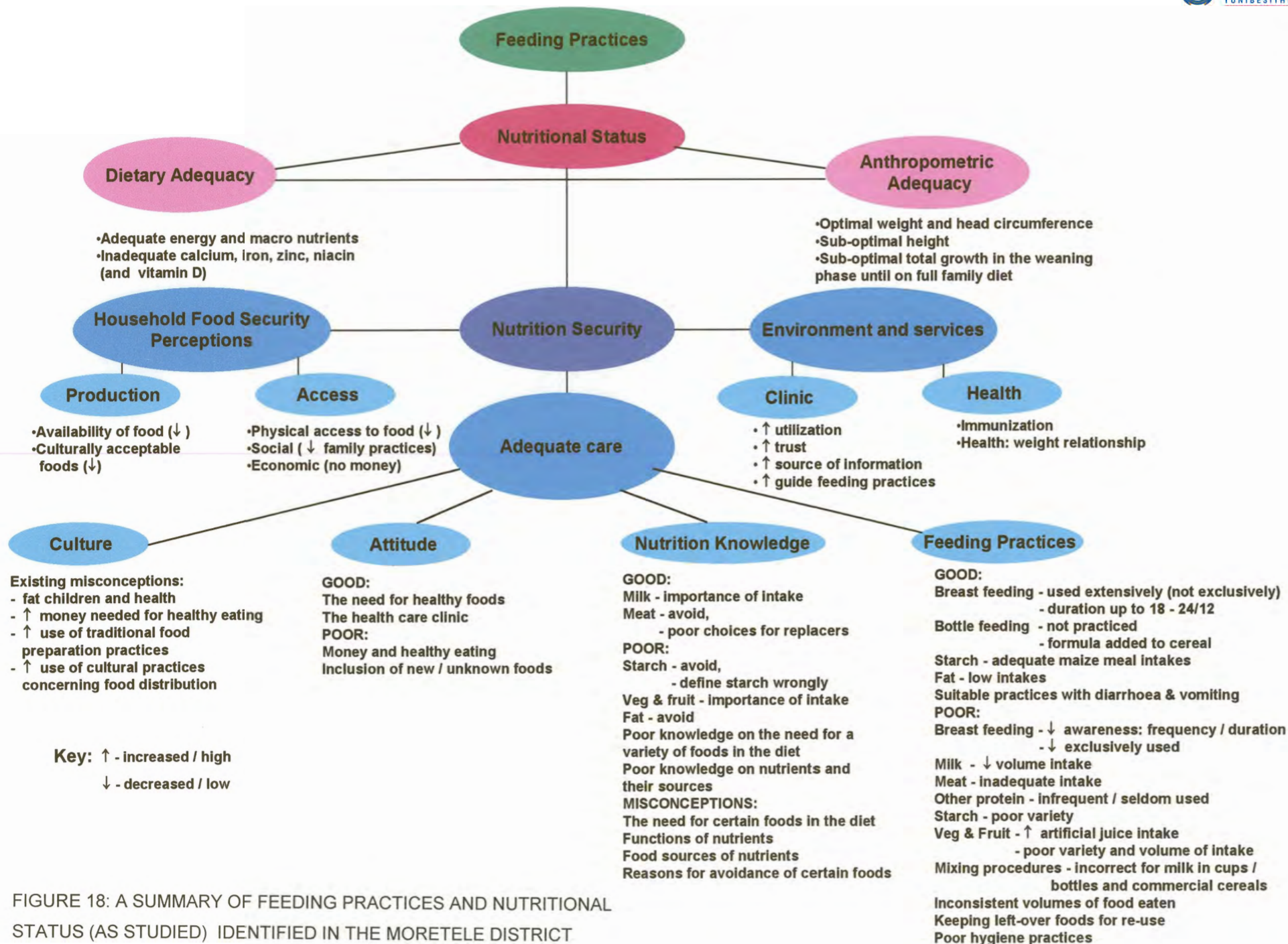


FIGURE 18: A SUMMARY OF FEEDING PRACTICES AND NUTRITIONAL STATUS (AS STUDIED) IDENTIFIED IN THE MORETELE DISTRICT

10.3 REFLECTIONS ON RECOMMENDATIONS

During the data analysis it became clear that the mothers / caregivers of the children in the research group had inadequate nutrition knowledge leading to unsatisfactory feeding practices of their children. Adherence to strict cultural beliefs and practices further impeded the quality of the feeding practices. Nutrition knowledge needs to be changed in a first step towards implementing improved feeding practices (6, 12). Therefore much emphasis has been placed in the discussion and recommendations on the role of nutrition education. The nutrition education should be focused on improving current knowledge, attitudes and practices, as well as eradicating misconceptions in order to improve the health status of the people in these communities in the long run. Nutrition education as such forms part of the so called food-based strategies (121).

Food - based approaches promote the consumption of foods that are naturally rich in micronutrients or are enriched through fortification. The quality and quantity of foods ingested impact on the nutritional status of the individual, as has been shown in Figure 5 and Figure 6. Micronutrient malnutrition and its effects on human life and its negative impact on economic development can be largely eliminated by improving the nutritional quality of the food supply and by educating people about good dietary practices (120, 121). Because children, who are the future workforce, are frequently the victims of these deficiencies, failure to deal with the problem may jeopardize the future of a nation (121). Food - based strategies, which include food production, dietary diversification, food fortification and nutrition education are the most sustainable approaches to increasing the micronutrient status of populations. These strategies also are the only viable, cost-effective and sustainable solution to micronutrient malnutrition (121).

Various reasons and advantages were given by the Food and Agriculture Organization of the United Nations and International Life Sciences Institute (1997)(121) to implement food - based strategies; amongst others food - based strategies:

are *preventive, cost-effective, sustainable and income generating*

Measures to improve malnutrition in South Africa should support small scale black farmers to produce a variety of food products and should support income-generating activities in the rural areas (25, 38, 119);

are *culturally acceptable and feasible to implement*

Underwood (1985)(63) indicates that it is to the advantage of poor families to use local foods more appropriately. The thin culturally acceptable gruels fed to infants contribute to an insufficient energy intake. This can be addressed by adding oil, peanut butter, avocado, sugar and soya to the traditional porridge (12). In the Moretele communities margarine and formula powder were added to the porridge. These practices should be reinforced and other culturally acceptable additions like sugar or soya could also be promoted;

promote self-reliance and community participation

Traditional technologies should be promoted and home gardens, multi-mixes and simple recipes are ways in which traditional weaning diets and family nutrition can be improved (12, 63). However, gardening projects must lead to increased consumption of the micronutrient rich food produced for it to be of any value. These projects should therefore be linked to nutrition education programmes. Community participation and the involvement of women are usually the key to building support and achieving the change that results in nutritional benefits (121). Community - based programs should focus on the processing of local foods at a subsidized price; to ensure effective and competitive markets to achieve low prices for the consumer, but also fair prices for the producer (12, 63, 121);

take into account the crucial role of breast feeding and the special needs of infants during the critical weaning period

Breast milk should be given exclusively for the first four to six months and encouraged through the weaning phase to the age of 18 to 24 months. WHO and UNICEF have launched an international programme to promote breastfeeding in 1991 (the international Baby Friendly Hospital Initiative). The South African national breastfeeding policy is based on this joint WHO/UNICEF statement and provides practical guidelines that include the information, protection and support that women need to breast feed successfully (6, 26, 54). Formula feeding for babies should thus be discouraged and in 1981 the WHO International Code of Marketing of Breast milk Substitutes was approved and implemented internationally (12, 54, 63). The South African code of ethics on the marketing of breast milk substitutes is based on this document (6).

To improve the diets of young children, many interventions are focused on the type and quality of weaning foods (12). In the absence of inexpensive, high quality weaning foods, people end up buying inferior substitutes such as potato chips, cheese curls, sugar, sweets or biscuits. This seems to be in wide use among the poor (12, 51) and was also witnessed in the Moretele communities;

foster the development of sustainable, environmentally sound food production systems

With sufficient access to water, fertile soils and seed or seedlings and an understanding of the local conditions, small scale producers may have a significant increase in success with small or large scale production of vegetables and fruit. Perishable goods need to be processed or preserved to increase year-round availability of seasonal micronutrient-rich foods (121);

build alliances among government, consumer groups, the food industry and others to achieve the goal of preventing micronutrient malnutrition

Food supplementation programmes are extremely effective in preventing malnutrition in both developing countries and poor communities (122). Promotion of household food security will be the end-result of such cooperation (food stamp programme / general consumer subsidy / price control on basic commodities)(38). The benefit of these programs is to the children and to the society by creating a healthy population able to learn, work and earn (122). Walker & Vorster (1993:2)(123), Coovadia (1993:18)(25) and the SAHR (1996:141-150)(26) list the options for possible dietary interventions in South Africa as follows:

- channelling food supplies to various vulnerable groups in general; specifically to malnourished children and pregnant women
- school-feeding schemes — the Primary School Nutrition Programme
- provision of food stamps
- provision of cheaper food — especially the cereal staple foods — via subsidization of their cost, and making them VAT free
- stabilisation of food prices
- fortification of cereal products with calcium, iron, vitamin A and B vitamins (121, 124)
- public work schemes for the unemployed
- vitamin A supplementation for prevention of measles
- improving women's nutrition to reduce low birth weight babies
- iron supplements targeted to specific groups with increased needs — especially young children and infants.

Appropriate food vehicles and fortificants should be selected to enhance the micronutrient status of the target group (121, 124).

Nutrition education as a component of food - based strategies emphasizes prevention. To improve child feeding practices, parents, family members, other caregivers and health care providers must have access to nutrition information regarding the following aspects:

- ☞ the timely introduction of complementary foods
- ☞ the types of food required in order to make informed choices
- ☞ the quantities of food required
- ☞ hygienic practices of food preparation and storage
- ☞ the importance of frequent and active feeding
- ☞ customs and cultural beliefs about food (12, 26, 49, 51, 64, 69, 114).

Nutrition education must focus on the imparting of the necessary information, but also on the motivation of people to change their behaviour (6, 12, 120). Cultural factors and taboos have a powerful influence on feeding practices and eating patterns. Young mothers / caregivers often find it impossible to ignore their elders or peer group, even though they are ill-informed (6, 69). Health workers should be motivated to apply and share their knowledge. Educational materials should be made available and used continuously in clinics; verifying that the materials are targeted to the right audiences (12, 125). The role of the media in direct public advertising, the availability of other information and promotional materials on infant / child nutrition and food products should be monitored. The media, e.g. television services, could be used very effectively for health education and health promotion as they exert tremendous power over children's food choice decisions (38, 40, 111, 115, 118). Facilitated group discussions provide an alternative method to lecture and one-on-one approaches for conducting educational interventions at clinic sites (118). It is a client-centered, interactive form of education wherein the learners share their problems, knowledge, and experience through group discussions. A supportive leadership style is used and discussions are based on participatory learning where the clients collaborate and engage in active reformulating of the issues being

discussed, which helps to internalize attitude and/or behaviour change. It is more likely to be meaningful to the participants as it allows them to access nutrition information within a supportive environment where their culture, prior experience, and personal concerns are respected. It empowers clients to make positive changes in nutrition behaviour (118). A meaningful approach could be to have a focus group discussion where nutrition-related problems are uncovered and thereafter are followed-on with a facilitated group discussion on the solutions to the problems uncovered.

Vorster & Labadarios (1993:5)(23) point out that in SA evidence shows that there is a need for responsible and effective nutrition education as part of any nutrition intervention programme implemented. In such programmes, dietitians or nutritionists should function as the educators, supervisors, coordinators, researchers, consultants, advocates, planners and evaluators. Naidoo et al (1993:26)(38) suggest that nutrition education should be actively promoted in SA by education departments, health departments and services, the private sector, the media and the community. It should be included in the curricula of all schools and training institutions (38).

Adoption of food - based strategies makes possible the **redirection of funds** previously devoted to curative health care and social welfare to other developmental activities. One such activity is **nutritional surveillance** as a preventive health care measure. Growth monitoring may be an effective nutrition intervention strategy fundamental to the improvement of health / nutritional status in these communities. For it to be effective, a two stage process of screening and intervention needs to be implemented: early detection of growth faltering followed by appropriate remedies (30, 31). If such a process is in regular use, it will have the potential of increasing child survival, but also improving child development (30). The greatest success with such a surveillance approach has been achieved where there is an extensive community infrastructure and health services to support family-based monitoring (30). In many communities the approach seems to be to assume that once growth faltering is identified, the mother / caregiver will automatically improve feeding practices. This may only work sometimes, especially when food supplements are provided to the community from outside sources. The best approach would rather be to identify the corrective interventions by considering the complex factors which are producing malnutrition in the local circumstances (30). Taylor (30) states that growth monitoring can serve many objectives, being the following:

- ☐ education and motivation
- ☐ screening, early detection and risk assessment
- ☐ entry point for comprehensive health care
- ☐ entry point for women's participation
- ☐ mechanism to promote community awareness, organisation and empowerment
- ☐ health indicator ; impact assessment
- ☐ instrument for supervision
- ☐ advocacy.

10.4 IMPLEMENTATION OF RECOMMENDATIONS

The recommendations based on the findings in this research study are aimed at improving the nutritional status and feeding practices of children, as well as early detection of nutrition related problems in the Moretele district / Hammanskraal area. The two recommendations that would probably most aid these communities are the implementation of **nutritional surveillance** and a **nutrition education programme**.

To improve nutritional status by means of early detection a **nutritional surveillance programme** should be implemented in the clinics as a preventive health care measure to address the problems faced in the communities of Makapanstad and Mathibestad. Growth monitoring should be implemented as a two stage process of screening and intervention. The focus would thus be on early detection of growth faltering, followed by appropriate intervention strategies such as medical care, nutrition education, correction of incorrect practices or nutrition intervention thereby increasing child survival, but also improving child development (30, 31).

Clinic staff, care groups and dietitians should be involved in these programmes, preferably coordinated from a central facility like a nutrition unit. Education may be given in the form of group work, lectures, practical demonstrations, practical sessions for the mothers / caregivers and visible nutritional surveillance charts on the growth of the children (refer to aforementioned discussion).

Community involvement could be achieved by involving the mothers / caregivers in the measurements for growth monitoring, caring for children while programmes are being held, involving mothers / caregivers in practical demonstrations, family visits and even food production (a community vegetable garden) may be practiced by all. Involvement by all members of the community would be the ideal to strive for (109, 126).

To improve nutrition knowledge, attitudes and feeding practices a **nutrition education programme** for the mothers / caregivers should be implemented. The approach for the nutrition education should be based on the K-A-P Model 1 where: knowledge (K) ↔ attitude (A) ↔ practice (P) (127). It was found in the research of Schwartz (1975:30)(127) that there is a relationship between knowledge and attitudes and between attitude and practice, but that there was no direct relationship between knowledge and practice. Other research findings supported this approach (106, 116, 128). With this approach, nutrition education should cognitively focus on the identified nutrition problems, which would in turn influence the attitude of the mothers / caregivers which would in turn have a positive effect on the nutritional practices of the mothers / caregivers. As discussed previously, facilitated group discussions as part of interactive nutrition education would serve an ideal approach for conducting educational interventions at health care clinics (118). This approach would allow the mothers / caregivers to access nutrition information within a supportive environment where their culture, prior experience, and personal concerns are respected. This interaction would probably empower them to make positive changes in their nutrition behaviour (118).

The nutrition education programme for the communities in the Moretele district should focus on the critical issues identified (see Table 80).

TABLE 80: THEMES AND TOPICS FOR A NUTRITION EDUCATION PROGRAMME FOR THE MORETELE DISTRICT

THEMES	TOPICS
<i>Health education</i>	<ul style="list-style-type: none"> - the relationship between food and health - overweight in children: not always oedemic due to malnutrition - overfeeding of children: effects and problems - money and healthy food choices - health education in terms of family and individual needs
<i>Basic nutrition</i>	<ul style="list-style-type: none"> - foods and their functions in the body - nutrients and food sources - role of nutrients in preventing PEM - recommended inclusion of important foods: <ul style="list-style-type: none"> ~ increased milk intake ~ variety of starch products ~ variety of vegetables / fruits ~ less artificial juices ~ suitable protein-rich foods - recommended quantities of important foods
<i>Feeding practices</i>	<ul style="list-style-type: none"> - initiation of breast feeding directly after birth - longer exclusive breast feeding - breast feeding routine: frequency and duration of feeds - ideal time for introducing weaning / complementary foods - ideal types of weaning foods - order of introducing weaning foods - elimination of using left-over foods - correct mixing procedures for milk for cup drinking (and bottle feeding where needed) - hygiene procedures for milk and food preparation
<i>Meal planning</i>	<ul style="list-style-type: none"> - devising healthy meal plans for the whole family - budgeting in terms of meal planning - compiling a healthy meal - making wise food choices - introducing snacks in the diets of children - ideal foods / drinks for snacking
<i>Culture</i>	<ul style="list-style-type: none"> - food choices and cultural beliefs: addressing misconceptions - fat children as being healthy - food distribution among family members - traditional food preparation techniques for children's food.

Nutrition can no longer exist on the fringes of development programmes if the before-mentioned goals need to be achieved. Focus should be placed on nutrition, especially on preventive measures and improved child feeding in order to achieve declines in mortality and morbidity.

10.5 RECOMMENDATIONS FOR FUTURE RESEARCH

Some insight was gained during the research leading to recommendations for future research. The following recommendations are formulated to improve on the research techniques and / or overcome shortcomings in this study:

10.5.1 A more detailed analysis of food intake needs to be done. The actual quantities of food consumed by these children remained unclear whatever the amount of probing. It is recommended that the researcher / field worker(s) should be present during feeding sessions of the children in order to determine more accurately the exact quantities of food consumed by these children.

10.5.2 It is recommended that observation of the food preparation techniques for babies, weaning children and weaned children should be done. Thus practices might be identified to provide reliable evidence concerning thinning of porridge, additions made to food as well as the serving techniques involved.

Both 10.5.1 and 10.5.2 are recommended with caution as the presence of any observer in a family setting may influence the behaviour of the mother / caregiver to be different than under normal circumstances.

10.5.3 Due to the number of topics included in the interview schedule, the focus group interview tended to be long and tiring. It might add to the quality of the data to have a few follow-on focus group interviews on identified themes; probing in more detail on each theme. Only a few groups of people, unknown to each other, should participate.

10.5.4 It is recommended that the origin of the wrong perceptions and poor attitude towards nutrition should be studied in order to gain insight. The latter is necessary to plan appropriate training programmes in terms of the best approaches, the contents, the tools, etc.

The insight gained during the research guided the following recommendations for new research:

10.5.5 A longitudinal approach where infants are measured from birth onwards is recommended. This may either be implemented as a research study, or ideally a nutritional surveillance programme should be run in the clinics where not only weight, but also height, head circumference and mid- upper-arm-circumference are measured and monitored monthly. Data on growth and development would thus be available to be used in the "Triple-A Approach" to combat malnutrition in communities.

10.5.6 The low birth percentile (25th) found in these communities may be due to poor prenatal growth or it may be genetically predisposed, indicating that the people in this cultural groups are smaller in size from birth onwards. A longitudinal study should be done on pregnant women and their babies in order to determine

if babies are born with low birth weights or if they are genetically smaller

- 10.5.7 An in-depth exploration of breast feeding practices is necessary in order to determine the quality of the breast feeding as implemented. The feeding frequencies, time spent per feeding session, feeding quality with reference to feeding or pacifying for different age groups should be evaluated, as well as the feeding practices with a child during the weaning process. Observation of the practices could contribute to better knowledge and understanding.

Again observation as technique is recommended with caution as the presence of any observer in a family setting may influence the behaviour of the mother / caregiver to be different than under normal circumstances.

- 10.5.8 A culturally more suitable questionnaire should be developed and standardized to determine hunger / food insecurity in these communities. It appeared that the mothers / caregivers in this cultural group had difficulty in understanding the questions.