

Childcare Practices, Morbidity Status and Nutrition Status of Preschool Children (24-59 Months) Living in Orphanages in Kwale County, Kenya

Moyo Burhaan Bakari, Munyaka-Ng'ang'a Ann, Chege Peter

Department of Food, Nutrition and Dietetics, Kenyatta University, P.O BOX 43844-00100, Nairobi, Kenya

Corresponding Author: Moyo Burhaan Bakari

ABSTRACT

Background: High adult mortality due to various causes like HIV and AIDS has led to an upward trend of the number of orphans and vulnerable children. Lack of adequate support for their care has forced the caretakers of these children to take them to orphanages. As a consequence, there has been mushrooming of orphanages in the country. Appropriate childcare practices have substantial consequences for growth, development and survival of infants and children. However, there is minimal information on childcare practices, morbidity status and nutrition status of preschool children living in orphanages. The study therefore sought to determine the childcare practices, morbidity status and nutrition status of preschool children living in orphanages in Kwale County, Kenya.

Method: A cross-sectional analytical study was conducted on a comprehensive sample of 162 children and 45 caregivers, drawn from a sample of 14 out of the 21 orphanages in Kwale County, Kenya.

Results: More than a third (36.4%) of the children was orphans. Majority (84.0%) of children had favourable caregiver to child ratio. About 15.4% of the children were stunted, 8.6% were underweight and 3.7% were wasted. The results also indicated that nutrition status was associated with childcare practices (chi-square test; $p < 0.001$), institutional characteristics (chi-square test; $p < 0.001$), morbidity status (chi-square test; $p < 0.001$) and duration of stay of the children in the orphanages (Pearson chi-square test; $p < 0.001$).

Conclusion: Appropriate childcare practices in the orphanages play a critical role in ensuring optimal nutrition of the preschool children.

Key words: Childcare practices, Orphanage, Institutional characteristics, Caregiver, Preschool children, Nutrition status.

INTRODUCTION

It is estimated that there are currently 151 million orphans in the world and 2.6 million in Kenya. [1] Among all orphans in Africa, 15% are children under five years of age. [2] Most family members would have taken the responsibility of caring for these children but due to limited resources that are usually over-stretched as a result of high dependency ratio, family networks have been unable to provide

adequate care required for the well-being of these children. [3] Some of these children get accommodated in orphanages although reports show that at least 50% of children in orphanages may have lost at least one parent. [4]

Childcare practices entail provision of appropriate feeding practices of infants and children and appropriate feeding of children in exceptionally difficult circumstances such as in emergency

situations, malnourished children, low-birth-weight babies, infants of HIV-infected mothers and orphans. It also entails provision of proper health care through immunizing, prompt seeking of medical care, provision of love and time and maintaining the child in a clean and safe environment. [5]

Studies show that inappropriate childcare practices may increase the level of malnutrition which is a common cause of morbidity and mortality among children below 5 years. [6] This is experienced in Kwale County, Kenya where reports indicate that children below 5 years are vulnerable to malnutrition and childhood illnesses such as pneumonia, diarrhoea, malaria, skin diseases, upper respiratory tract infections, dysentery and typhoid due to poor sanitation and hygiene practices and in particular low latrine coverage and failure to treat water. [7,8] The preschool years have been identified as a crucial time to study dietary practices and health status of children as it is the period within which feeding habits are becoming established. [9]

Childcare practices which consist of actions necessary to promote child survival, growth and development are influenced greatly by the socio-economic, political and cultural environment surrounding the children. [10] Infants and preschool children in orphanages are nutritionally challenged because many do not have access to breast milk which is the ideal food for infants as it has all the nutrients they need for healthy development. [5,11]

Provision of appropriate childcare practices remains a challenge in some orphanages because of lack of adequate resources. With little or no outside assistance, many orphanages might be impoverished thus may increase vulnerability of the children to malnutrition. [12] Loss of parental care and other aggravating factors such as high child to caregiver ratios, poor hygiene, inadequate amounts and diversity of foods served to the orphanage children, caregivers with little knowledge, regimented and non-

individualized care may worsen the situation. [2,13]

There exists limited information about the orphanages and their relation to the nutrition status and morbidity prevalence in Kenya and Africa at large. Most of the existing literature shows most orphanages are damaging [14] thus assessment of childcare practices and nutrition status of institutionalized children is essential. The study therefore sought to determine nutrition status of pre-school children living in orphanages in Kwale County as influenced by childcare practices from their caregivers. This was to provide information that could be a basis for intervention in reducing child malnutrition.

MATERIALS AND METHODS

Research design

The study adapted a cross-sectional analytical study design using both qualitative and quantitative approaches.

Study area

The study was carried out in Kwale County. Kwale County is bordered by Kilifi County, Mombasa County, Taita-Taveta County, Indian Ocean and United Republic of Tanzania. Due to its proximity to the Indian Ocean, the main economic activities in this area are finishing and tourism. The area is divided into 4 sub-counties namely Msambweni, Kinango, Matuga, and Lunga-lunga. The area has an approximate area of 8,270 square kilometers and a total population of 739,435. [15] Kwale County has been associated with poor nutrition status and morbidity status. Moreover, the area is associated with high poverty levels, food insecurity, drug and substance abuse and relatively medium-HIV burden. [15,16]

Study population

The study population comprised of 162 preschool children 24-59 months having resided in the orphanages in Kwale County for at least three months. The caregivers of these children in the selected orphanages in Kwale County were the respondents.

Sampling techniques

The calculated sample size was 160. This was calculated based on Fisher et al., 1998 formula ($n = Z^2 (p q) / d^2$). Data collection was on a comprehensive sample of 162 preschool children. A comprehensive sample of 162 preschool children was used since the calculated sample of 160 was close to 162. Fourteen orphanages were purposively sampled because they had the highest number of children aged 24-59 months and allowed research activities. They were selected from a total of 21 orphanages in Kwale County, Kenya. Out of the 14 selected orphanages, 8 are in Msambweni sub-County namely; Kebene, Nyumba ya yatima, Faraja, Upendo, Amadeus, Diani, Future for children and Nice view II. Foot prints, Makobe, Henny's and Tsimba are in Matuga sub-County. Selected orphanages in Kinango Sub-County are Dorcas and Kuluhiro.

Data collection procedure

Structured questionnaire and key informant interview guide for caregivers were the main data collection tools. A 24-hour food recall and a 7 day food frequency questionnaire were used to gather and estimate the amount of nutrients consumed. Data collected from the 24-hour recall was analyzed using Nutri-survey software (2008) to establish the total amount of selected nutrients consumed per day. These amounts were computed and compared with the WHO Recommended Daily Allowance to establish whether there was adequate consumption. Data from 7 day food frequency questionnaire was analyzed to determine for regularity of intake. Consumption of these foods more than 4 times a week was considered regular and less than 3 times a week was considered irregular.

The anthropometric data were collected using SECA scale and paediatric height board. Weight of the children was measured in kilograms using SECA scale with accuracy of 0.1 Kgs. The height of the child was measured in centimeters using paediatric height board with a headstand to the nearest 0.1 centimeter accuracy.

Statistical analyses

Anthropometry data was analysed using ENA for SMART (2011). The indices of interest were weight-for-height (WFH), height-for-age (HFA) and weight-for-age (WFA). Z scores were used to indicate various levels of undernutrition. Children with a Z score of below (< -2) for WFA, WFH and HFA were classified as Underweight, Wasted and Stunted respectively. Children with a Z score of below < -3 and between -2 and -3 for all the indices were classified as severely and moderately malnourished. ^[17] Data on dietary intake was entered and analysed using Nutri-Survey software after which it was exported to SPSS version 20.0. This was for cross analysis with variables like nutrition status, morbidity and other practices.

Descriptive statistics which included mean, standard deviation, frequencies and percentages were used to describe data on nutrition status, dietary practices, institutional characteristics and morbidity status. Pearson product moment correlation coefficient was used to show relationship between continuous variables such as the age of the child with nutrition status. Chi-square test and odds ratio were performed to establish the relationship between morbidity, dietary intake and the children nutrition status. Analysis of variance (ANOVA) was used to test for differences in mean HAZ, WAZ and WHZ among the children based on their gender. Multi-nomial regression was also performed to identify predictors of nutrition status in the study population. Significance level was set at a value of < 0.05 . Key informant interview data were transcribed, coded, organized into common themes and conclusions drawn. The conclusions drawn provided a thick description to triangulate and support quantitative findings.

Logistical and ethical consideration

Approval to conduct the study was obtained from the Graduate School of Kenyatta University and a research permit

obtained from the National Commission for Science, Technology and Innovation (NACOSTI). Ethical clearance was sought from Kenyatta University Ethical Review Committee. The researcher then visited the study area and reported to the county commissioner, director of education, children officers and the orphanages' administrations. Respondents' participation was voluntary hence participated in the study based on their informed consent. The researcher ensured that the respondent understood the purpose of the study, study procedures, the risks, benefits and compensation if any before the consent was given. The researcher assured the respondents that all information collected would be treated confidentially. Children found malnourished or ill were referred to the nearest health facility for treatment.

RESULTS

The sample consisted of 162 preschool children 24-59 months of age and their caregivers. The total number of caregivers that were interviewed was 45.

Institutional characteristics

Socio-demographic characteristics of caregivers

Table 1: Caregivers demographic characteristics in selected orphanages

Characteristics of caregivers	Kwale County		
	N	%	
Age of caregivers (in years)	23-50	42	93.3
	>50	3	6.7
	Mean (SD) age: 36±8.72		
Sex of caregivers	Male	7	15.6
	Female	38	84.4
Marital status	Single	8	17.8
	Married	36	80.0
	Widowed	1	2.2
Level of education	Primary	6	13.3
	Secondary	26	57.8
	College	13	28.9

The youngest caregiver in this study was aged 23 years while the oldest was aged 58 years. The mean (SD) age was 36.13± 8.72 years. The majority (93.3%) of the caregivers were aged between 23-50 years. The lowest proportions (6.7%) of caregivers were in the category of above 50 years.

Majority (84.4%) of caregivers were females while a small percentage (15.6%) was males. Additionally, majority (80.0%) of the caregivers were married. Those who were single were less than a third (17.8%) with only a small percentage (2.2%) widowed. Findings of this study also showed that caregivers had varied education levels ranging from primary to college diplomas.

Training of caregivers on childcare practices

More than two thirds (71.9%) of caregivers in the present study reported that they had been trained on some aspects of childcare practices such as good nutrition for children, using locally available food items to maximize nutrient intake including enrichment, food sources for particular nutrients, hygiene and sanitation, child development and behavioural management. About 80% of the administrators in the visited orphanages had been trained on childcare practices. Trainings in the orphanages are conducted by the Association of Charitable Children Institutions of Kenya (ACCIK).

Age and sex distribution of preschool children

There was no significant difference in the number of male and female children. There were 48.1% males and 51.9% females. The study findings revealed that majority (82.1%) of the children were in the age group 37-59 months while those below 36 months were less than one fifth (17.9%).

Table 2: Distribution by age and sex of the preschool children

Characteristics of preschool children	Kwale County		
	N	%	
Age in months	24-36	29	17.9
	37-59	133	82.1
	Mean (SD) age: 50.73±10.79		
Sex distribution	Male	78	48.1
	Female	84	51.9

Caregiver-to-child ratio

Caregiver to child ratio varied considerably. All orphanages visited practiced group care for the children with the least caregiver to child ratio being 1:2

and highest 1:11. Most orphanages with higher caregiver to child ratio viewed undesirable staff turn-over as the main reason for the shortage of caregivers.

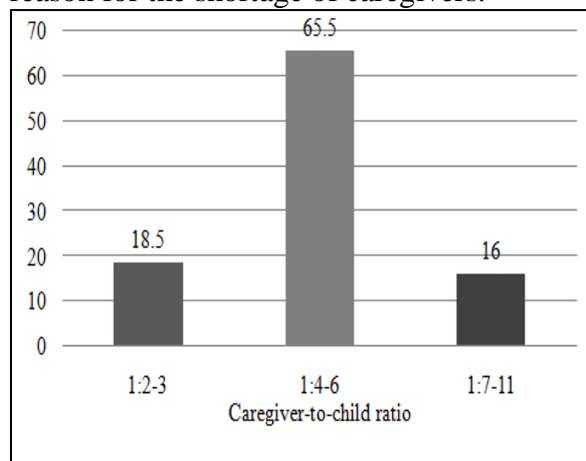


Figure 1: Caregiver to child ratio

Duration of stay of preschool children

Majority (67.3%) of the study children had stayed in the orphanages for a period of between 36 and 51 months while those who had stayed for 24 to 35 months were 15.4%. Those who had stayed for 4 to 12 months were 11.7% with a small percentage (5.6%) staying between 12 to 23 months. The mean (SD) duration of stay was 35.22±13.54 months.

Children with living parents

More than a third (36.4%) was either single or double orphans. The rest (63.6%) were neither single nor double orphans. The parents often visit their children in the institutions on either monthly basis or sometimes during holidays.

Childcare practices (Dietary and Healthcare)

Amount of energy and other nutrients consumed by preschool children

In the orphanage set up, all the meals are prepared in one place and to establish the quantities of ingredients used, the data was obtained from the kitchen personnel. Majority (79.0%) of the preschool children consumed adequate amounts of recommended energy per day. The mean (SD) energy intake was 2183.67±672.01 Kcal against the recommended 1352 kcal. Nearly all (90.1%) children consumed adequate amounts of recommended proteins per day. The mean (SD) protein intake was 71.98±21.51 g against the recommended 26g. Majority (86.3%) of the children consumed adequate amount of vitamin A rich foods. The mean vitamin A intake was 3573.78±872.5 µg against a recommendation of 400µg. Slightly more than two thirds (71.6%) consumed adequate amounts of iron with a mean intake of 25.67±14.49 mg against the recommended 6.0 mg. All (100%) the children consumed adequate amounts of Zinc with a mean intake of 17.52±6.73 mg against the 4.1 mg recommendation. Nearly all (96.3%) the children consumed adequate amounts of vitamin C with a mean intake 132.56±61.83 mg against the recommended intake of 30mg.

Table 3: Estimated adequacy of energy and consumption of selected nutrients by preschool children (N=162)

Nutrient	RDA	Mean (SD) consumption in 24 hours	Number meeting the RDA	% meeting the RDA
Energy	1350-1690 Kcal	2183.67±672.01	128	79.0
Proteins	25-26 gm	71.98±21.51	146	90.1
Vitamin A	400-450 µg	3573.78±872.5	140	86.4
Vitamin C	30 mg	132.56±61.83	156	96.3
Iron	6.0 mg	25.67±14.49	116	71.6
Zinc	4.1-5.1 mg	17.52±6.73	162	100.0

References for RDA: FAO, 2004; FAO/WHO, 2001

Frequency of food consumption by preschool children

To determine frequency of food consumption and the types of foods consumed, the foods were classified into 12 different food groups. All the orphanages served bread or mandazi (Swahili

bun)/chapatti, ugali (stiff porridge) and rice as part of the daily meals for preschool children.

Wheat based products were the most consumed energy giving foods with a mean consumption of 5.27±1.82 times a week. A consumption pattern in potatoes was

3.27±1.28. Consumption of foods in this food group ensures that children get adequate energy for growth and development.

Consumption patterns of legumes and nuts food group was high with the mean (SD) consumption being 5.00±1.33. No nuts were provided in either of the orphanages visited, however beans constituted a daily menu in all the orphanages surveyed. Vegetables and meat were served thrice a week with a mean consumption of 3.27±1.28 and 2.51±1.32 respectively.

Table 4: Frequency of food consumption by preschool children

7-Day food frequency consumption	Kwale County (N=162)
Food	Mean (SD)
Cereals	
Ugali	4.33±1.54
Rice	3.71±1.37
Bread/ chapatti/ Mandazi/Pasta	5.27±1.82
Root and tubers	
Potatoes	3.27±1.28
Pulses, legumes and nuts	
Beans/ green grams	5.00±1.33
Vegetables	3.27±1.28
Fruits	
Ripe Bananas	2.37±1.35
Oranges	1.41±0.95
Meat, poultry, offal	2.51±1.32
Fish and seafood	1.24±1.18
Eggs	0.24±0.20
Milk and milk products	5.10±2.41
Sugar and honey	7.00±0.00
Oils and fats	7.00±0.00
Salt and spices	7.00±0.00

The mean consumption for dairy products was 5.10±2.41. A high proportion (80%) of orphanages served milk tea as part

of daily meal. Fish was served twice a week with a consumption pattern of 1.24±1.18. Ripe bananas were more preferred as fruits than oranges. This was because they are cheap and always on season. The mean consumption of ripe bananas and oranges was 2.37±1.35 and 1.41± 0.95. Sugars and oils contribute significantly to daily energy intake. All (100%) children consumed both sugar and fats added to foods during the cooking process.

Diversity of foods consumed by preschool children

Findings in the current study showed majority (82.1%) of the children in orphanages were served meals with more than four food groups while a small percentage (17.9%) were served meals with less than four food groups.

Table 4: Diversity of foods consumed by the preschool children

Food groups	N	%
< 4 food groups	29	17.9
≥ 4 food groups	133	82.1

Meal frequency

All the orphanages visited had a fixed meal schedule. Supper was the main contributor of total energy intake (35.1%) compared to lunch (34.7%). Kcals derived from breakfast were less than one eighth (11.4%) while 10.00am snack and 4.00 pm snack contributed 10.2% and 8.6% Kcals respectively.

Table 5: Meal frequency

Meal	Mean Energy intake (Kcal)	% contribution to total energy	N	%
Break fast	249.95 ±213.13	11.4	162	100
Snack (10.00 am)	222.58 ±188.3	10.2	62	38.3
Lunch	758.80 ±346.43	34.7	162	100
Snack (4 pm)	188.47 ±69.12	8.6	23	14.2
Supper	763.88 ±346.47	35.1	162	100
Total	2183.70 ± 672.01	100	162	100

Furthermore, more than two thirds (61.7%) of children in the orphanages had three meals in a day. This was attributed to lack of snacks between the major meals and it is short of the four to six meals recommended per day. [18,19] Those who had four meals in a day were 25.9%. A small percentage (12.4%) took five meals in a day.

Morbidity status among preschool children and health care practices in orphanages

In this study, 21.6 % of the study children were reported ill based on a two week recall. Nearly a third (31.4%) of the sick children had illnesses lasting for less than three days. A small proportion (6.8%)

of reported illnesses were associated with upper respiratory tract infection mainly coughs and runny nose. Additionally, symptoms associated with malaria were reported by 10.5% of the sick children; however none of them had laboratory diagnosis to confirm the clinical symptoms. A very small proportion (0.6%) of the children had chronic diarrhea lasting between 3-7 days while those with vomiting accompanied by acute diarrhea were also reported by 0.6%. The prevalence of skin infection in this study was reported by 2.5%. Finally, measles prevalence in this study was reported by 0.6%.

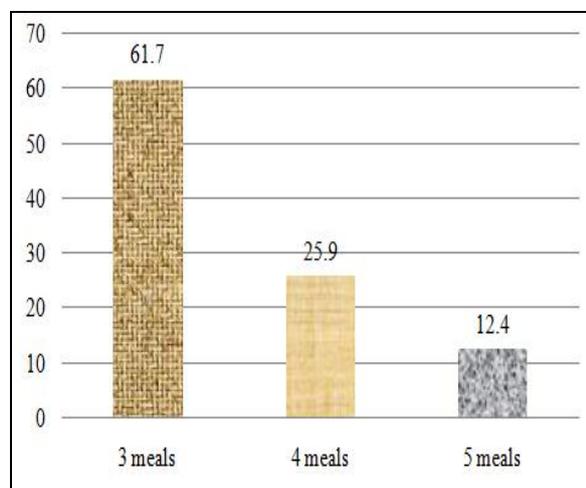


Figure 2: Number of meals taken per day by preschool children

Table 6: Morbidity status among preschool children

Morbidity status	Kwale County (N = 162)	
	N	%
Presence of illness two weeks prior to the study		
Sick	35	21.6
Not sick	127	78.4
Duration of illness		
≤ 3 days	11	31.4
< 3days - < 6 days	15	42.9
>6 days	9	25.7
Nature of illness		
Upper Respiratory Tract Infections	6	6.8
Diarrhea lasting more than 3 days	1	0.6
Vomiting and acute diarrhea	1	0.6
Skin infection	2	2.5
Clinical malaria (No laboratory confirmation)	14	10.5
Measles	1	0.6
Others	11	9.3

The study found that in the event of sickness, 73.5% of the children were either taken to orphanage dispensaries or civilian dispensaries/hospitals for medical care.

Through key informant interviews, it was established that the drug kits in the civilian hospitals and dispensaries were supplied by the Ministry of Health, Kenya. Caregivers preferred civilian hospitals because treatment was free.

Immunization status, vitamin A supplementation and deworming

Majority of preschool children in this study were fully immunized (93.2%), had been supplemented with vitamin A (90.1%) and had been dewormed (97.5%).

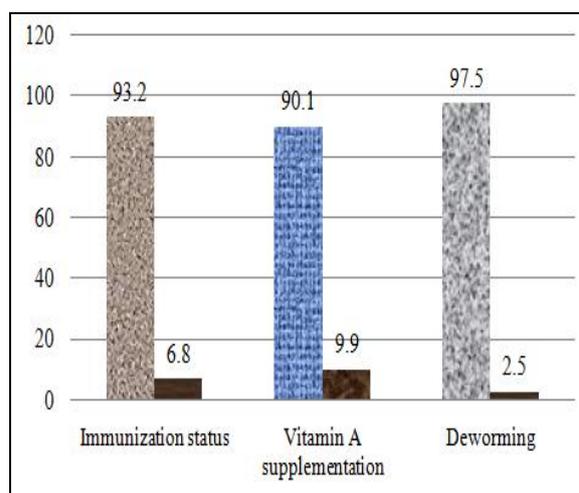


Figure 3: Immunization status, vitamin A supplementation and deworming coverage

Nutrition status of the preschool children in the orphanages

In this study, the wasting rate was 3.7% (95% CI: 1.2-6.8), underweight 8.6% (95% CI: 4.9-13.0) and stunting rates of 15.4% (95% CI: 10.5-21.0). None of the study children presented with oedema.

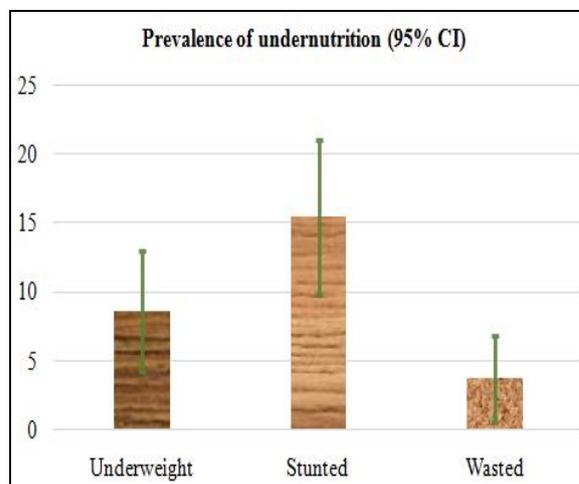


Figure 4: Nutrition status of preschool children

For boys the rates of stunting, wasting and underweight observed in the current study were at 23.1%, 7.7% and 10.3%) respectively. For girls, stunting, wasting and underweight were at 8.3%, 0.0% and 7.1% respectively. The results show that boys were more stunted ($\chi^2=6.74$, $p=0.008$), wasted ($\chi^2=6.71$, $p=0.011$) and underweight (though not significant, $p=0.580$) compared to the girls. There was also a significant difference in nutrition status based on gender. ANOVA tests showed that boys had a lower mean WHZ ($p=0.035$) than girls.

Relationship between duration of stay in orphanages and nutrition status

Prevalence of undernutrition seemed to increase significantly with an increase in length of stay in the orphanages. These differences were significant for stunting ($r = 0.378$, $p < 0.001$) and underweight ($r = 0.560$, $p < 0.001$) but not significant ($r = 0.013$, $p = 0.914$) for wasting.

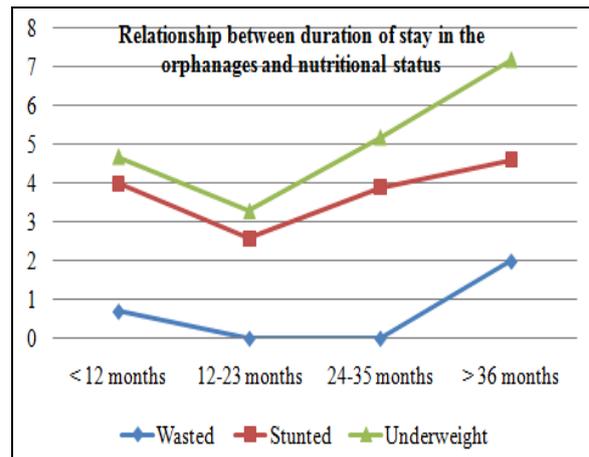


Figure 5: Relationship between duration of stay for preschool children and nutrition status

Relationship between institutional (socio-demographic [Marital status]) characteristics and nutrition status

Caregivers marital status showed a significant relationship with stunting ($\chi^2 = 6.073$, $p = 0.048$). Children whose caregivers were married were more likely to be stunted. Underweight ($\chi^2 = 0.467$, $p = 0.792$) and wasting ($\chi^2 = 0.158$, $p = 0.971$) did not show any relationship with caregivers' marital status.

Table 7: Relationship between caregivers' marital status and nutrition status

Nutrition status	Single N=58		Married N=103		Widowed N=1		Total N=162		χ^2	P-value
	N	%	N	%	N	%	n	%		
Underweight	4	3.8	10	6.1	0	0.0	14	8.6	0.467	0.792
Normal	54	96.2	93	93.9	1	100.0	148	91.4		
Wasted	2	0.2	4	3.0	0	0.0	6	3.7	0.158	0.971
Normal	56	99.8	99	97.0	1	100.0	156	96.3		
Stunted	7	9.4	17	13.1	1	100.0	25	15.4	6.073	0.048*
Normal	51	90.6	86	86.9	0	0.0	137	84.6		

Likelihood ratio correlations used for cells with less than 5 counts

Relationship between childcare practices (dietary practices) and nutrition status

According to the study findings, the amount of energy consumed per day for preschool children showed a significant relationship with underweight ($\chi^2 = 38.72$, p

< 0.001) and stunting ($\chi^2 = 39.40$, $p < 0.001$). Children whose kilocalories were not adequate were more likely to be underweight and stunted. Wasting did not show any relationship ($\chi^2 = 0.573$, $p = 0.607$) with adequacy of energy intake.

Table 8: Relationship between dietary practices and nutrition status

Nutrition status	Energy intake adequate N=128		Energy intake not adequate N=34		Total N=162		χ^2	P-value
	N	%	N	%	n	%		
Underweight	2	1.6	12	35.3	14	8.6	38.72	0.001**
Normal	126	98.4	22	64.7	148	91.4		
Wasted	4	3.1	2	5.9	6	3.7	0.573	0.607
Normal	124	96.9	32	94.1	156	96.3		
Stunted	8	6.3	17	50.0	25	15.4	39.40	0.001**
Normal	120	93.7	17	50.0	137	84.6		

Likelihood ratio correlations used for cells with less than 5 counts

Relationship between morbidity and nutrition status

The presence of illness based on a two week morbidity recall showed a significant relationship with stunting ($\chi^2 = 16.13$, $p < 0.001$). Furthermore, the episode of illness in this study showed a significant

relationship with wasting ($\chi^2 = 7.470$, $p = 0.020$) and underweight ($\chi^2 = 16.48$, $p < 0.001$). Children who were sick two weeks prior to the study were more likely to be stunted, underweight and wasted than those who were not.

Table 9: Relationship between morbidity and nutrition status

Nutrition status	Children sick N=35		Children not sick N=127		Total N=162		χ^2	P-value
	N	%	N	%	n	%		
Underweight	9	25.7	5	3.9	14	8.6	16.48	0.001**
Normal	26	74.3	122	96.1	148	91.4		
Wasted	4	11.4	2	1.6	6	3.7	7.470	0.020*
Normal	31	88.6	125	98.4	156	96.3		
Stunted	13	37.1	12	9.4	25	15.4	16.13	0.001**
Normal	22	62.9	115	90.6	137	84.6		

Likelihood ratio correlations used for cells with less than 5 counts

Relationship between institutional characteristics (training of caregivers on childcare practices) and nutrition status

Training of caregivers on childcare practices was significantly associated with underweight ($\chi^2 = 41.20$, $p < 0.001$), wasting ($\chi^2 = 14.08$, $p = 0.004$) and stunting ($\chi^2 = 45.00$, $p < 0.001$).

Table 10: Relationship between training of caregivers on childcare practices and nutrition status

Nutrition status	Trained N=139		Not trained N=23		Total N=162		χ^2	P-value
	N	%	N	%	n	%		
Underweight	4	2.9	10	43.5	14	8.6	41.20	0.001**
Normal	135	97.1	13	56.5	148	91.4		
Wasted	2	1.4	4	17.4	6	3.7	14.08	0.004*
Normal	137	98.6	19	82.6	156	96.3		
Stunted	5	3.6	20	86.9	25	15.4	45.00	0.001**
Normal	134	96.4	3	13.1	137	84.6		

Likelihood ratio correlations used for cells with less than 5 counts

Predictors of preschool children nutrition status

Morbidity status was a predictor for stunting (OR = 1.734, $p < 0.001$), wasting (OR = 2.967, $p = 0.015$) and underweight (OR = 8.446, $p < 0.001$). Children who were sick in the last 14 days prior to the study were more likely to be stunted, wasted and underweight. Adequacy of energy intake was also a predictor of stunting (OR = 16.70, $p < 0.001$) and underweight (OR = 9.400, $p < 0.001$). Children who had inadequate intake of energy were more likely to be stunted and underweight compared to those who had adequate intake of energy. Lastly, training of caregivers on childcare practices was a predictor of stunting (OR = 2.222, $p < 0.001$), underweight (OR = 8.000, $p < 0.001$) and wasting (OR = 8.000, $p = 0.012$) respectively. Children whose caregivers had

not been trained on child care practices were more likely to be undernourished.

Table 11: Predictors of preschool nutrition status

Variable	Odds ratio	95% CI	P-value
Adequacy of energy intake		Stunting	
	16.70	3.170 – 19.09	0.001**
		Underweight	
	9.400	3.333 – 27.02	0.001**
Adequacy of Vitamin A intake		Stunting	
	3.000	1.404 - 6.579	0.666
Caregivers trained on child care practices		Stunting	
	2.222	0.903 - 5.263	0.001**
		Underweight	
	8.000	2.558 – 25.00	0.001**
		Wasting	
	8.000	1.529 – 41.66	0.012*
Morbidity status		Wasting	
	2.967	1.051-8.403	0.015*
		Underweight	
	8.446	2.615 – 27.28	0.001**
		Stunting	
	1.734	0.438 – 14.03	0.001**

Significance at $p < 0.05$

DISCUSSION

The results of this study showed that most of the respondents were young married caregivers of secondary level of education. Most of the caregivers had been in the orphanages for at least 36 months. All of them were on full time employment in the institutions. They were also involved in subsistence projects in the institutions for income generation. The findings in this study are similar to the national survey findings where majorities (79.8%) of respondents were reported to be married. [16]

It was noted in this study that more than a third (36.4%) of children in the selected orphanages were either single or double orphans with a mean (SD) duration of stay of 35.22±13.54 months. The rest (63.6%) were not orphans. These findings are in agreement with the observation that majority of children in institutional care globally are not double orphans. [20] Depending on the region, 50-90% of children living in orphanages have at least one living parent. [4] The findings of this study however differ slightly with those in Ghana where 80-90% of the children in orphanage care had families that, with some support, would be able to care for them. [21]

Caregiver to child ratio is one of the most important indicators for childcare. Favourable caregiver to child ratio in institutional care is 1:4-6. [22] Most institutions that have been studied have had high caregiver to child ratios. In many studies, ratios have ranged from 1:12 to 1:15. [22] In the present study, the least caregiver to child ratio was 1:2 while the highest was 1:11. Majority (84.0%) of the children had favourable caregiver to child ratio. Through key informant interviews with the respondents, it was established that caregivers discouraged individualized care so that children don't develop a preferred attachment to a specific caregiver. Other studies have also shown that there is still a problem of inconsistent caregiving and unfavourable caregiver to child ratios. In a study conducted in Ethiopia, some of the orphanages had administrative personnel but

no caregivers while other orphanages were in a range that included 33 to 125 children per caregiver. [23] In Rwanda, the study found that the average ratio was one caregiver to 13 children. [24]

The diet served in the orphanages comprised mostly of starchy foods. The cereal based foods contributed the highest proportion of food energy. These findings support high mean energy intake observed in the 24 hour recall mean analysis and the 7-food frequency consumption. The energy (less than 12% of the daily energy intake) derived from breakfast in this study were low to enable the children perform adequately until lunch considering that breakfast needs to provide at least 15-25% of the total energy intake. [25] Supper was the main contributor of daily energy intake (35.1%) compared to lunch (34.7%). However the mean energy intake for children in orphanages didn't meet the energy requirements for all children. Among the children in orphanages, majority (79.0%) met their daily energy requirements. Through key informant interviews with the overall in charges of the orphanages, it was established that all children were served same quantities of food. The difference in energy intake was as a result of poor appetite, illness among children as well as age. It could therefore be suggested that for those children whose energy intake fell below the recommended intake, they were at risk of suffering nutrition deficiencies.

Consumption of meat, fruits and vegetables was low. Low consumption of fruits and vegetables could expose children to micronutrient deficiencies that take long to manifest. A combination of these food groups contributed to majority (82.1%) of the children having a dietary diversity of more than four food groups. Additionally, the orphanages depended on purchased food rather than on home-produced food.

Overall, the health status of the population in Kenya is poor. [16] The common illnesses for children under five years in Kwale County are; upper

respiratory tract infection, malaria, diarrhoea, skin disease and pneumonia. [7,8]

In this study, the morbidity burden was not high among the children. More than a fifth (21.6%) were reported ill two weeks prior to the study. The most prevalent illnesses were acute respiratory infections (ARIs) and malaria. Health seeking behaviors by caregivers for their sick children were appropriate with the majority of them seeking assistance from health facilities within 24 hours of the child falling sick. In addition, the prevalence of diarrhoeal diseases and vomiting was not common. Caregivers reported having an understanding for the need and importance of appropriate health care practices. A larger proportion of children had access to treated/boiled drinking water. These factors minimised the risks of contamination. Generally, Kwale County has also seen a significant reduction (22%) of illnesses such as malaria and pneumonia as a result of mass distribution of nets and introduction of pneumococcal vaccine. [8]

The nutrition status of children is important as it determines the health, physical growth and development, academic performance and progress in life. All children have the right to adequate nutrition, which is essential for attainment of the highest standard of health. [6] Kwale County registered an increasing rate of Global acute malnutrition from 8.4% to 9.1% in 2009 and 2012, respectively. Severe acute malnutrition rate in 2012 stood at 2.7%. [26] The proportion of under-five children at risk of malnutrition reached 5.3%. [7] County Government data showed that stunting rate was 34.2%, wasting rate 6.1% and underweight rate 19.3%. [26] If compared with previous studies done in Kwale County, the undernutrition levels of the study shows a significant improvement.

The prevalence of the three forms of undernutrition in this study was lower than the Kenya national levels. [16] Wasting, underweight and stunting were lower than the findings in the orphanages in Nairobi, Kenya. [2] Furthermore, a similar

observation was noted in a study in Nigeria which showed that stunting rates were higher (34%) than underweight rates (19%) and wasting rates (18%) respectively. [27]

The lower levels of undernutrition in this study may be associated with the positive changes and strategies made in orphanages in Kwale County on childcare practices. The lower levels in undernutrition in comparison with other studies may as well be attributed to the smaller sample size of the study.

The findings of this study revealed that the longer a child stays in the orphanage, the more likely the child would be stunted and underweight. Children who consumed adequate energy intake were less likely to be underweight and stunted respectively. Those children reported ill in the two weeks prior to the study were more likely to be stunted, underweight and wasted. Children whose caregivers had not been trained on childcare practices were more likely to suffer the three forms of undernutrition (wasting, stunting and underweight).

CONCLUSION

From the study, it can be concluded that good nutrition status can be equated with appropriate childcare practices, low morbidity burden and appropriate institutional characteristics. Majority of children living in orphanages in Kwale County had good nutrition status as depicted by the low levels of undernutrition. Therefore, the government should ensure orphanages have adequate resources to take care of children in orphanages. The orphanage management should also encourage research activities to improve the conditions in the orphanages. Program planners and policy makers should implement measures to promote appropriate childcare practices that would target all orphanages in Kenya.

ACKNOWLEDGEMENT

I wish to acknowledge Dr. Munyaka and Dr. Chege for their professional guidance and support during the course of my study.

REFERENCES

1. United Nations Programme on HIV/AIDS (UNAIDS). Report on the global AIDS epidemic. Geneva: United Nations; 2012.
2. Mwaniki, E., & Makokha, A. Nutrition status of children in orphanages in selected primary schools within Dagoretti Division Nairobi, Kenya. *J Nutr Food Sci.* 2013; 4(2): 1-6.
3. UNICEF. Africa's orphaned generations. Geneva: United Nations; 2006.
4. Williamson, J., & Greenberg, A. Families, Not Orphanages. Better Care Network working paper. New York: United Nations; 2010.
5. Republic of Kenya. Maternal Infant and Young Child Nutrition. National operational guidelines for health workers. Nairobi: Division of Nutrition; 2013.
6. International Food Policy Research Institute (IFPRI). Global nutrition report. From promise to impact: Ending malnutrition by 2030. Washington, DC: IFPRI; 2016.
7. KFSSG. Kwale County long rains food security assessment report. A joint Report of Kenya Food Security Steering Group (KFSSG) and County Steering Group, Kwale County. Nairobi: KFSSG; 2017.
8. KFSSG. Kwale County long rains food security assessment report. Nairobi: KFSSG; 2016.
9. Black, M. & Hurley, K. Child nutrition. Helping children develop healthy eating habits. 2nd rev. ed. University of Maryland, USA: School of Medicine; 2013.
10. FSNAU. Food Security and Nutrition Analysis Unit for Somalia. FSNAU-FEWSNET Technical Release. Nairobi/Washington: FSNAU; 2017.
11. WHO. Infant and young child feeding. 2014. Factsheet No. 342. Updated February, 2014. Retrieved from www.who.int/mediacentre/factsheets/fs342/en/ accessed on 10/07/2014.
12. Vaida, N. Nutritional status of children living in orphanages in District Budgam, J & K. *International Journal of Humanities and Social Science Invention.* 2013; 2(2): 36-41.
13. Zeanah, C.H., Nelson, C.A., Fox, N.A., Smyke, A.T., Marshall, P., Parker, S.W. & Koga, S. Designing research to study the effects of institutionalization on brain and behavioural development. *Development and Psychopathology.* 2003; 15: 885-907.
14. Dozier, M., Zeanah, C.H., Wallin, A.R. & Shauffer, C. Institutional care for young children: Review of literature and policy implications. *Social issues and policy review.* 2012; 6(1): 1-25.
15. Republic of Kenya. Kwale County HIV and AIDS strategic plan 2016/2019. Kwale: Kwale County; 2016.
16. KNBS. Kenya Demographic and Health Survey. Nairobi: Kenya National Bureau of Statistics; 2014.
17. WHO. Child growth Standards. Technical report. Geneva: World Health Organization; 2006.
18. Chea, S., Peter, C., & Nyamota, M. Household food security, Dietary practices and Nutritional status of preschool children in Bahari Division, Kilifi County. *Int J Health Sci Res.* 2017; 7(1): 237-247.
19. Nokuthula, V. Food consumption in Kenya. Pretoria: University of Pretoria; 2009.
20. UN. Guidelines for the Alternative Care of Children. New York: United Nations; 2010.
21. Frimpong-Manso, K. From walls to homes: Childcare reform and deinstitutionalisation in Ghana. *International Journal of Social Welfare.* 2013; 23 (4): 402-409.
22. Zeanah, C.H., Smyke, A.T., & Settles, L.D. Orphanages as a developmental context for early childhood. Institute of infant and early childhood mental health. Tulane University: Health Sciences Center; 2005.
23. Family Health International (FHI). Improving Care Options for Children in Ethiopia through Understanding Institutional Child Care and Factors Driving Institutionalization. North Carolina, USA: FHI; 2010.
24. Republic of Rwanda. National survey of institutions for children in Rwanda. Rwanda: Ministry of Gender and Family Promotion (MIGEPROF) and Hope and Homes for Children; 2012.

25. Spence, C. Breakfast: The most important meal of the day. 2017; 8: 1–6.
26. UNICEF. MERCY-USA for AID and Development. New York: UNICEF; 2012.
27. Obiakor-Okeke, P., & Nnadi, B. Nutritional status, caregiving and feeding practices of infant and preschool children in motherless babies homes in Owerri, Metropolis. Department of Nutrition and Dietetics. Owerri: Imo state university; 2014.

How to cite this article: Bakari MB, Ann MN, Peter C. Childcare practices, morbidity status and nutrition status of preschool children (24-59 months) living in orphanages in Kwale county, Kenya. *Int J Health Sci Res.* 2017; 7(11):263-275.
