AN ASSESSMENT OF THE NUTRIENT CONTENT OF MEALS PROVIDED AND FACILITIES PRESENT AT STATE-FUNDED CRÈCHES IN CAPE TOWN

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Background. A large proportion of resources allocated to the Community-Based Nutrition Programme (CBNP) of the Department of Health in the Western Cape is spent on crèche-feeding schemes. To date, little evaluation of the CBNP has been undertaken.

Aim. A cross-sectional study was conducted to assess the nutritional adequacy of meals provided, and facilities available, at state-funded crèches in the Cape Metropole.

Methods. A questionnaire was administered to managers of 43 conveniently sampled crèches in two districts of Cape Town. Twenty-two of the crèches were randomly selected for nutrient assessment of a duplicate meal, and a typical meal sample was weighed and analysed for this purpose. Anthropometric measurements for a random sample of 10% of the children (N = 275) attending these 22 crèches were obtained.

Results. Only one crèche did not have food preparation and storage facilities (due to theft). Toilet facilities were inadequate at some crèches. The ratio of children to toilets was 23.7 (± 16.6):1, ranging from 6.5:1 to 91:1. None of the meals provided met one-third of the age-related Recommended Dietary Allowance (RDA) for energy, calcium, iron or phosphorus. With regard to protein, 86.4% of the meals sampled did meet one-third of the RDA for 1 - 3-year-olds and 68.2% for 4 - 6-year-olds. At crèches where the meals provided ≥ 15% of the RDA for energy for 4 - 6-year-olds, it was reported that a mean of R1.18 (± R0.48)/child/day was spent on food, compared with a mean of R0.89 (± R0.20)/child/day in crèches at which the meals provided < 15% of the RDA for energy (P = 0.14). According to the World Health Organisation classification of moderate undernutrition, in the age group ≤ 60 months (N = 170) there was found to be a low prevalence of stunting (7%), a moderate prevalence of underweight (16%) and a very high prevalence of wasting (11.8%). In children older than 60 months (N = 105) there was found to be a low prevalence of stunting (12.4%), underweight (8.7%) and wasting (2.9%).

Conclusion. The nutritional content of meals provided at state-funded crèches in two areas of the Western Cape is largely inadequate, and is positively associated with the amount of daily spending per meal. These findings suggest that more attention should be directed towards improved training of crèche staff with regard to menu planning and food budgeting.

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Good nutrition is a cornerstone of the primary health care approach, and is considered one of the key developmental priorities in South Africa. Household food security for the majority of South Africans is poor. It has been estimated that 39% of the population do not meet their daily energy requirements[1] while 43% of households are considered to be in food poverty, whereby they cannot afford to purchase a basic subsistence diet.[2] In this regard, one of the first commitments undertaken during President Mandela's term of office was to improve the nutritional status of all South Africans through the implementation of integrated nutrition strategies. As a result, substantial consideration is given to children, who have been identified as a particularly vulnerable group. In 1994, the South African Vitamin A Consultative Group (SAVACG) study demonstrated that 23% of all South African children under the age of 6 years were stunted and 9% were underweight for age.[3] This translates into approximately 600 000 preschool children being identifiably malnourished and 1.5 million being stunted, a consequence of long-term malnutrition. In addition, micronutrient deficiencies have been identified as a major health issue in this age group, with 21.4% of preschool children being anaemic and a third of young children having a marginal vitamin A status. The Community-Based Nutrition Programme (CBNP) is one of three components of the Integrated Nutrition Programme (INP), the other two components being health facility-based services and nutrition promotion, comprising communication, advocacy and legislation.[4] On the basis of recommendations of a National Committee on Nutrition, appointed by the Minister of Health in 1994, the INP replaced the former National Nutrition and Social Development Programme (NNSDP), which was largely a R400-million-a-year food aid programme. The mission of the INP is to improve the nutritional status of all South Africans through the implementation of integrated nutrition activities.

The purpose of the CBNP is to improve household food security and to enable people to become self-reliant through nutrition-related development projects. Children aged 0 - 6 years are the primary focus of the CBNP and, as such, are reached through crèche-feeding. Other beneficiaries of the CBNP, namely unemployed women with children and families in crisis (where there is no income and/or all adult family members have TB), are reached through on-site feeding and development projects.

According to the October Household Survey of 1995, 21% of all South African children under the age of 6 attended some form of preschool, crèche or Educare facility.[5] Crèches have been identified by the Department of Health as a means to reach a nutritionally vulnerable group through targeted state-funded nutrition interventions; however, the challenge of reaching the other 79% of this age group remains. Together with the Department of Social Services, the CBNP provides financial assistance to crèches, as a means of assisting care-givers to provide nutritious meals to children. However, additional funding does not necessarily ensure the nutritional adequacy of meals. Studies evaluating menus at child-care facilities in the USA have demonstrated that many establishments were serving nutritionally inadequate meals,[6-13] despite the existence of specific menu-planning guidelines and nutrition standards in that country.[14,15] Such findings raise concern over the nutritional knowledge and menu-planning skills of child-care providers employed at crèches. Furthermore, in South Africa many crèches are operated from private dwellings, making it difficult to monitor their food budgeting and meal preparation practices.

Menu planning guidelines for children using appropriate nutritional standards, coupled with good hygiene and sanitary practices, all contribute to the quality of care provided within crèches. Ultimately, the implementation of such standards of care can positively affect the growth and development of young children attending preschool facilities. However, achieving these standards requires sound nutrition knowledge on the part of the caregivers.[6-10] The principles of the CBNP state that one basic meal will be provided at targeted facilities and that the meal should provide a third of a child's RDA.

The present study was undertaken to assess the nutritional adequacy of meals provided at state-subsidised crèches in the Western Cape, the nutritional status of children attending these facilities, and the nutritional knowledge of the child care providers. An evaluation of resources available at the crèches was also performed.

METHODS

Study design and study population

A cross-sectional study was undertaken in August 1999 in a convenience sample of 43 state-subsidised crèches in two districts in Cape Town, namely Cape Town South (Mitchells Plain; *N* = 35) and the South Peninsula (Ocean View; *N* = 8). Within each of these districts, all crèches operated by one of the umbrella organisations in that district were included in the sample. Twenty-two of the 43 crèches were randomly selected, for nutrient assessment of a duplicate meal. A typical meal sample was weighed and analysed for this purpose. Anthropometric measurements for a random sample of 10% of the children attending these 22 crèches (*N* = 275) were obtained. Written informed consent was obtained from all crèche managers, as well as from representatives within the Western Cape Provincial Department of Health. The study was approved by the Ethics and Research Committee of the University of Cape Town.

Questionnaires

Each crèche manager was interviewed on site by the researcher, using a pretested questionnaire designed to gather information on the facilities available at the crèche, the ratio of caregivers to children, the sanitation and hygiene practices of the caregivers and the cost of an average meal per child per day, and to identify general concerns of the crèche managers. The nutrition knowledge of the crèche manager was also assessed using a 9-item multiple-choice test developed by the researchers. Each crèche manager, or the person responsible for food purchasing, was asked to report their average monthly expenditure on food. This sum was divided by the number of crèche days in each month and then by the number of children on the crèche register.

Assessment of sample meal

Each of the 22 crèches which were randomly sub-sampled was requested to provide a duplicate 1-day lunch-meal sample. To minimise bias, the 10th meal served on that particular day was kept aside and collected by the researcher. The food items of each meal were separated and weighed using a Krupps electronic food scale (denominator = 2 g). The weights of each food item were recorded and analysed using the computerised Foodfinder nutrient assessment package,[16] the database of which is the Medical Research Council's Food Composition Tables (1991).[17] The average nutrient contents per meal were compared with one-third of either the Recommended Dietary Allowance (RDA)[18] or the Dietary Reference Intake (DRI)[19] values for children in two age groups, namely 1 - 3 and 4 - 6/8 years.

Anthropometry

Anthropometric measurements were performed in 275 children (134 boys, 141 girls) by a trained researcher. Weights were measured to the nearest 0.5 kg using a calibrated electronic bathroom scale. A vertical measuring stick was used to measure heights, to the nearest 0.1 cm. Anthropometric data were expressed as Z-scores for weight for age, height for age

and weight for height, using the EpiInfo 6 computer programme.[20] Moderate and severe undernutrition was categorised according to Z-score values below 2 and 3 standard deviations (-2 SD and -3 SD) respectively, from the NCHS/WHO/CDC International Reference Medians.[21] The following classification of nutritional status was used:[22]

- Prevalence of moderate underweight (weight-for-age Z-score < - 2): low (< 10%), moderate (10 - 19%), high (20 - 29%) and very high (≥ 30%)
- Prevalence of moderate stunting (height-for-age Z-score < -2): low (< 20%), moderate (20 - 29%), high (30 - 39%), and very high (≥ 40%)
- Prevalence of moderate wasting (weight-for-height Z-score < -2): low (< 4%), high (4 - 7%), and very high (≥ 8%).

The prevalence of overweight was measured as the proportion of children with a weight-for-age Z-score > 2 SD.

Descriptive statistical analyses were performed using the Statistica (version 5.1) software package.[23] Differences between the average amount spent on a meal, according to its nutritional adequacy, were assessed using a Mann-Whitney test for skewed data.

RESULTS

Nineteen of the 43 crèches (44%) were home-based, 7 (16%) were run from a garage, 11 (26%) from a church hall or community centre, 4 (9%) from a wendy house, and 2 from elsewhere. According to attendance registers, almost 2 000 children were reported to attend the 43 crèches (mean = 45 (SD = 23) children per crèche). Most of the children attending the crèches were older than 3 years (Table I), with over a third being older than 5 years of age. Ninety-five per cent (N = 1 868) of the children spent a full day at the crèches. The mean child-to-caregiver ratio was 13 (SD = 4.5):1, ranging from 5:1 to 27:1.

Table I. Age distribution of children attending sampled crèches

Age group (months)	No. of children	% of total number
<12	72	3.6
12 - 35	429	21.7
36 - 59	783	39.7
≥ 60	690	35
Total	1974	100

Facilities

Only one of the 43 crèches did not have adequate cooking facilities, or cold and dry storage facilities present on the premises (confirmed visually and objectively by the investigator), due to theft. However, the crèche manager, who lived nearby, prepared food at her home, transported it daily to the crèche and reheated the meals using a portable gas stove. At 40 of the 43 crèches, washbasins were available for children to wash their hands; at the remaining 3 crèches portable plastic tubs were used. At all crèches soap was provided and children were supervised while washing their hands. The ratio of children to toilets was 24 (SD = 16.6):1 , ranging from 7:1 to 91:1.

Major concerns identified by crèche managers during discussions with the investigator were lack of space and toilets (mainly in home-based crèches); a need for continued nutrition and health education of the staff; lack of financial support (as food donations or money) from parents; and children arriving at the crèche very hungry, having not eaten the previous night.

Nutritional content of meals

The mean nutrient content of the 22 sample meals is shown in Table II. A large range was found between crèches for a number of nutrients, particularly vitamin A and folate. The percentage of meals that provided less than one-third of the RDA or DRI for the age groups 1 - 3 years and 4 - 6/8 years is shown in Fig. 1. Most meals exceeded one-third of the RDA for protein for both age groups. None of the meals sampled met one-third of the RDA for energy, calcium or iron for both age groups. Thiamin, riboflavin, vitamin D, vitamin E, folate and zinc content were also particularly low. Of even greater concern is the number of meals that did not provide any amount of a specific nutrient. Seventeen (77.3%) of the meals provided no vitamin D; 10 (45.5%) did not provide vitamin B_{12}; 5 (22.7%) did not provide vitamin A; and 3 (13.6%) did not provide any vitamin C.

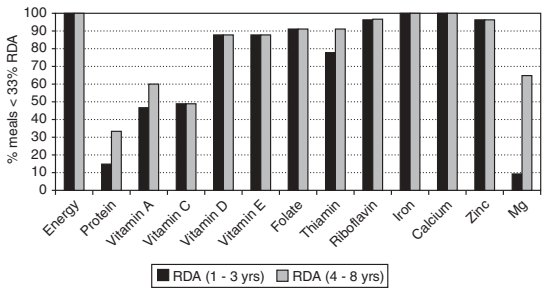

Fig. 1. The percentage of meals at 22 crèches in the Western Cape providing < 33% of the RDA for energy, protein and selected micronutrients by age.

Crèche managers were asked to rank, in order of importance, a list of five factors which influenced the types of meals they provided. 'Nutritional benefit' was rated by 72% of subjects as the most important factor that influenced food preparation at the crèche (Table III). The factor considered to be the least important was 'facilities which were required for food preparation' (42% of subjects ranked it 5th).

Table II. Mean nutrient composition of meals provided at 22 crèches in the Western Cape

Nutrient	Mean (SD)	Range (min - max)	1/3 RDA[18]/DRI[19] 1 - 3 yrs	4 - 6/8 yrs
Energy (kcal)	271 (64)	132 - 385	433	600
Protein (g)	9.5 (4)	3.8 - 19.9	5.3	8
Carbohydrate (g)	45 (17)	6.4 - 80.2		
Fat (g)	3.4 (4.7)	0.9 - 13.5		
Micronutrients				
Vitamin A (retinol equivalent)	48 (270)	0 - 920	133	167
Thiamin (mg)	0.133 (0.048)	0.06 - 0.24	0.17	0.2
Riboflavin (mg)	0.097 (0.045)	0.04 - 0.26	0.17	0.26
Niacin (mg)	2.1 (1.1)	0.7 - 4.4	2	2.6
Vitamin B_6 (mg)	0.29 (0.1)	0.08 - 0.4	0.17	0.2
Folate (µg)	22 (32)	3.0 - 152	50	66
Vitamin B_{12} (µg)	0.1 (0.4)	0 - 1	0.3	0.4
Vitamin C (mg)	8.5 (15.7)	0 - 6.6	13.3	15
Vitamin D (µg)	0.48 (1.1)	0 - 3.97	3.3	3.3
Vitamin E (mg alpha-tocopherol)	0.3 (0.8)	0.04 - 4.65	2	2.33
Calcium (mg)	51 (25)	10.0 - 116	166	267
ron (mg)	1.4 (0.7)	0.6 - 3.1	3.3	3.3
Magnesium (mg)	40 (13)	13 - 80	26.7	40
Phosphorus (mg)	141 (42)	75 - 241	267	267
Zinc (mg)	1.4 (0.6)	0.6 - 3.3	3.3	3.3
Energy profiles				
Energy from carbohydrate (%)	70 (17)	22 - 86		
Energy from protein (%)	14 (6)	8 - 31		
Energy from fat (%)	16 (14)	2 - 55		

Table III. The overall rank of factors determined by the investigator to be important in selecting the type of meals to be prepared at the crèche

Factors determining food to be prepared	% of subjects assigning the particular rank to the factor
1. The nutritional benefit of the food	72.1
2. The likes and dislikes of the children	30.2
3. The availability of the ingredients	39.5
4. The ease of making the food	30.2
5. The facilities needed to prepare the food	41.9

Most crèche managers (86%) reported that fruit was served every day, usually at one of the two snack times. In some crèches children brought their own snacks, whereas in others snacks were provided. Vegetables were generally served 3 - 4 times a week, with potatoes, cabbage, carrots, cauliflower and pumpkin being served most frequently. The actual meals provided at each of the crèches are shown in Table IV. In half of the crèches where meals were sampled, high biological value protein foods (meat, fish, chicken, eggs and cheese) were being provided.* Over a third of the meals did not include micronutrient-rich vegetables.

* In the Western Cape, the CBNP distributes a list of food items which are allowed to be purchased by crèches subsidised by the programme. The list states that high-cost protein foods should not exceed 15% of the food budget.

Cost of meals

Data on mean spending per meal per child per day were available for only 18 of the 22 crèches sub-sampled for meal analyses. At crèches where the meals provided ≥ 15% of the RDA for energy for 4 - 6-year-olds (N = 9), it was reported that a mean of R1.18 (SD = R0.48) per child per day was spent on food, compared with a mean of R0.89 (SD = R0.20) per child per day in crèches at which the meals provided < 15% of the RDA for energy (N = 9) (P = 0.14).

Nutritional knowledge of meal planners

Eighty-four per cent (N = 36) of the crèche managers had received nutrition education, either through their formal training to become caregivers (46.5 %, N = 20), nutrition workshops (20.9 %, N = 9), or a combination of both (16.3%, N = 7). A mean score of 6.3 (SD = 1) out of a possible score of 9 was obtained in the multiple-choice nutrition test, with scores ranging from 4 to 9. Subjects who had received previous nutrition education had a slightly (not significantly) higher mean score than those who had not received any form of nutrition education. Only 42% of caregivers correctly identified fruit and vegetables as 'protective foods'. Most of them (93%) were able to identify oranges as a good source of vitamin C,

Table IV. Meals provided at 22 crèches in the Cape metropole*

Insufficient protein foods included	High-cost protein foods included	No micronutrient-rich vegetables included	Meals which conform with CBNP-approved food items
114 g white rice, cooked 126 g peas, cooked 72 g pumpkin, cooked + sugar	64 g gravy 86 g rice 46 g chicken, boiled, with skin 46 g potato, boiled, no skin	→	150 g white rice, cooked 30 g fish, pilchard in tomato sauce 66 g pumpkin, cooked + sugar
150 g white rice, cooked 204 g spaghetti, canned in tomato sauce	→	→	28 g potato, boiled, no skin 16 g carrots, cooked 14 g peas 12 g Toppers, cooked 200 g white rice, cooked 8 g onions, sautéed in sunflower oil
76 g white rice, cooked 80 g cabbage, cooked 14 g cauliflower, cooked 22 g potato, boiled, no skin 10 g onion, sautéed in sunflower oil	44 g chicken, boiled, without skin 164 g biryani, (sunflower oil, rice, lentils, no meat)	→	180 g white rice, cooked 15 g Toppers, cooked 32 g potato, boiled, no skin 26 g broccoli, cooked 36 g carrot, cooked 2 g sugar
202 g white rice, cooked 66 g cabbage, cooked 60 g pumpkin, cooked + sugar 8 g onions, sautéed in sunflower oil	112 g white rice, cooked 18 g beef mince, pan fried 178 g spaghetti, canned in tomato sauce	→	
122 g potato, mashed (with milk and margarine) 60 g white rice, cooked 30 g cabbage, cooked 68 g pumpkin, cooked + sugar	130 g white rice, cooked 22 g meat (beef), cooked 104 g cooked dried sugar beans		
	114 g white rice, cooked 104 g cabbage, cooked 60 g potato, boiled, no skin 14 g carrot, cooked 12 g meat (beef), cooked 10 g onion, sautéed in sunflower oil	120 g white rice, cooked 30 g fish, pilchard in tomato sauce 104 g potato, boiled, no skin	
	16 g potato, boiled, no skin 40 g meatball 4 g carrots, cooked 18 g pumpkin, cooked + sugar	150 g white rice, cooked 30 g Toppers, cooked 10 g onions, sautéed in sunflower oil	
	2 g meat (beef), cooked 22 g potato, boiled, no skin 102 g white rice, cooked 22 g carrots, cooked 34 g cabbage, cooked 3 g sunflower oil	72 g gravy 38 g cooked lentils 112 g white rice, cooked	
	50 g fish fingers, fried 106 g white rice, cooked 28 g peas, cooked 110 g pumpkin, cooked + sugar		
	65 g egg scrambled (in sunflower oil) 10 g tomato, raw 30 g bread 5 g margarine		
	112 g white rice, cooked 16 g meat (beef), cooked 154 g cabbage, cooked (potato, onion, sunflower oil)		
	98 g white rice, cooked 84 g cabbage, cooked (potato, onion, sunflower oil) 20 g beef meat, cooked		

* Meals provided on day of sampling.

whereas only 60% identified carrots as a good source of the vitamin A precursor. All caregivers correctly identified the food items containing the most fibre from a list of various foods (i.e. wholewheat bread), as well as the food likely to cause tooth decay (i.e. sugar).

Anthropometric status of children

The anthropometric status of a sample of 275 children, randomly selected from the sub-sample of 22 crèches, is shown, according to age, in Fig. 2. In the age group ≤ 60 months (*N* = 170; Z-score < - 2 SD), there was found to be a low prevalence of stunting (< 20%), a moderate prevalence of underweight (10 - 19%) and a very high prevalence of wasting (≥ 8%). In children older than 60 months (*N* = 105), there was found to be a low prevalence of moderate stunting, underweight and wasting. Within the total population, 1.1% of the children were severely (Z -score > - 3 SD) stunted, 2.5% severely underweight, and 2.2% severely wasted. Three percent of children were overweight (weight-for-age Z-score > + 2 SD).

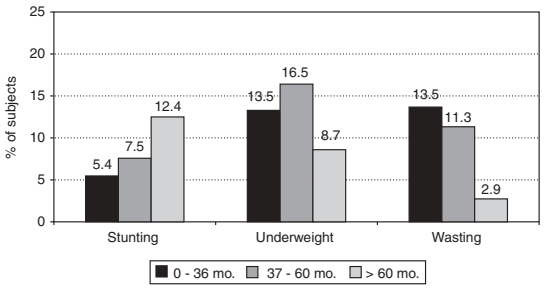

Fig. 2. The percentage of children attending crèches in the Western Cape with a Z-score < - 2 SD for defined anthropometric indices (N = 275).

Discussion

All but one crèche had adequate cooking facilities, as well as cold, freezer and dry storage facilities to meet their needs; the availability of these resources therefore cannot be considered determinants of the quality of the meals that could be provided. Toilet facilities were inadequate, mainly in home-based crèches, which poses a major hygienic and sanitary risk to children who attend state-subsidised facilities.

Crèche managers appear to be genuinely interested in providing nutritious meals that can be enjoyed by the attending children. However, the meals provided were largely nutritionally inadequate, a finding consistent with trends reported in child day-care centres in the USA.[3-10] The energy content of the meals provided was low, as was their micronutrient content, particularly for thiamin, riboflavin, vitamin D, vitamin E, calcium, iron, zinc and folate. In the preschool age group, an inadequate intake of these nutrients may manifest as growth faltering and increased susceptibility to infections.

A major limitation in the present study was that a 24-hour dietary intake was not assessed, so the contribution of the midday meal provided at the crèches to the total daily nutrient intake could not be assessed. However, crèche managers did volunteer the information that children often arrived hungry because insufficient food had been offered at home, which suggests that the meal provided at the child-care facility made a significant contribution to the total daily nutrient intake. It should, however, be borne in mind that the use of a single duplicate sample meal taken from each crèche on a single day further limits the validity of the nutrient assessment technique employed in this study. It is suggested that future evaluations of meals provided at crèches take repeated meal samples for dietary analyses. An assessment of the average nutrient content of meals provided could also be calculated from a nutrient assessment of the cyclical menus (if they are available) utilised by crèches, and compared against actual intakes of children, using a plate-waste method. Although only 3 of the 43 crèches sampled in this study reported that they did not use menus, we were unable to obtain a copy of the menus for nutrient analyses.

According to the SAVACG study,[3] 1 in 3 children under the age of 6 years in South Africa has sub-optimal vitamin A status and 1 in 10 children is iron-deficient. The children's blood micronutrient status was not assessed in the present study; however, the low vitamin A and iron content of the meals provided is cause for concern, since an even higher prevalence[24] of suboptimal serum retinol concentrations (59%) and anaemia (12.3 %) than that reported in the SAVACG study has been documented in schoolchildren in Grades 1 and 2 in Cape Town. The authors[24] suggested that poor dietary practices during the preschool period, in combination with parasitic infestations and infections, place primary school children at high nutritional risk.

The combination of a very high prevalence (8.4%) of wasting and a low prevalence (9.1%) of stunting indicates a predominance of acute-on-chronic malnutrition in this sample of children studied, particularly in children younger than 5 years of age. This finding would suggest a sustained overall food deficit in these preschool children from the two low socioeconomic geographical areas of the Western Cape studied. Overall, the anthropometric findings of the present study differ from those of the national SAVACG[3] survey, in which a higher prevalence of stunting (23%) and a lower prevalence of underweight (9.6%) were documented. A plausible explanation which is generally offered is that within the very young age groups, both underweight and stunting coexist, but weight gain after about the age of 2 - 3 years (in the presence of sufficient food intake) results in a decrease in underweight,

while height does not seem to catch up to the same degree.[25] Furthermore, the time elapsed and the changes in socio-economic status that may have occurred since the completion of the SAVACG survey should also be borne in mind when such comparisons are made. In children older than 5 years in the present study, chronic malnutrition appears to be the main nutritional disorder, since the prevalence of stunting in this age group was higher than in the other two age groups.

Findings from other South African studies of preschool children have demonstrated that factors other than food deficit that predict undernutrition include the introduction of solid foods before the age of 5 weeks of age, non-exclusive breast-feeding in infancy, low maternal education, the presence of 7 or more children in a household, an unemployed father and the use of herbs or Lennon's Dutch remedies soon after birth.[26,27] The purpose of the present study was not to identify risk factors associated with undernutrition in preschool-age children, but rather to investigate the nutritional adequacy of meals provided at state-subsidised crèches. This study does, however, indicate that the average amount of money spent per meal per child is a determinant of nutritional adequacy. A mean difference of 29c allocated per meal per child tended to affect the nutrient content, at least in terms of energy intake. It is evident that a revision of the current maximum CBNP subsidy of 85c per meal per child (i.e. in preschools where parents' contribution to preschool fees is R80 or less per month) is needed in order for the objectives of the CBNP to be met in this high-risk age group.

Apart from financial considerations, the present study identified a need for additional training of crèche staff in basic nutrition principles, menu planning and food budgeting. Despite most of the crèche managers achieving a high score in the multiple-choice nutrition knowledge test, most managers did not understand the classification of foods according to the three food groups, namely, 'energy-giving,' 'protective' and 'body-building' foods. This classification is the nutrition education tool most commonly used by dietitians and nutrition educators of the Department of Health in the training of crèche personnel (M C du Toit — personal communication). In some of the crèches sampled, large educational posters illustrating these food groups were seen in the kitchen; however, their presence seemed to have little effect on improving knowledge with regard to meal planning. It is recommended that the new food-based dietary guideline approach[28] be adopted in the future training of personnel responsible for meal planning and preparation in child-care facilities.

CONCLUSION

Meals provided at state-funded crèches in two economically disadvantaged areas of the Western Cape are nutritionally inadequate for energy and many micronutrients, despite the satisfactory availability of food preparation facilities. Of particular concern is that meals provided at crèches where a mean sum of R0.89 is allocated per meal per child per day do not meet even 15% of the RDA for energy, which questions the rationale behind the current provincial subsidisation of crèche meals at the level of R0.85 per meal per child per day. Children younger than 5 years who are attending these crèches have a very high prevalence of wasting (acute-on-chronic malnutrition), whereas children older than 5 years may be at risk of chronic malnutrition, on the basis of a relatively higher prevalence of stunting than in the younger age group. In order for the objectives of the CBNP to be met through crèche-feeding, it is evident that there is a need for crèche personnel to be trained in balanced menu planning and food budgeting, using effective nutrition education techniques. In addition, implementation of an efficient strategy is required for the regular monitoring of the programme.

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CONTINUING PROFESSIONAL DEVELOPMENT ACTIVITY FOR DIETITIANS

SAJCN CPD activity No 15 - June/July 2002

You can obtain 3 CPD points for reading the article: "An assessment of the nutrient content of meals provided and facilities present at state-funded crèches in Cape Town" and answering the accompanying questions.
This article has been accredited for CPD points for dietitians. (Ref number: DT 02/3/159/12)

HOW TO EARN YOUR CPD POINTS

1. Check your name and HPCSA number.
2. Read the article and answer all the questions.
3. Indicate your answers to the questions by coloring the appropriate block(s) in the cut-out section at the end of this questionnaire.
4. You will earn 3 CPD points if you answer more than 75% of the questions correctly. If you score between 60-75% 2 points will be allocated. A score of less than 60% will not earn you any CPD points.
5. Make a photocopy for your own records in case your form is lost in the mail.
6. Send the cut-out answer form by mail, NOT BY FAX to: SASPEN Secretariat, SAJCN CPD activity No 15, c/o Department of Human Nutrition, PO Box 19063, Tygerberg, 7505 to ***reach the office not later than 31 August 2002***. Answer sheets received after this date will not be processed.

PLEASE ANSWER ALL THE QUESTIONS

(Mark the ONE correct choice)

1. What percentage of households in South Africa is considered to be in food poverty?
[a] 41 [b] 42 [c] 43 [d] 44 [e] 45

2. What percentage of preschool children is considered to be anaemic?
[a] 10.5 [b] 12.2 [c] 15 [d] 21.4 [e] 30

3. The principles of the CBNP state that one basic meal will be provided at targeted facilities and that the meal should provide a quarter of the RDA of a person.
[a] True
[b] False

4. The mean caregiver-to-child ratio in this study was:
[a] 8:1 [b] 10:1 [c] 13:1 [d] 16:1 [e] 19:1

5. What was the mean iron (mg) content of the duplicate meals in this study?
[a] 0.9 [b] 1.2 [c] 1.4 [d] 1.7 [e] 2.2

6. How many of the 22 sample meals did not provide vitamin A in this study?
[a] 3 [b] 5 [c] 7 [d] 10 [e] 11

7. Which factor was rated as the most important by the crèche managers when deciding on the types of meals to be provided?
[a] The facilities needed to prepare the food.
[b] The ease of making the food.
[c] The nutritional benefit of the food.
[d] The availability of the ingredients.
[e] The likes and dislikes of the children.

8. In the Western Cape, the CBNP distributes a list of food items that can be purchased by crèches, which are subsidised by the programme. The list states that high-cost protein foods should not exceed 25% of the food budget?
[a] True
[b] False

9. What percentage of caregivers in this study correctly identified fruit and vegetables as "protective foods"?
[a] 35 [b] 42 [c] 57 [d] 76 [e] 83

10. In this study crèches in which the meals provided ≥ 15% RDA for energy for 4 - 6-year olds (N = 9), it was reported that a mean of R1.18 (SD = R0.48) per child per day was spent on food, compared with a mean of R0.89 (SD = R0.20) per child per day in crèches at which the meals provided < 15% RDA for energy (N = 9) (P = 0.14).
[a] True
[b] False

11. What percentage of children aged 0 - 36 months in this study were wasted?
[a] 10.5 [b] 11 [c] 12 [d] 13.5 [e] 15.5

12. The present study identified a need for additional training of crèche staff in basic nutrition principles, menu-planning and food budgeting.
[a] True
[b] False

✂ Cut along the dotted lines and send to: SASPEN Secretariat, SAJCN CPD activity No 15, c/o Department of Human Nutrition, PO Box 19063, Tygerberg, 7505 to reach the office not later than 31 August 2002

HPCSA number: DT |__|__|__|__|__|__|__|

Surname as registered with HPCSA: _____ Initials: _____

Full member of ADSA: |__| yes |__| no If yes, which branch do you belong to? _____

Full member of SASPEN: |__| yes |__| no

"An assessment of the nutrient content of meals provided and facilities present at state-funded crèches in Cape Town"
C Pietersen, KE Charlton, MC du Toit, L Sibeko
Please color the appropriate block for each question

(e.g. if the answer to question 1 is a: 1) a ■ b)

1) [a] [b] [c] [d] [e] 2) [a] [b] [c] [d] [e] 3) [a] [b] 4) [a] [b] [c] [d] [e]

5) [a] [b] [c] [d] [e] 6) [a] [b] [c] [d] [e] 7) [a] [b] [c] [d] [e] 8) [a] [b]

9) [a] [b] [c] [d] [e] 10) [a] [b] 11) [a] [b] [c] [d] [e] 12) [a] [b]