Extended Abstract

Can Family Planning Programmes assist Food Security Mission in Underdeveloped and Developing Countries: *Evidence from Nigeria*

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Introduction

Family planning is one of the earliest life-cycle interventions that can contribute to the reduction of hunger [1]. Demographic studies show that the fertility rate in poor households is higher than the national average, meaning larger household sizes. Promotion of rights-based family planning is the most cost-effective approach to bring down fertility, which in turn will help limit household size and lower food grain requirements [2,3]. The fact that nearly10% of women aged 15–49 years reported using a modern method of contraception [4] indicates the potential for unintended pregnancy/births, which more starkly affect the poor who do not have enough economic support for daily living. Slowing population growth to reduce household size requires greater encouragement of family planning programmes and support from different development sectors including finance, agriculture, water and the environment [5]. Against this background, this study aims to analyze whether use of contraception associated with the food security among Nigerian children. Guided by the report from International Food Policy Research Institute [6], this study takes into account the undernutrition among under-five children as the proxy indicator for food insecurity.

Materials and Method

Data

This study has used data from the three rounds of the Nigeria Demographic and Health Survey (NDHS) conducted during 2003 (NDHS-3), 2008 (NDHS-4), and 2013 (NDHS-5). NDHS is a nationally representative, large scale, repeated cross sectional survey in representative samples of households throughout Nigeria. The principal objective of NDHS is to provide region and national level estimates on fertility, mortality, family planning, HIV-related knowledge, and on important aspects of nutrition, health and health care. The survey

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provides regional and national level estimates of demographic and health parameters as well as data on various socioeconomic and program dimensions, which are critical for implementing the desired changes in demographic and health parameters. The survey adopted a weighted cluster sample design in rural as well as urban areas. The selected clusters correspond to the enumeration areas of the sampling frame.

So, the different rounds of NDHS provide sufficiently large sample sizes to carry out analysis at the national level. The data were collected using similar interview schedules in the recent three rounds of the NDHS. The household and eligible female informant response rates were consistently above 90% in all three NDHS rounds. To make the estimates representative and comparable across the three survey rounds, and to account for the cluster sampling design adopted in these rounds of NDHS, appropriate weights in the analysis are used. The details of the sampling weights are given in NDHS reports of the various rounds.

Defining contraceptive use and food security indicator

In all three rounds of NDHS, currently married women aged 15-49 years were asked about the current use of any method of contraception. From there, the current use of methods – whether spacing methods or limiting methods was extracted. Women who responded that they were not using any type of contraceptive method were considered 'non-users'. Subsequently, non-users (who did not want a/another child soon, but were not using any method to avoid pregnancy, and women who did not want any [more] children, but were not using any method to avoid pregnancy) were asked about the reasons for not using any kind of contraceptive method. These questions were not posed to pregnant or sterilized women. In brief, the contraceptive use was defined in four categories – women who were currently using 'spacing' and 'limiting' method; women who were 'intend to use' any method of contraception in future, and who 'did not intend to use' any contraceptive in future.

Information on anthropometric indicators for children below three years of age are used uniformly in the analyses to measure the nutritional status of children in all three rounds of NDHS. NDHS provides information about weight-for-age, weight-for-height and height-for-age for all three survey rounds. In order to generate robust all Nigeria estimates over time, weight-for-age, underweight as our preferred indicator for measurement of the nutritional status of children are used. This approach has been supported by studies that argue that

'weight-for-age', underweight deserves special attention, as it is a comprehensive indicator of child nutritional status, incorporating both stunting and wasting. Underweight is a measure of protein-energy undernutrition. It describes children who have a weight-for-age measurement less than two standard deviations below the median value of United States National Centre for Health Statistics (US NCHS) international reference population as recommended by the World Health Organization. Children (below three years of age) whose weight-for-age is below minus two standard deviations from the median reference population are classified as "underweight" or "malnourished". The analytical sample size of the present study is restricted to children below 35 months (below three years) of age after excluding missing and flagged cases from all rounds of NDHS.

Predictor variables

The analysis has used a number of potential predictors comprising a set of child, mother and household characteristics. The child characteristics mainly included the age and sex of the child, birth order, size of the child at birth, birth interval, status of the child etc. Similarly, the mother's characteristics comprised of the indicators such as age of mother at childbirth, mother's education, work status, mass media exposure, mother's BMI etc. The household and other contextual variables incorporated in the analysis are household wealth index, place of residence (rural/urban) etc.

Statistical approach

The overall analyses have been carried out in combination of bivariate as well as multivariate analyses. Along with weighted prevalence of undernutrition by background characteristics, the binomial logistic regression was applied to understand the association between contraceptive use and the undernutrition among Nigerian children. In this study, the binomial response (y, children are underweight or not) for each individual was related to a set of categorical predictors, X, and a fixed effect by a logit link function:

$$logit(\pi_i) = \log[\pi_i/1-\pi_i] = \beta_0 + \beta(X) + \varepsilon$$

The probability that an individual of being underweight is π_i. The parameter β_0 estimates the log odds of the outcome variable for the reference group, and the parameter β estimates with

maximum likelihood, the differential log odds of being underweight associated with the predictor X, as compared to the reference group. ε represents the residual in the model. To examine the effect of survey year on the intention to use contraceptives, the data of three rounds were pooled.

Results

As per the estimates of 2013, almost one third of the children below three years of age in Nigeria were observed underweight, which recorded an increase of nearly 16% in the prevalence of underweight children compared to the estimates of 2003. Similarly, almost 17% children were found wasted in 2013, compared to the prevalence of 9.5% recorded in 2003. However, there was observed a decline of nearly 5 percentage points in the prevalence of stunted children between 2003 and 2013. On the other hand, the prevalence of contraceptive use among women/mothers was not considerable, as nearly 9.6% Nigerian women were found using modern contraceptive method in 2013, compared to 9.5% in 2003. The analyses also suggest the probabilities of children being underweight and stunted were lower for mothers who were using modern methods of contraception, compared to those mothers who were not using any method of contraception. In light of such findings, this is encouraging for policy makers in underdeveloped and developing countries that they could emphasize and focus on the family planning programmes in their respective setup as one of the potential measures dealing with the challenges of food security in those societies.

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