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Feeding pattern of children in day care centres in Port Harcourt metropolis

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Abstract: *Objective:* To determine the feeding pattern of day care attendees aged 0-35 months in Port Harcourt metropolis.
Methodology : Following appropriate approvals, a pilot-tested questionnaire was used to obtain the socio-demographic data and information on the feeding pattern of 10 day care attendees aged 0-35 months who met the study criteria selected from each of 200 schools using a stratified multistage random sampling technique. Data entry and analyses utilised SPSS version 20 and statistical significance was set at $p<0.05$.
Results: Between November, 2011 and July, 2012, 1541 children comprised of 766 (49.7%) males and 775 (50.3%) females were studied. They were aged 5-34months (mean 23.78 ± 7.04 months, median 25 months and modal 24 months) with 110(7.2%) children aged less than 12 months and 283(18%) aged less than 18 months. Although 102(6.6%) children were still breastfeeding, none of the 21 (1.4%) children aged less than 6 months was being exclusively breastfed. Complementary feeding commenced at age 6-8 months in 747(48.5%) children, before 6 months in 613(39.8%) and after 9 months in 181(11.7%) children. The ages at starting day care attendance which ranged from 1-25 months with 56.3% children starting before 11 months of age statistically significantly influenced the ages at which complementary feeding commenced ($\chi 2= 53.431$, df = 8, p = 0.000). The main foods fed to day care attendees while at day care centres were adult diet for 1152 (74.8%) children and breast milk and/or cereals for 389 (25.2%). Daily feeding frequencies while at the centre which ranged between 1-6 times and decreased with the child's age an the age was statistically significantly affected by the child's age, the feeding frequency (p = 0.000).
Conclusion: The feeding pattern of these day care attendees did not comply with the recommendations of the National Infant and Young Child Feeding Guidelines. This situation at a national level may contribute to the high prevalence of under-five malnutrition and calls for strategies to correct these deficiencies.

Key words: Feeding pattern, Day care attendees, Day care centres,

Introduction

The period of a child's life from birth till the age of 8years[1] are the formative years as it is during this time that optimal growth and development take place. Mothers are the most important humans who influence their children's feeding practices in these early years but with the global economic recession more mothers now work outside their homes. Consequently, their children are entrusted to other caregivers either at home or in institutions such as day care centres where they are cared for and fed[2,3].
There are different types of day care centres – institutional or home day care and care given by a non-relative in the child's own home[4]. They may be run by the government or non-governmental agencies[5-7]. The age range of children in day care centres varies between countries, developed and developing alike, but the common age is 3 years[8]. In Rivers State however, the cut off age was fixed at 6 years[9] even though children at this age have usually started primary education. A child in regular child care should spend at least 10 hours in care per week[10]. However, no duration was recommended in relevant Rivers State and national policy documents[9,11].
The World Health Organisation's (WHO) Guidelines leave the curriculum for early child care at the discretion of each country[12] but it is expected that while in care, children will be taught appropriate language and social skills and have their basic nutritional and health needs met.

Day care attendance has been reported to impact variably on children with some studies reporting improved intelligence quotient, development and academic grades; better communication with their mothers[13]. Other studies however, reported adverse effects such as increased incidence of respiratory, gastrointestinal, skin, ear and other bacterial infections[14-16].

For optimal child growth, the WHO's Infant and Young Child Feeding Guidelines which have also been adopted in Nigeria require a child to be exclusively breastfed till 6 months and thereafter, breastfeeding is continued with complementary feeding till the child is aged at least 2 years[17,18]. Compliance with these guidelines have been variable with very few studies evaluating the situation even in Nigeria[13] hence this study to determine the feeding pattern of day care attendees aged 0-35 months in Port Harcourt metropolis.

Materials and methods

This Port Harcourt-based cross-sectional descriptive survey was conducted from November 2011 to July 2012.Day care centres in Rivers State are registered with the Department of Child Care in the State Ministry of Social Rehabilitation as well as with the National Association of Proprietors of Private Schools (NAPPS). However, while the NAPPS registered 500 centres, less than 50 were registered with the government. These centres are spread across the metropolis, and clustered in 20 zones,10 zones in each of the 2 Local Government Areas (LGA) that make up Port Harcourt metropolis-Obio/Akpor and Port Harcourt LGAs. The Rivers State Government did not run any day care centre.

The minimum sample size for the study was calculated using the formula[19]:

$N = z^2(pq)/ e^2$[z=1.96 at 95% confidence intervals, so that $z^2 = 3.8416$; p is the proportion of day care children who were fed according to the IYCF age appropriate recommended guidelines while at day care centres. However, since the proportion of day care attendees who were fed according to these guidelines was not available either at local or national level, 50% was used (i.e. p= 0.5),q is $1 – p = 1 – 0.50 = 0.5$, while e is 0.05 giving $N = z^2 (pq)/e^2 = 3.8416 \times 0.5 \times 0.5/0.025 = 1536.64$ which is approximately 1537 children].

With the assistance of the NAPPS, 200 schools were selected using a stratified multistage random sampling technique, based on the location of the school. In each LGA, 5 out of 10 zones were selected and 20 schools from each of the 5 selected zones. In each school, 10 children- 5 from each gender, aged 0-35 months who met the study criteria were studied. The inclusion criteria for the study were attendance at the day centre for at least 3months(one school term), parental/guardian's consent/completion of the questionnaire, child's assent and the child being apparently well at the time of the study. A child was excluded if the criteria were not met, or had any pre-existing medical condition that could affect the child's growth such as multiple births, sickle cell disease and other chronic illnesses, or had a younger sibling who had been recruited into the study at the same centre.

The pre-tested study questionnaire was used to obtain the socio-demographic data and information on the feeding pattern from the parents/guardians and minders by one of the authors with the aid of trained assistants. Approvals for the study were obtained from Research Ethics Committee of the University of Port Harcourt Teaching Hospital, NAPPS- Port Harcourt Chapter, Day Care Centre Proprietors and parents/guardians of participating children. Parental and school authority's counselling was done for all children with inappropriate feeding practices. Data obtained were entered vetted and questionnaires with incomplete data were excluded from analysis. Data from properly completed questionnaires were entered into a Microsoft Excel spreadsheet and analysed using SPSS version 20 with statistical significance set at $p<0.05$. Results are presented in tables and charts.

Results

Of the 1541 children with complete data, 766 (49.7%) were males and 775 (50.3%)females. They were aged 5-34months (mean 23.78 ± 7.04 months, median 25 months and modal 24 months) with 110(7.2%) children aged less than 12 months and 283(18%) less than 18 months. One hundred and two (6.6%) children were still breastfeeding among whom were 55 (53.9%) who breastfed during the hours they spent at day care.

Although 13(61.9%) of the 21 children aged less than 6 months were breastfed while at day care, none was breastfed exclusively. Additionally while 5.6% children aged 20-23 months were still breastfeeding 12(0.7%) children were never breastfed (Table 1). The median age at which breastfeeding was stopped was 12 months. Adult diet alone - consisting of foods such as rice, pasta, tubers and plantain- was fed to 1152 (74.8%) children aged 6 months and above while 389 (25.2%) children were still being fed on breast milk and/or cereals. The age of each child was a statistically significant determinant of what he/she was fed with while at day care (p=0.000). Parents prepared the meals eaten by 1209 (78.5%) children 21.5% children ate meals prepared by other people such as their relatives and the minders. The minders employed by the centres fed 1418 (92%) children while 123 (8.0%) children either fed themselves or were fed by their mothers. A cup/plate and spoon were used for feeding 1449 (94.0%) children while 92 (6.0%) were bottle-fed. The age of a child was statistically significant determinant of who fed him/her while at day care (p = 0.007) and the utensils used in feeding (p = 0.000) but not who prepared the food eaten while at day care (p = 0.415).

The daily duration of stay at day care centres was less than 5 hours for 123 (8.0%) children, 5-10 hours for 1411(91.6%) children and 10-12 hours for 7(0.5%) children. The daily feeding frequencies while at day care ranged between 1-6 times (mean 1.85 ±1.039 and me-

dian 2) with 724(47.0%) children being fed once, 490 (31.8%) twice and 327 (21.2%) 3-6 times. The daily feeding frequencies with cereals/adult food reduced as the child got older with 88 (5.8%) of the 110 (7.2%) children aged less than 12 months being fed at least twice compared to 502 (32.6%) of the 973 (63.1%) children aged 24-35 months who were fed once. The ages of the children significantly affected the daily feeding frequency while at day care centre (p = 0.000).

Table 1: Feeding practices of day care attendees while at day care

Characteristics	Age range (months) 0-5	6-11	12-17	18-23	24-29	30-35	Total N(%)
Age distribution N (%)	21 (1.4)	89 (5.8)	173 (11.2)	285 (18.5)	631 (40.9)	342 (22.2)	1541 (100)
1. Breastfeeding practice among day care children while at day care [p = 0.000 (Fisher's exact)]*							
Breastfeeding N (%)	13 (0.8)	42 (2.7)	29 (1.9)	3 (0.2)	9 (0.6)	6 (0.4)	102 (6.6)
Not Breast –feedingN (%)	8 (0.5)	47 (3.0)	144 (9.3)	282 (18.3)	622 (40.4)	336 (21.8)	1439 (93.4)
Foods fed to day care attendees while at day care [χ^2 = 68.89, df = 5, p = 0.000]							
Breast milk / cereals N (%)	21 (1.4)	24 (1.6)	32 (2.1)	61 (4.0)	163 (10.6)	88 (5.7)	389 (25.2)
Adult diet N (%)	0 (0)	65 (4.2)	141 (9.1)	224 (14.5)	468 (30.4)	254 (16.5)	1152 (74.8)
Who prepares foods fed at day care [χ^2 = 5.012, df = 5, p =0.415]							
Parents N (%)	20 (1.3)	68 (4.4)	130 (8.4)	226 (14.7)	495 (32.1)	270 (17.5)	1209 (78.5)
Others N (%)	1 (0.1)	21 (1.4)	43 (2.8)	59 (3.8)	136 (8.8)	72 (4.7)	332 (21.5)
Who feeds the child while at day care[χ^2 = 15.838, df = 5, p = 0.007]							
Minders N (%)	16 (1.0)	81 (5.3)	154 (10)	257 (16.7)	596 (38.7)	314 (20.4)	1418 (92.0)
Others N (%)	5 (0.3)	8 (0.5)	19 (1.2)	28 (1.8)	35 (2.3)	28 (1.8)	123 (8.0)
Utensils used in feeding the child at day care[χ^2 = 46.620, df = 5, p = 0.000							
Cup/plate and spoon N (%)	15 (1.0)	74 (4.8)	160 (10.4)	273 (17.7)	608 (39.5)	319 (20.7)	1449 (94.0)
Feeding bottles N (%)	6 (0.4)	15 (1.0)	13 (0.8)	12 (0.8)	23 (1.5)	23 (1.5)	92 (6.0)
Feeding frequencies while at day care[χ^2 =26.028, df = 10, p = 0.000]							
Once N (%)	5 (0.3)	17 (1.1)	63 (4.1)	137 (8.9)	324 (21.0)	178 (11.6)	724 (47.0)
Twice N (%)	9 (0.6)	21 (1.4)	50 (3.2)	79 (5.1)	220 (14.3)	111 (7.2)	490 (31.8)
Three or more N (%)	7 (0.5)	51 (3.3)	60 (3.9)	69 (4.5)	87 (5.6)	53 (3.4)	327 (21.2)

df = degree of freedom

All the day care attendees, irrespective of their ages at starting of day care, had been commenced on complementary foods with 747 (86.2%) of the 867 (56.3%) children who started day care attendance by 10 months of age having been started on complementary feeding by age 6-8 months. Thus the ages at the commencement of day care attendance statistically significantly influenced the age at which complementary feeding was commenced (p=0.000) (Table 2).

Table 2: Ages at commencing day care and introduction of complementary feeds

Age at commencing day care attendance (months)	Ages at which Complementary Foods were introduced <6months N (%)	6-8months* N (%)	> 9months N (%)	Total N (%)
1 – 5	210 (13.6)	205 (13.3)	36 (2.3)	451 (29.3)
6 – 10	166 (10.8)	204 (13.2)	46 (3.0)	416 (27.0)
11 – 15	115 (7.5)	137 (8.9)	30 (1.9)	282 (18.3)
16 – 20	49 (3.2)	126 (8.2)	27 (1.8)	202(13.1)
21 – 25	73 (4.7)	75 (4.9)	42 (2.7)	190 (12.3)
Total (%)	613 (39.8)	747 (48.5)	181 (11.7)	1541 (100)

χ2= 53.431, df = 8, p = 0.000 [df = degree of freedom)

*Recommended age for the introduction of solid, semi-solid or soft foods is 6-8 months[20]

Discussion

Compared to the 10.6% day care attendees age less than 6 months in the USA[21] who breastfed while at day care, 61.9% of similar aged children in our study did so. However in both settings, there was poor compliance with the WHO IYCF Guidelines which had been adopted in both settings. This was evidenced by lack of exclusive breastfeeding among day care attendees aged less than 6 months and the cessation of breastfeeding before 2 years[17,18]. The high level of poor compliance in these series is similar to those documented from Osogbo[22], (Western Nigeria) and Sao Paulo[23] whose authors blamed the poor practices on lack of maternity leave and the location of day care centres away from mothers' work premises. Although the breastfeeding rate among children aged 20-23 months in this study was low compared to the 40% reported in Bogota[24] it was higher than the 0% recorded in Oshogbo[22] which recorded a similar median age of stopping breastfeeding.

The similarity of our rate of early introduction of

complementary feeding with those reported by other studies in Nigeria, Ghana, North and South America may be attributed maternal feeling of breast milk inadequacy and ignorance of the benefits of breastfeeding as have been previously reported[21-25]. The prevalent use of adult diet documented in this study, although not compliant with the National IYCF policy has been reported in Osogbo[22] and may be explained by the lack of appropriate facilities at the day care centres to hygienically prepare the recommended complementary foods and the high cost of commercially available complementary foods.This study has also demonstrated the adverse effect of early commencement of day care attendance on the compliance with recommended optimal infant and young feeding practices especially where the day care centre is not located close to mother's workplace[26].

Conclusion

Children who start attending day care centres at an early age are less likely to be fed optimally as recommended by the National IYCF policy especially if their mothers are working at sites located far from the day care centres where their children attend. Access to day care centres in working environments, enforcement of the IYCF policies with monitoring and supervision of day care centres are likely to promote compliance with these guidelines and improve the feeding of day care attendees.

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