Trends and patterns of childhood mortality clustering in Nigeria

Childhood mortality rates are basic indicators of a country's socio-economic status and quality of life. Globally, though some progresses have been made in improving child survival, however, the childhood mortality rates are still high in Nigeria and many developing countries. Half of infant and child deaths in 2008 occurred in India, Nigeria, Democratic Republic of Congo, Pakistan and China with Nigeria accounting for 12% of the under-5 deaths worldwide (UNICEF, 2010). In the 2003 Nigeria Demographic Health Survey (NDHS), infant mortality and under-five mortality rates were 100 and 201 deaths per 1000 live births respectively (National Population Commission, 2004). The 2008 NDHS reported 75 and 157 for infant mortality and under-5 mortality respectively. The rate of decline is slow when compared to other developing nations that were at similar level as Nigeria in the 1990s. An example is Rwanda where the infant mortality was 85 deaths per 1000 births in 1987-92 but now 62 in 2002-2007 (Rathavuth et al., 2009).

A few studies have investigated the correlates of childhood mortality in Nigeria with most of them using data from the NDHS. It is commendable that many of these studies identified some of the socio-economic, bio-demographic, household and environmental factors associated with childhood mortality. These studies utilized analytical models that assumed child deaths to be independent and randomly distributed across families, households and communities. However, recent studies in other settings have shown that child deaths can be concentrated / clustered at the level of the mother/family, households, community and region (Das Gupta, 1990; Kuate-Defo and Diallo, 2002; Omariba et al., 2007; Sastry, 1997). Mortality clustering is a direct consequence of children sharing same mortality risks (both measurable and unmeasurable). Correlated observations violate the assumption of independence during statistical analyses and they will result in biased standard errors and inconsistent estimates. Majority of studies that have explored the phenomenon in the past used frailty models which account for both death clustering and unexplained heterogeneity (unmeasured covariates). The concept of unexplained heterogeneity is quite different from death clustering, so using a single model to suggest both is conceptually questionable. Besides, such an approach makes it difficult to properly explore death clustering as a phenomenon. In this paper, an attempt would be made to descriptively explore childhood death clustering in Nigeria.

Sastry (1997) noted that countries with high fertility and mortality are ideal for assessment of death clustering. Nigeria with a total fertility rate of 5.67 and infant mortality of 75 per 1000 (National Population Commission, 2009) is a right candidate for assessment of death clustering. Some understanding about the pattern of clustering in Nigeria can serve a dual purpose. Future studies of childhood mortality could benefit from the understanding in that appropriate analytical strategies could be employed. Secondly, interventions and policies on child survival can be appropriately applied to those with the highest childhood mortality risks. In lieu of these, the aim of this paper is to describe the trends and pattern of clustering of childhood mortality risks in Nigeria.

Data

This study will utilize data from the NDHS rounds of 1990, 2003 and 2008. The NDHS is a nationally representative survey of women of reproductive age (15-49 years) and have relevant information for under-five mortality studies. There was a survey in 1999 but data quality assessment reports indicated that births and deaths in three years before the survey were grossly under-reported. Hence, we exclude it from our analyses. Data on childhood mortality are collected in the birth history section of the Women's Questionnaire. Questions include child bearing experience such as total number of sons and daughters alive or dead. For all children who had died, the respondent was asked of their age at death. The study would be restricted to women aged 15-49 years with at least two children, but without twins.

Method

Three measures of child mortality clustering will be derived. The first indicator is the proportion of women losing more than one child. This is based on the assumption that multiple deaths within a family is an indicator of mortality clustering. The second indicator refers to the proportion of total child deaths accounted for by women with history of multiple deaths. The third measure is the proportion of child deaths per mother, this represent the focal measure of death clustering/concentration. These measures will be computed for each of the NDHS. Bivariate analyses would be done to elucidate the pattern of mortality clustering according to

selected background characteristics. Ordinary least square regression models will be fitted to the third indicator to identify factors independently associated with childhood mortality clustering. Furthermore, a binary variable indicating whether or not a mother has had at least two deaths will be subjected to a logistic regression to identify predictors of risk of multiple deaths in families

Preliminary Findings

The overall level of childhood mortality clustering is high and seems not to have changed much between 1990 and 2008 NDHS. The proportion of women losing two or more children merely moved from 24% in 1990 to 22.7% in 2008. Child losses among these women accounted for 77% and 75% of all child deaths in 1990 and 2008 respectively. The proportion of child dead per mother/family followed the same pattern though with a higher magnitude in terms of reduction. Childhood mortality clustering was found to be higher in the northern regions (North West and North East) than the south (South West, South East and South South). The regression analysis will throw more light on these patterns and how they have changed between 1990 and 2008

Though, the 2008 NDHS report indicated that childhood mortality is on a decline, mortality clustering levels has not changed in a commensurate manner. This is suggestive of inequitable distribution of health-related resources or existence of problems specific to some families/communities.

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