

# Relationship between antenatal visits and under-five under-nutrition: A case study of Ekpoma, Edo-Nigeria

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## Abstract

A cross-sectioned study was conducted in Ekpoma, Esan West Local Government Area of Edo State in Nigeria to investigate the impact of antenatal service utilizations on risk of under-nutrition among under-five children. 402 households, in which there were children in the right age groups, were interviewed using questionnaire and face to face. Of the 402 children in these households, 24.38% were under nourished. Malnutrition was associated with mother's utilization of prenatal services during pregnancy as mothers who registered for antenatal services were over 2 times less likely to present with under nourished under-five. Based on the findings of this study, utilization of antenatal service is one sure way to curb the under nutrition trend in many developing countries that share similar characteristics with Ekpoma, Edo state Nigeria.

## Keywords

Antenatal Services, Under-Nutrition, Under-Five Children, Nigeria

## 1. Introduction

In September 2000, world leaders came together at the United Nations headquarters setting out eight time bound targets known as the millennium development goals (MDGs) among which reducing children mortality by three-quarters (MDG-4) by the year 2015 is one of the targets ([1]).

Under-nutrition is one of the most common causes of morbidity and mortality among children throughout the world and more so in developing nations ([2]). Being a major burden of ill health, it has been accountable for 60% of the 10.9 million deaths that occur annually among children under five years of age ([3]). By implication, Under-nutrition continues to be a public health problem. On the other hand, it has been established that women who take antenatal services have progressively higher infant survival rates compared to women who did not ([4]).

Specifically, according to Taylor et al. ([5]), women who do not utilized prenatal care, are six times more likely to have low birth weight infants, five times more likely to have stillborn, and six times more likely to die within the first year. For these facts, antenatal services that a mother receives during pregnancy are important for the well being of the mother and her child.

Considering the important of prenatal care programmes that are designed to deal with factors that are most likely to be associated with maternal and child health, such programmes are no doubt widely advocated as a way of alleviating the incidence of low birth weight and avoiding adverse pregnancy outcomes ([6], [7], [8]). Reference to the literature on prenatal services, the rate of maternal and under-five morbidity and mortality, and trend in under-nutrition, the reductions in child malnutrition and improvements in related outcomes, maternal health and access to antenatal care are yet to be reached with regard to the Millennium Development Goals. This study was

therefore undertaken to investigate the impact of antenatal services utilization during pregnancy and under-five nutritional status.

## 2. Materials and Method

### 2.1. Study Area

Ekpoma is the administrative headquarters of Esan West Local Government Area of Edo State, Nigeria. It lies between latitude  $6^{\circ} 43^1$  and  $6^{\circ} 45^1$  of the Greenwich meridian. It has flat landscape, one lacking in rocks and mountains and good for agriculture purposes.

It is suburban community with public and private hospitals, primary and secondary schools, a university (Ambrose Alli University), and electricity supply, but limited sources of clean water. Geographically, it is less than 100kilometres to Benin -the Edo State capital. It is bounded by Uhunmwode Local Government Area on the south and Igueben Local Government Area on the north. The closely associated neighbouring community is Irrua in Esan Central Local Government Area, the home of Irrua Specialist Hospital. The indigenes speak Esan and their occupation is mainly farming and trading. The predominant food and farm produce are yam, cassava, cocoyam, plantain and rice.

### 2.2. Ethical Consideration

The traditional ruler of Ekpoma, *The Enogie of Ekpoma* was seen and educated on the objective of this study after which he granted permission for the study. Informed consent was obtained from the respondents after being educated on the study and its objectives.

### 2.3. Study Population

A total of 402 under-five caregivers who reside in Ekpoma were recruited for this study.

### 2.4. Selection Criteria

The under-five caregivers must have been living in Ekpoma for the past 5 year.

### 2.5. Exclusion Criteria

The under-five caregivers who have undergone major surgery, and any other chronic illnesses were excluded from this study.

### 2.6. Duration of Study

The study was conducted between February and April 2012.

### 2.7. Sampling Method

Systematic sampling technique was utilized in selecting the participants. There are nine quarters in Ekpoma. An average of 45 houses was used in each quarter and one out

of every third house was selected and an under five child in the house was recruited and the caregiver interviewed.

### 2.8. Method of Data Collection

The interviewer-administered questionnaire used to obtain information from the caregivers was divided into two sections: Section A elicits bio-data information of caregivers and under-five year children, while section B was on the nutritional status of the children. This was accessed by measuring their weight (kg) using a standard electronic scale, and height (cm) and mid-under arm circumference (cm), were measured using a tape rule (tailor's tape). Also, physical examination involved general inspection of oral hygiene, skin, eyes, hair, nail and ears.

The nutritional status of the children was determined using the International Reference Population defined by U.S National Centre for Health Statistics (NCHS) and Centres for Disease Control and Prevention ([9]). Height-for-age (HAZ), weight-for-height (WHZ), and weight-for-age (WAZ) Z-scores was calculated based on WHO ([9]) recommendation. The children were classified as stunting, wasting, and being under-weight, if the HAZ, WHZ, and WAZ were  $< 2$  standard deviation (SD). Under-nutrition was defined as the presence of stunting, wasting or under-weight.

### 2.9. Data Analysis

Data was analyzed using statistical packages for social sciences (SPSS) version 16.0. Statistical analyses included descriptive statistics, student's t-test, chi square, correlation and regression.

## 3. Result

The bio-data profiles of the mothers of the under-five children are presented in Table 1. Over all, the mothers were mainly within the ages of 30 and 39 (270; 62.20%), married house wife (340; 84.60%), Christians (366; 91.00%), had secondary education as their highest educational attainment (276; 68.70%) and were mainly traders in term of occupation (184; 45.90%).

Table 1. Demographic profile of care-givers of the sampled population

Demographic profile	Variables	Frequency (%)
Age (years)	20 – 29	42 (10.40%)
	30 – 39	270 (62.20%)
	40 – 49	18 (4.50%)
	50 – 59	72 (17.90%)
Marital status	Married	340 (84.60%)
	Widow	50 (12.40%)
	Single	6 (1.50%)
Religion	Divorce	6 (1.50%)
	Christians	366 (91.00%)
	Muslim	2 (0.50%)

Demographic profile	Variables	Frequency (%)
Highest educational attainment	Traditional	34 (8.50%)
	None	48 (11.90%)
	Primary	66 (16.40%)
	Secondary	276 (68.70%)
	Tertiary	12 (3.40%)
Occupation	Traders	184 (45.90%)
	Farmer	44 (10.90%)
	Civil servants	62 (15.40%)
	Students	24 (6.00%)
	Full house wife	88 (21.90%)

Table 2 shows the prevalence of under nutrition among the sampled under-five in Ekpoma. A total of 98 (24.38%) under-five out of the total 402 under-five were under-nourished and were classified to be under-weight (10; 2.5%), wasting (38; 9.5%) and stunting (50; 12.4%).

**Table 2.** Prevalence of under nutrition in the sampled under five populations

Variable	Total (%)
Normal nutrition under-five	304 (75.62)
Under-nourished under-five	98 (24.38)
Under weight	10 (2.50)
Wasting	38 (9.50)
Stunting	50 (12.40)

Table 3 shows the relationship between antenatal utilization and under-five nutrition. Of the 402 mothers studied, 76.12% utilized antenatal services during pregnancy while 23.88% did not. Of the 306 mothers who utilized antenatal services during pregnancy, 16.99% had under-five that were under nourished. On the other hand, of the 96 mothers who were not involved in the utilization of antenatal services during pregnancy, 47.92% had under-five that were under nourished. Under-five under-nutrition among mothers who had no antenatal care during pregnancy was 2.82 times among mother who had antenatal care.

**Table 3.** relationship between antenatal utilization and under-five nutrition in Ekpoma

Variable	Frequency (%)	Variable	Frequency (%)	% Under nourished
Had antenatal care	306 (76.12)	Normal	254	16.99
		Under nourished	52	
Do not had antenatal care	96 (23.88)	Normal	50	47.92
		Under nourished	46	

## 4. Discussion

This study shows under-five under-nutrition (24.38%) characterised by under-weight (2.5%), wasting (9.5%) and stunting (12.4%) to be mild in Ekpoma compared to values reported by the Nigeria Demographic and Health Survey ([10]) which placed the rates of stunting at 41%, wasting at 14% and under-weight at 32% or the study conducted by Omuemu and Ofili ([11]) whereby underweight and stunting among under-five children were 28.1% and 22.6% respectively. As well, the rate of under-five under nutrition in this study is lower compared to other African countries like Kenya ([12]), Tibet ([13]) and Tanzania (Dares Salaam) ([14]) where the prevalence rates for stunting, wasting and underweight were 30%, 4% and 20%; 39%, 5.6% and 23.7%; and 31.6%, 2.9% and 14.6% respectively.

Considering these facts and figures, under-five under-nutrition is a global public health problem especially in low-income and middle income countries according to Black et al. ([15] and Muller and Krawinkel ([16]). To Bryce et al. ([17]), under-five under-nutrition is an underlying cause in more than a third of all infant and child deaths annually. In fact, synergistic impact has been reported for under-nutrition and infection on child mortality ([15]). In the present study, it was observed that under-five with mothers not involved in the utilization of antenatal services during pregnancy was over 2 times (2.82) more likely to be under-nourished than under-five with mothers who utilized antenatal services during pregnancy. Previous study has showed mothers' education to have a good impact on protecting infant chronic

malnutrition in Bangladesh ([18]) and this may be related to the education provided by antenatal services as educated mothers may be more likely to utilised antenatal services. It has been shown that as service provision increases and socioeconomic development accelerates health services are actually utilized by those in less need ([19]). The better-off women of childbearing age are the ones who access and take advantage of improved services, indicating that inequity is increasing. While the overall picture may be that of improvement ([20]), inequity in health is therefore a major challenge to global public health today both for the efforts to reach the Millennium Development Goals and beyond ([21]).

Worrisome on the other hand, is the fact that projections have it that Millennium Development Goals in this area of maternal and child health and nutrition are not going to be met by 2015 even though maternal and child health is at the core of global public health, ([22]). Although there has been substantial progress in improving the survival of mothers and children globally, the changes are not happening fast enough. Additionally there are disadvantaged groups that do not benefit from development to the same extent, resulting in increasing inequity in health ([23], [24]).

Generally, educated mothers have good knowledge about infant caring and disease concern and seek maternity care that are good for herself and her baby.

## 5. Conclusion

Conclusively, this study showed that maternal education

during antenatal care and services has positive impact on under-five nutritional status. Therefore it's possible that promoting antenatal service utilization during pregnancy may curb the global public health problem associated with malnutrition among under-five.

## References

- [1] United Nations: End poverty 2015: Fact sheet GOAL 4: reduce child mortality. 2008, <http://www.un.org/millenniumgoals/2008highlevel/pdf/newsroom/Goal%204%20FINAL.pdf>
- [2] World Health Organization. Management of severe malnutrition: a manual for physicians and other senior health workers; Geneva: 1999.
- [3] Amsalu S., Tigabu Z. Risk factors for severe acute malnutrition in children under the age of 5: A case-control study. *Ethiopian Journal of Developmental Health*, 2008; 22:21-25.
- [4] Rathavuth H., Ruiz-Beltran M. impact of prenatal care on infant survival in Bangladesh. *Matern M Child Health J.*, 2007; 11:199-206.
- [5] Taylor, C.R., G.R. Alexander, and J.T. Hepworth. Clustering of U.S. Women Receiving No Prenatal Care: Differences in Pregnancy Outcomes and Implications for Targeting Interventions. *Maternal and Child Health Journal*, 2005; 9(2): 125-133.
- [6] Alexander G., Korenbrot C. The role of prenatal care in preventing low birth weight. *Future Child*, 1995; 5 (1): 103-20.
- [7] Singh, S., Jacqueline E.D., Michael V., Jennifer N. Adding it up: the benefits of investing in Sexual and Reproductive Health care. New York NY, Alan Guttmacher Institute/UNFPA. 2003.
- [8] Wagstaff, A., Claeson M. The Millennium Development Goals for Health: Rising to the Challenges. Washington, DC: World Bank. 2004.
- [9] WHO. Multicentre Growth Reference Study Group. WHO Child Growth Standards based on length/height, weight and age. *Acta Paediatr.*, 2006; 450:76-85.
- [10] Nigeria Demographic and Health Survey. National Population Commission (NPC) [Nigeria] and ICF Macro. 2009.
- [11] Omuemu, V.O., Ofili, A.N. Nutritional status of under-five children in an urban community in Benin-city. *Ann. Biomed. Sci.* 2009; 8(1):1-11.
- [12] Kwenia, A.M., Terlouw, D.J., de Vlas, S.J., Phillips-Howard, P.A., Hawley, W.A., Friedman, J.F., Vulule, J.M., Nahlen, B.L., Sauerwein, R.W. and Kuile, F.O. Prevalence and severity of malnutrition in pre-school children in a rural area of western Kenya. *Am. J. Trop. Med. Hyg.* 2003; 68(4 Suppl):94-9.
- [13] Dang, S., Yan, H., Yamamoto, S., Wang, X., Zeng, L. Poor nutritional status of younger Tibetan children living at a high altitudes. *Eur. J. Clin. Nutr.* 2004; 58(6):938-46
- [14] Matee, M.I., Msengi, A.E., Simon, E., Lyamuya, E.F., Mwinula, J.H., Mbena, E.C., Mbena, E.C., Samaranayake, L.P. and Scheutz, F. Nutritional status of under fives attending maternal and child health clinics in Dares Salaam, Tanzania. *East. Afr. Med. J.* 1997; 74(6):368-71.
- [15] Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, Mathers C, Rivera J. Maternal and child undernutrition: global and regional exposures and health consequences. *Lancet*. 2008; 19;371(9608):243-60.
- [16] Muller O, Krawinkel M. Malnutrition and health in developing countries. *CMAJ*. 2005; Aug 2;173(3):279-86.
- [17] Bryce J, Boschi-Pinto C, Shibuya K, Black RE. WHO estimates of the causes of death in children. *Lancet*. 2005; 1;365(9465):1147-52.
- [18] Semba RD, Pee SD, Sun K, Sari M, Akhter N, Bloem MW. Effect of parental formal education on risk of child stunting in Indonesia and Bangladesh: a cross-sectional study . *Lancet* 2008; 26;371(9609):322-8.
- [19] Hart JT: The inverse care law. *Lancet* 1971, 1(7696):405-412.
- [20] Gwatkin DR, Bhuiya A, Victora CG: Making health systems more equitable. *Lancet* 2004; 364(9441):1273-1280.
- [21] United Nations: *Millennium Development Goals Report 2011*. New York: United Nations; 2011.
- [22] Lozano R, Wang H, Foreman KJ, Rajaratnam JK, Naghavi M, Marcus JR, Dwyer-Lindgren L, Lofgren KT, Phillips D, Atkinson C, *et al.*: Progress towards Millennium Development Goals 4 and 5 on maternal and child mortality: an updated systematic analysis. *Lancet* 2011, 378(9797):1139-1165.
- [23] Thomsen S, Hoa D, Malqvist M, Sanneving L, Saxena D, Tana S, Yuan B, Byass P: Promoting equity to achieve maternal and child health. *Reproductive Health Matters* 2011, 19(38):176-182. in press
- [24] Anderson I, Axelson H, Tan BK: The other crisis: the economics and financing of maternal, newborn and child health in Asia. *Health Policy Plan* 2011; 26(4):288-297.