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Do Mothers' Knowledge and Practice of 'Child Survival Strategies' Affect the Nutritional Status of Their Children?

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Abstract: A set of activities collectively called 'Child Survival Strategies' (CSS) have been demonstrated to reduce morbidity and mortality in the under-5 year old children. But Under-5 mortality has been consistently high in the past ten years in Nigeria and whether this was due to lack of knowledge or practice of these strategies is not known. It was therefore necessary to evaluate mothers' knowledge and practice of these activities. A descriptive cross-sectional study of nursing mothers and their children attending well-baby clinics in Ibadan was designed. Two hundred and forty nursing mothers and their children were recruited from three types of well baby clinics (university teaching hospital, state maternity hospital and primary care health centers) in the Ibadan North local government area of Oyo state, Nigeria. Interviewer-administered questionnaire were used to obtain information from mothers about knowledge and practice of breast-feeding, childhood immunizations, oral rehydration, growth monitoring, family planning and relevance of female education to child survival. Anthropometric measurements of the children were taken to determine 'wasting', 'stunting' and 'underweight'. Result of the analyses showed that majority of the mothers (74%) were married and 17% were single, 31.3% had completed primary and/or secondary education, 16.7% had no formal education while 51.8% had tertiary education. Exclusive breast-feeding was practiced by 67.5%, oral rehydration therapy by 78.3%, growth monitoring and promotion by 7.5%. Timely and complete immunization was practiced by 93.8% for BCG, 80.4% for one dose, 60.4% for two doses and 49.2% for three doses of DPT and oral polio vaccines, 53.8% for measles and 12.1% for hepatitis B. About 55% of the mothers were currently using family planning methods. Sixty-three percent of the children were underweight, 68% were stunted and 23% were wasted. There was no significant relationship between mothers' practice of CSS and nutrition of the children. Mothers' education was negatively correlated to 'wasting' in the children. This study reaffirms the importance of female education in the practice of CSS and good nutritional outcomes in children. Basic knowledge of child health, nutrition and related issues should continue to be made available to women and be included in the school curricula. Practice of all the CSS components should be encouraged even at the community level.

Key words: Child survival strategies, nutritional status, mothers' knowledge and practice

INTRODUCTION

Child survival strategies (CSS) is defined as steps taken for children aged 0-3 years by individuals and communities to reduce risk, duration or severity of an adverse health condition that detrimentally affects the survival of infants and children (USAID, 2002). CSS include breast-feeding, immunization, oral *rehydration* therapy, growth monitoring and promotion, female education, family planning and food fortification. Despite apparent application of this CSS, thousands of children under 5 years still die all over the world as a result of preventable diseases and illnesses (Neumann *et al*., 1999). Nigeria with an under-five-mortality rate of 187 per thousand ranks fifteenth position in the world (UNICEF, 2001); this value is poor when compared to that of other developing countries of the world.

Breast-feeding has tremendous advantages of protection against diarrhea, respiratory tract infection, *otitis media*, *bacteraemia*, bacterial meningitis, botulism, urinary tract infection and necrotizing *enterocolitis* (Bocar, 1997; Hanson, 1999). It was also reported that breast-feeding improved responses to vaccines by actively stimulating the immune system of children (Hanson, 1999). Hormones, growth factors, cytokines and even whole cells are present in breast milk and act to establish biochemical and immunological communication between mother and child (Berntokm and Walker, 1999).

Growth monitoring and promotion is useful for early detection of malnutrition or illness and fosters good development in children (UNICEF, 2001). Oral rehydration therapy is the use of home-made prepared salt, sugar solution in the management of diarrhea which was the second main cause of infant mortality and the third main cause of under-five mortality (UNICEF, 2001) and its use had saved a million children yearly worldwide (Endsley and Galbraith, 1998).

Poor sanitary environment has been suggested as one of the reasons why diarrhoeal diseases and consequent dehydration is so common in Nigeria.

Childhood immunization remains an important strategy in the reduction of morbidity and mortality from common

vaccine-preventable diseases which have been implicated in the death of more than 20% of children under five (CDC, 2002).

Studies have shown that globally there is an inverse relationship between the level of female literacy and infant and child mortality (Caldwell, 1996). Female literacy is a non-health factor that influences child survival and better nourishment of children.

Family planning is the deliberate practice of controlling the timing and number of pregnancies in women. Birth defects have been reported to be common among children born within a year of the previous birth (UNICEF, 1998). Rustein (2001) showed that intervals of at least 36 months was associated with the lowest mortality and morbidity levels and that the provision of micronutrients to pregnant women prevents delivery of low birth weight babies.

Nigeria has an under-five mortality rate of 187 per thousand this is too high when compared to other developing countries (UNICEF, 2001). The main causes of under-five mortality had been identified and effective strategies deployed. This persistent high under-five mortality therefore suggests either lack of knowledge or practice of child survival strategies by mothers and caregivers. This study therefore assessed the knowledge and practice of child survival strategies among nursing mothers in Ibadan Nigeria.

MATERIALS AND METHODS

This study was descriptive cross-sectional in design. Six well-baby clinics in Ibadan North Local Government Area (LGA) of Oyo state of Nigeria were selected. Two hundred and forty mother-child pair were selected consecutively in each of the locations. Exclusion was based on refusal to participate and child being ill. Ethical clearance was obtained from the University of Ibadan/ University College Hospital ethical committee and consent of the participants were sought. Permission was granted by the authorities of these health facilities. A validated, semi-structured interviewer-administered questionnaire was designed to assess the knowledge and practice of child survival strategies by mothers. Socio-demographic information was also obtained while anthropometric measurements of weight and length/height of children were taken using 'seca' digital weight scales and length-boards. Indices of wasting, stunting and underweight were derived using the WHO (2005) growth standard. Descriptive and inferential statistics were used to analyze the data. Means were compared using the student's t-test at $p<0.05$ taken as significant.

RESULTS

Two hundred and forty mother-child pair were the subjects of this study and their characteristics are shown in Table 1. The highest number of respondents fell into the age group of 21-25 years. A high percentage of the respondents had primary or secondary education (31.3%), while 23.8% had diploma, 8.8% and 19.2% were postgraduates and undergraduates students respectively. Sixteen per cent (16.7%) had no formal education and 9.2% full-time housewives.

Table 1: Socio-demographic characteristics of subjects

	Frequency	Percentage
Mothers' Age Group		
<20	30	12.5
21-25	81	33.8
26-30	57	23.8
31-35	43	17.8
36-40	20	8.3
≥ 40	9	3.8
p<0.05		
Religion		
Christianity	119	49.6
Islam	119	49.6
Others	2	0.8
p>0.05		
Ethnicity		
Yoruba	161	67.1
Igbo	41	17.1
Hausa	33	13.8
Others	3	1.3
p<0.05		
Marital Status		
Married	178	74.2
Single	40	16.7
Separated	13	5.4
Widowed	9	3.8
p<0.05		
Education		
Postgraduate	21	8.8
Undergraduate	46	19.2
Diploma	57	23.8
No formal education	40	16.7
Primary and secondary school	75	31.3
p<0.05		
Occupation		
Trading	55	22.9
Civil servant	21	8.8
Professional (e.g. Nurse, Doctors, Lawyers, Engineers)	57	23.8
Artisans	20	8.3
Housewives	22	9.2
Business	18	7.5
Others e.g domestic help.	47	19.6
p<0.05		
Total	240	100.0

Table 2 shows that infants between age group 0-6 months had the highest number, with 65% of the children being males while 35% were females. Adequate knowledge of child survival varied with maternal age with mothers <20yrs with lowest proportion followed closely by mothers >40yrs (Table 3). Health care providers were the sources of information in 55.4% and electronic media in another 19.2% (Table 4). It can be observed from Table 5 that in all age-groups over 70% of mothers had correct knowledge about exclusive breast-feeding. Mothers below 20 years of age

Table 2: Age and sex of children

Age Group	Males		Females		Total	
Months	n	%	n	%	n	%
0-6	65	27.08	45	18.87	110	45.83
6.1-12	40	16.67	19	7.92	59	24.59
12.1-24	30	12.50	15	6.25	45	18.75
>24	21	8.87	05	2.08	26	10.83
Total	156	65.0	84	35.0	84	100.0

Table 3: Adequate knowledge of child survival strategies

Mothers' Age-Group	Number	Adequate Knowledge	Percentage
<20	30	13	43.3
21-25	81	68	84.0
26-30	57	44	77.2
31-35	43	34	79.1
36-40	20	15	75.0
≥40	9	5	55.6
p<0.05			

Table 4: Sources of knowledge of child survival strategies

Source	Frequency	Percentage
Health care professionals	133	55.4
Radio and TV	46	19.2
No response	61	25.4

had the least knowledge about ORT, GMP and their implication to child survival. Almost all the women in the different age groups had learnt about family planning during attendance at antenatal clinic. Majority of the women in each age group support that women should be educated as much as men. Immunization record showed that about 94% had BCG, 80% had one dose, 60% two doses and 49% three and complete doses of DPT and oral polio vaccines (Table 6).

Of the components of CSS whose practice was evaluated, growth monitoring and promotion was the poorest with 7.5%, about 55% practice one form of family planning, 67% practiced exclusive breast feeding and 78.3% stated they use oral rehydration therapy (Table 7). The prevalence of stunting is highest in the children but a clear trend cannot be recognized: while proportion of wasted children increased with maternal age, age-group 36-40 was much lower. In summary 68% of the children were stunted (with 41.3% severe), 63.3% underweight (with 7.1% severe) and 22% wasted (with 7.1% severe). This is shown in Table 8. Finally, of all the components of the CSS only female education correlates with wasting in the children ($r = -0.171$, $p = 0.008$).

DISCUSSION

Findings showed that 75.6% of the mothers were knowledgeable about components of the Child Survival Strategy (CSS), a greater percentage of them (55.4%) had heard about CSS from health professionals while 19.2% got their information from media and friends. According to WHO/UNICEF (1991) it was recommended that children should be breast-fed for the first six months of life before introduction of complementary feeding. In this study 77% of mothers had correct knowledge of Exclusive Breast-feeding (EBF) but only 67.5% were practicing it. This EBF rate is higher than the 17% in Nigeria, 54% in Ghana, 4% in Ivory Coast and 21% in Cameroon (UNICEF, 2001). This may be because the study was facility-based. The potential of EBF to avert 13% of all under-five mortality is lost by this poor practice/uptake in a region with high childhood malnutrition and mortality rates.

Growth Monitoring and Promotion (GMP) is very important for the early detection of malnutrition and illnesses in children. Results of this study showed that 65.8% of mothers were knowledgeable but only 7.5% of them actually visit the clinic for Growth Monitoring regularly. Ashworth *et al*. (2008) in an excellent review of evidence of impact of GMP had noted low participation rates, poor health workers performance and inadequacies in health system infrastructure as some of the reasons identified. Also measurable benefits which include improved nutritional status of participating children, increased utilization of health services and reduced child mortality have been identified in some of the small scale and large scale GMP programmes reviewed. It may be possible that low practice of GMP is because a third to three-fourth carers in developing countries do not understand the growth chart (Ruberfroid *et al*., 2007) and therefore its relevance to child nutrition and survival.

UNICEF (2001) had shown that Nigeria's immunization rates are among the worst in the world. Findings pertaining to immunization coverage in this study showed 93.8% of all the children had BCG vaccine; this was much higher than the 69% reported for Nigeria (UNICEF, 2001). Also 80.4% had one dose and 49.2% had three doses of DPT and oral polio vaccine and. This was higher than the corresponding figure of 72% and 54% for Nigeria (UNICEF, 2001). The 53.8% who had

Table 5: Correct Knowledge of different components of child survival strategies

Age of Mother	Number	Correct Knowledge	Percentage
Exclusive Breast-feeding			
<20	3024	80	
21-25	81	60	74.1
26-30	57	41	71.9
31-35	43	33	76.7
36-40	20	18	90.0
≥40	9	9	100.0
p<0.05			
Oral rehydration therapy			
<20	30	16	53.3
21-25	81	70	86.4
26-30	57	56	98.2
31-35	43	39	90.6
36-40	20	18	90.0
≥40	9	7	77.9
p<0.05			
Growth monitoring and promotion			
<20	30	11	36.7
21-25	81	63	77.5
26-30	57	44	77.1
31-35	43	25	58.1
36-40	20	11	55.0
≥40	9	4	44.44
p<0.05			
Family planning			
<20	30	29	96.67
21-25	81	75	92.59
26-30	57	57	100
31-35	43	43	100
36-40	20	20	100
≥40	9	9	100
p>0.05			
Female education			
<20	30	23	76.7
21-25	81	67	82.7
26-30	57	49	86.0
31-35	43	36	83.7
36-40	20	17	85.0
≥40	9	5	55.6
p<0.05			

measles vaccine in this study is lower than the 62% coverage for Nigeria.

Oral rehydration therapy is one of the child survival strategies introduced by the World Health Organization to reduce infant mortality which results from dehydration. Findings from this study reveal that 77.9% have adequate knowledge of ORT across all age groups of mothers and 78.3% rate of utilization. This is a tremendous improvement to the 39% awareness and 10% use of ORT in Lagos (Ekanem and Benebo, 1988). Mothers in Enugu, Nigeria with 97% awareness and 86% use of home-made salt-sugar-solution (Ugochukwu, 2002) made better use of ORT than the subjects in this study.

There is high level of knowledge of family planning (97.1%) but this does not translate to the practice which is only 55%. Ethnicity was suspected to have an effect on the practice of family planning. The highest uptake or utilization of family planning was by the Yoruba ethnic group, 33.2% followed by Igbo 8.4% and Hausa 3.8%. This agrees with the NDHS (2003) report which showed higher uptake among respondents in the south-west than in the other regions of Nigeria.

According to UNICEF (2001), education is a key factor in reducing child and infant mortality. Findings from this study showed a higher percentage (82.1%) in support of female education. The correlation between the

Table 6: Immunization status of the children

Immunization Antigen	Number	%
BCG	225	93.8
DPT, OPV 1	193	80.4
DPT, OPV 2	145	60.4
DPT, OPV 3	118	49.2
Hepatitis B	29	12.1
Measles	129	53.8

Table 6 shows that 93.8% had BCG vaccine at 0-6 months whereas the number of those who received subsequent vaccine continued to decrease

Table 7: Mothers' practice of components of child survival strategies

Age Range	Number	Yes	Percentage
Exclusive breast feeding			
<20	30	19	63.3
21-25	81	60	74.0
26-30	57	35	61.4
31-35	43	27	62.7
36-40	20	14	70.0
≥40	9	7	77.8
p<0.05			
Utilization of oral rehydration			
<20	30	15	50.0
21-25	81	62	76.5
26-30	57	55	96.4
31-35	43	32	74.4
36-40	20	17	85.0
≥40	9	7	77.5
p<0.05			
Growth monitoring and promotion			
<20	30	1	3.3
21-25	81	7	8.6
26-30	57	5	8.8
31-35	43	3	7.0
36-40	20	1	5.0
≥40	9	1	11.1
p<0.05			
Family planning			
<20	30	24	80.0
21-25	81	54	66.7
26-30	57	22	38.6
31-35	43	16	37.2
36-40	20	10	50.0
≥40	9	6	66.7
p<0.05			

Table 8: Age of mothers and malnutrition in children

Age of mother	Number	severe	Mild/moderate
Wasting			
<20	30	2	1
21-25	81	4	10
26-30	57	4	10
31-35	43	6	9
36-40	20	1	3
≥40	9	0	5
Total	240	17	38
%	(100)	(7.1)	(15.9)
p<0.05			
Stunting			
<20	30	13	12
21-25	81	42	19
26-30	57	18	20
31-35	43	14	7
36-40	20	7	5
≥40	9	5	1
Total	240	99	64
%	(100)	(41.3)	(26.7)
p<0.05			
Underweight			
<20	30	4	15
21-25	81	5	46
26-30	57	6	31
36-40	20	0	9
≥40	9	1	6
Total	240	17	135
%	(100)	(7.1)	(56.2)
p<0.05			

nutritional status (wasting) and other components of CSS showed that female education had an association with wasting.

Conclusion: The knowledge of mothers about each of the components of child survival strategies was high but the practice was very low. The lowest of them all was the GMP, which if practiced could have served as an early warning for mothers about the poor nutritional state or inadequacy of dietary intake of their children. CSS is not being effectively practiced and in view of this more attention should be shifted towards growth monitoring and promotion programmes, strengthen the nutrition counseling elements, combine growth monitoring with other health intervention channels such as immunization and ensure consistent message delivery (Ashworth *et al*., 2008).

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REFERENCES

Ashworth Ann, Shrimpton Roger and Jamil Kazi, 2008. Growth monitoring and promotion: review of evidence of impact. Maternal and Child Nutrition (2008), 4 pp: 86-117.

Bernt, K.M., and W.A. Walker, 1999. Human milk as a carrier of biochemical messages. Acta Paediatrica. Supplement, 88: 27-41.

Bocar, D.L., 1997. Combining breastfeeding and employment: increasing success. J. Perinatal Neonatal Nursing, 11: 23-43.

Centre for Disease Control (CDC), 2002. Progress towards poliomyelitis eradication. Nigeria, Morbidity and Mortality Weekly Report, 52: 478-481.

Caldwell, P., 1996. Child Survival: physical vulnerability and resilience in adversity in the European past and the contemporary third world. Soc. Sci. and Med., 43: 609-619.

Endsley, S. and A. Galbraith, 1998. Are you overlooking oral rehydration therapy in childhood diarrhea? It's not just for use in developing countries. Postgraduate Medicine, 104: 159-162, 165-166, 179.

Ekanem, E.E. and N.S. Benebo, 1988. A community-based survey of the awareness and acceptability of Oral Rehydration Therapy (ORT) as a treatment for acute diarrhea in children. Early Childhood Development and Care, 34: 95-102.

Hanson, L.A., 1999. Human milk and host defence, immediate and long term effects. Clinics in Perinatology, 26: 447-478.

NDHS, 2003. Nigeria Demographic and Health Survey 2003. National Population Commission and ORC Macro 2004.

Neumann, N.A., C.G. Victoria, R. Halpern, P.R. Guinares and J.A. Cesar, 1999. Assessment of the performance of Pastoral de Crianca, a health support group, in promoting child survival and health education. Pan Am. J. Public Health, 5: 400-410.

Ruberfroid, D., G.H. Pelto and P. Kolsteren, 2007. Plot and see! Maternal comprehension of growth chart worldwide. Trop. Med. Int. Health, 2007 Sept; 12: 1074-86.

Rustein, S., 2001. Effects of birth interval on mortality and health: multivariate cross country analysis {Powerpoint}. Calverton, Maryland, Measure/DHS+, Macro Int'l, 65p.

Ugochukwu, F.E., 2002. Treatment of childhood Diarrhoea: What mothers do. Nig. J. Clin. Practice, 5: 64-68.

United Nations Children's Fund (UNICEF), 1998. The state of the World's children. UNICEF Oxford University Press. Oxford.

United Nations Children's Fund (UNICEF), 2001. The state of the World's children. UNICEF New York.

USAID, 2002. Child survival and health programmes. Fund progress report, USAID, Washington DC, 2002, XII, 95p

WHO, 2005. World Health Organization Child Growth Standard. Dept of Nutr, WHO, Avenue Appia 20, 1211 Geneva 27.

WHO/UNICEF, 1991. Baby friendly hospital initiative. http://www.who.int/nutr (Accessed august 31,2009).