Determinants of Child Malnutrition in Changazi Ward in Chimanimani District, Zimbabwe

Oswell Rusinga and Stanzia Moyo

1 Great Zimbabwe University
Faculty of Science, Department of Physics, Geography and Environmental Science
Box 1235, Masvingo, Zimbabwe.
2 Centre for Population Studies,
University of Zimbabwe.

Corresponding Author: Oswell Rusinga

Abstract
Child nutritional status has been deteriorating in Zimbabwe since the early 1990s due to biological, behavioural, socio-economic, political and physical factors. A survey was used to carry out the study. A triangulation of quantitative and qualitative methods was used to ascertain the level and underlying factors of child malnutrition. A sample of 222 children under five years was determined for the anthropometric measurements. A total of 222 questionnaires were administered to caregivers of the sampled children. Qualitative data were collected using focus group discussions and in-depth interviews. The study noted high levels of chronic child malnutrition in the area. Insufficient food at the household level was the most important underlying factor of child malnutrition and had detrimental repercussions on dietary intake and diversity. The meals consumed by children were dominated by thick porridge (sadza) and green vegetables. The nutritional status of these children was being severed by high prevalence of infectious diseases such as diarrhoea, pneumonia and malaria.

Keywords: child malnutrition, diet, diseases, infection, food insecurity, feeding

INTRODUCTION
Notwithstanding improvements in nutrition worldwide, child malnutrition continues to be a major public health problem in developing countries as one third of all children under five years are malnourished (de Onis et al., 2000). The proportion of malnourished children remains substantially high in most parts of the developing world except in Latin America and the Caribbean. According to the Population Reference Bureau [PRB] (2007), the levels of underweight children remain substantially high in Asia and Sub-Saharan Africa; estimated at 27% and 26%, respectively. The proportion of underweight children is comparatively low in Latin America and the Caribbean; estimated at 5% in 2007. Zimbabwe Demographic and Health Surveys (1988, 1994, 1999 and 2005-06) have shown that levels of malnutrition among children under five years had been increasing in the past two decades (Figure 1). For example, the prevalence of stunted children under five years increased from 21% in 1994 to 34% in 2010 (Zimbabwe Demographic and Health Survey 2005-06; Food and Nutrition Council and the Ministry of Health and Child Welfare, 2010). The deterioration of child nutritional status gave rise to significant increases in nutritional deficiencies related diseases and exacerbating the spread of communicable diseases among children under five years (Food and Nutrition Council and Ministry of Health and Child Welfare, 2010). The Government of Zimbabwe (2004) noted that about 34% of early childhood deaths in Zimbabwe are related to undernutrition.

The pervasiveness of child malnutrition in Zimbabwe is an embodiment of the weakening of socio-economic, political and traditional systems which take care of children. According to the Zimbabwe Human Development Report [ZHDR] (1998), the deterioration of child nutritional status in the last decade is mainly attributed to persistent inequalities and poverty in the general population; fall in real incomes and HIV and AIDS. The report further noted that the consistent pattern of child malnutrition in Zimbabwe is inextricably related much to persistent inequalities than to drought and other natural disasters. The programmes implemented since 1980 were more effective in the short run but marginally solved the underlying problems of poverty and inequalities which are still prevalent. For instance, after the Government of Zimbabwe adopted the Economic Structural Adjustment Programme (ESAP) in 1991, the per capita expenditure on health dropped from Z$16.50 in 1990/91 to Z$10.92 in 1993/94 thereby negatively affecting health care by raising cost-barriers to access to care, reducing preventive services or early treatment and making it difficult to deal with the rise of ill-health caused by declining incomes and HIV and AIDS (ZHDR, 1998). Therefore, the deterioration of the health delivery system compounded the synergistic relationship between child undernutrition and diseases. For example, about 41% of child deaths are attributed to HIV and AIDS, 15% to pneumonia and 12% to diarrhoea (Food and Nutrition Council and Ministry of Health and Child Welfare, 2010). Diseases negatively affect child nutritional status by directly weakening the immune system of the child and reducing the food intake through loss of appetite. Assessing the nutritional status of children is important because child malnutrition is an important indicator of child health and growth.

OBJECTIVES OF THE STUDY
The main objective of the study is to investigate various factors underlying child malnutrition in Changazi Ward in Chimanimani District. The study specifically seeks to:

- To assess the nutritional status of children under the age of five years.
- To examine the factors which influence the malnutrition of children under five years.

METHODS AND MATERIALS
Study Design
A survey was used to carry out the study. A triangulation of both quantitative and qualitative methods was employed. The sample was selected in two stages with the ward as the first stage and the second stage involved the random selection of villages. Questionnaires were used to collect quantitative data. Focus group discussions (FGDs) and in-depth interviews were used for qualitative data. However, there were some limitations encountered. Caregivers were reluctant to freely discuss the problem of child malnutrition due to its cultural and social sensitivity. Moreover, it appeared invasive to ask people about their consumption patterns.

Target Population
The target population consisted children under five years and primary caregivers. Primary caregivers were maternal mothers or female guardians who usually provided physical or immediate care such as feeding, bathing, stimulating cognitive development and providing an emotionally positive environment. This was important because, in Zimbabwe, as elsewhere, the primary responsibility for child care rests with women (Ministry of Education and Culture and United Nations Children’s Fund, 2000).

Sample Size Determination
Sample size was determined using the formula: \( n = \frac{z^2 p q}{e^2} \). Where: \( n \) = the desired sample size; \( p \) = the proportion of the target population estimated to be malnourished. The proportion of national prevalence of stunted children under five years estimated at 29% in the Zimbabwe Demographic and Health Survey 2005-06 was used because the population of children under five years in Changazi was not known. \( q = 1 - p \); \( z \) = the standard normal deviate set at 1.96 which corresponds to 95% confidence interval; \( e \) = the margin of error set at 0.05. Therefore, the sample was calculated as follows: \( n = \frac{(1.96^2 * 0.29 * 0.71)}{0.05^2} = 222 \). A probability sample of 222 children under five years was determined and the margin of error was set at 0.05.

Sampling Procedures
The sample was selected in two stages with the ward as the first stage. The second stage involved the random selection of villages. A systematic random sampling was used to select households in sampled villages. A total of 222 households with children under five years were selected. When a household was selected the caregiver was also identified in order to administer the questionnaire. Children participated during the measurement of length (children <24 months) and height (children ≥24months) and weight. The tools used to measure length/height and weight were; hanging weighing scale, weighing pants, tape measure and a wooden head piece. Weight was measured using a hanging weight scale.

DATA COLLECTION METHODS AND TOOLS
Questionnaires
A total of 222 questionnaires were administered to caregivers. Questionnaires were used to collect data on the household’s socio-demographic characteristics, child’s characteristics, caregiver’s
characteristics, dietary intake, disease and care for illness, household food insecurity, care for both caregiver and the child, reproductive behaviour, state of the healthy environment and accessibility to and utilisation of health services.

Focus Group Discussions (FGDs)
Three Focus Group Discussions (FGDs) were conducted with caregivers to assess their knowledge, attitudes and beliefs about child care. Each FGD consisted of six participants. Caregivers who participated in FGDs were selected among those the researcher created a good rapport during the administration of questionnaires.

In-Depth Interviews
Four face-to-face in-depth interviews were conducted with nurses at Changazi and Gudyanga clinics. Two nurses from each clinic were selected using simple random selection. In-depth interviews validated data collected from the survey and FGDs.

RESULTS
Socio-demographic Characteristics of Children Under Five Years
The study noted that 48% were males and 52% were females. Figure 1 shows that 29% of the children were in the 12-23 months category while 4% aged less than six months. Nine percent were aged between 6-11 months, 25% between 24-35 months, 20% between 36-47 months and 12% between 48-59 months. Results also revealed that about 93% of children stayed with their mothers while 7% were fostered children. Nearly three quarters of births (85%) were attended by a health professional and had taken place either in a clinic or a hospital while 15% of births took place at home.

Nutritional Status of Children Under Five Years
About 37% of the children under five years were stunted while 9% were wasted (Figure 3). More than one fifth (22%) were underweight.

Table 2: Nutritional Status of Children by Village

<table>
<thead>
<tr>
<th>Village</th>
<th>Stunting</th>
<th>Wasting</th>
<th>Underweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chandimara</td>
<td>38.1</td>
<td>9.2</td>
<td>22.3</td>
</tr>
<tr>
<td>Dzitiro</td>
<td>40.3</td>
<td>10.3</td>
<td>23.4</td>
</tr>
<tr>
<td>Mumera</td>
<td>37.4</td>
<td>8.6</td>
<td>20.0</td>
</tr>
<tr>
<td>Muzvizii B</td>
<td>35.6</td>
<td>8.5</td>
<td>19.6</td>
</tr>
<tr>
<td>Muzvizii C</td>
<td>39.2</td>
<td>9.1</td>
<td>21.7</td>
</tr>
<tr>
<td>Mwandiambira</td>
<td>36.2</td>
<td>9.7</td>
<td>20.5</td>
</tr>
</tbody>
</table>

Determinants of Malnutrition among Children Under Five Years
This section discussed the biological, behavioural, cultural and socio-economic determinants of malnutrition among children under five years in Changazi Ward.

Inadequate Dietary Intake
The study found that diets of most households lacked diversity (Table 3). About 97% of children ate thin porridge (bota) during breakfasts. Other foods eaten by children during breakfasts were grits/mealie rice (manhuchu), tea without milk, home-made bread with wheat flour and unleavened maize with groundnuts or cow peas (mutakura). The most common meal for lunch and supper was thick porridge (sadza) and green, leafy vegetables cultivated or wild.
The study found that the majority of the children ate snack foods between meals. The dominant snacks were fruits and sweet beer (mahewu). About 83% of children ate fruits and drank sweet beer (mahewu) between meals.

### Diseases

Many child diseases are associated with loss of appetite thus, cycling back to further lowering the dietary intake (Latham, 1997). The study noted that about 21% of children had malaria and other symptoms related to malaria like fever and headache two weeks prior to the survey. Sixteen percent of the respondents reported that a child had an illness with a cough over the past two weeks prior to the survey. More than one third (32%) of the children had diarrhoea. The interviews with nurses at the local clinics revealed that diarrhoea, malaria and pneumonia were the major diseases among children in the area.

#### Reproductive Behaviour

Results showed that there were significant variations in the levels of undernutrition by birth interval. Figure 4 shows an inverse relationship between the level of malnutrition and birth interval. For instance, stunting increased sharply from 32% of first birth to 40% when a birth occurred in an interval of less than 24 months but gradually decreases as the interval increased. In addition, all anthropometrical indicators –stunting, underweight and wasting - revealed that undernutrition tended to be highest among children born within an interval of less than 24 months (that is 40%, 25% and 11%, respectively).

### Household Food Insecurity

The study revealed that 58% of the households ate an average of two meals a day while 42% ate three meals a day. About 84% of the households ate a limited variety of foods due to lack of resources to obtain other varieties. About 94% of the households were worried about their food reserves and revealed that they would not meet their food requirements in the near future.

<table>
<thead>
<tr>
<th>Breakfast</th>
<th>Lunch</th>
<th>Supper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin porridge, Leftover thick porridge</td>
<td>Thick porridge (sadza), Covo, Pumpkin leaves</td>
<td>Thick porridge (sadza), Covo, Pumpkin leaves</td>
</tr>
<tr>
<td>(sadzuka), Home made bread</td>
<td>(mutikiti), Cow sour milk, Pigeon peas (ndodzi),</td>
<td>(mutikiti), Black jack (mhuvuwu),</td>
</tr>
<tr>
<td>unleavened maize with</td>
<td>Bush okra (derere), Wild cucumber</td>
<td>Bush okra (derere), Pigeon</td>
</tr>
<tr>
<td>groundnuts or beans etc (mutikuru)</td>
<td>(munyuka), Black jack (mhuvuwu),</td>
<td>peas (ndodzi), Cow sour milk,</td>
</tr>
<tr>
<td></td>
<td>Mustard rape (ndakupuka)</td>
<td>Mustard rape (ndakupuka)</td>
</tr>
</tbody>
</table>

Table 3: Foods Usually Eaten by Children during Breakfast, Lunch and Supper

N = 222

Figure 4: Levels of Malnutrition among Children Under Five Years by Birth Interval

**Inadequate Integrated Care for the Child and Caregiver**

Virtually, all children (99%) were ever breastfed and nursing mothers reported that they breastfed their babies on demand. About 68% were breastfed in less than 24 hours after birth. The mean duration of breastfeeding was 18 months. The shortest duration of breastfeeding was 15 months while the longest was 21 months. Appropriate infant and young child feeding practices include timely initiation of feeding semi-solid or solid foods, frequency of feeding a day, encouraging young children to eat and hygiene during eating (Zimbabwe Demographic and Health Survey 2005-06; Sah, 2004). Children were introduced to semi-solid or solid foods as early as two months. About 47% of children aged between 9 and 23 months ate three meals a day while 53% of those aged between 24 and 59 months ate two family meals per day.

Caregiver-child interaction during feeding is also an important factor of appropriate child feeding practices. The study found that 48% of caregivers assisted children to eat. Almost one third (29%) of the caregivers reported that they force feed the child in the event that he/she refused to eat while 16% persuaded. Only 7% of the caregivers said that they gave favourite foods. In focus group discussions caregivers reported that child ate if they were hungry. One respondent remarked: “If not sick, a child must eat alone. He/she would not be hungry if he/she refuses to eat by herself”.

The proportion of children aged between 12 and 23 months who received all vaccination was 59% (Table 4). The relationship between the level of education of the caregiver and vaccination was significant. About 82% of children whose mothers had at least
secondary education were more likely to have been vaccinated than children (47%) of mothers with primary education.

Table 4: Percentage Distribution of Children Received Vaccination

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>Current Age of Child in Months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12-23</td>
</tr>
<tr>
<td>BCG</td>
<td>59.3</td>
</tr>
<tr>
<td>DPT1</td>
<td>62.1</td>
</tr>
<tr>
<td>DPT2</td>
<td>59.4</td>
</tr>
<tr>
<td>DPT3</td>
<td>56.7</td>
</tr>
<tr>
<td>Polio1</td>
<td>65.0</td>
</tr>
<tr>
<td>Polio2</td>
<td>58.2</td>
</tr>
<tr>
<td>Polio3</td>
<td>55.6</td>
</tr>
<tr>
<td>Measles</td>
<td>57.4</td>
</tr>
<tr>
<td>Overall</td>
<td>59.2</td>
</tr>
</tbody>
</table>

N = 222

The study revealed that the primary responsibility of child care rests with caregivers. The majority of the caregivers (89%) were responsible for staying at home nursing sick children or taking children to a health centre. Caregivers are also responsible for dressing (48%) and bathing (51%) children.

Unhealthy Environment and Insufficient Health Services

About 85% of the respondents revealed that their households had a toilet facility (Table 5). Of these, 42% had improved ventilated toilets (Blair toilets) while 43% had pit toilets. However, about 15% of the households had no toilet facility. Dzitiro village had the highest proportion of households (44%) without a toilet facility while the least proportion was found in Muzvizii B (16%).

Table 5: Percentage Distribution of Households with a Toilet Facility by Village

<table>
<thead>
<tr>
<th>Village</th>
<th>Flush toilet</th>
<th>Ventilated Improved Pit Toilet</th>
<th>Improved Ventilated Pit Toilet</th>
<th>No Toilet Facility</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chandimara</td>
<td>---</td>
<td>37.5</td>
<td>29.4</td>
<td>33.1</td>
<td>100</td>
</tr>
<tr>
<td>Dzitiro</td>
<td>---</td>
<td>23.6</td>
<td>32.1</td>
<td>44.3</td>
<td>100</td>
</tr>
<tr>
<td>Mumera</td>
<td>---</td>
<td>28.6</td>
<td>45.0</td>
<td>26.4</td>
<td>100</td>
</tr>
<tr>
<td>Muzvizii B</td>
<td>---</td>
<td>43.6</td>
<td>40.1</td>
<td>16.3</td>
<td>100</td>
</tr>
<tr>
<td>Muzvizii C</td>
<td>---</td>
<td>34.2</td>
<td>38.6</td>
<td>27.2</td>
<td>100</td>
</tr>
<tr>
<td>Mwandiambira</td>
<td>---</td>
<td>45.3</td>
<td>33.2</td>
<td>21.5</td>
<td>100</td>
</tr>
<tr>
<td>Chandimara</td>
<td>---</td>
<td>38.9</td>
<td>41.8</td>
<td>19.3</td>
<td>100</td>
</tr>
<tr>
<td>Overall</td>
<td>---</td>
<td>41.8</td>
<td>43.2</td>
<td>15.0</td>
<td>100</td>
</tr>
</tbody>
</table>

N = 222

Results revealed that 91% of the households had access to safe and clean water that is from a protected well or borehole. About 5% of the households fetched their water from an unprotected well while only 4% fetched their water from a river/dam/stream. All households stayed within a radius of less than one kilometer from the nearest borehole. Almost half of the households (46%) in the area stayed in a radius of less than 500 metres from the borehole while 54% stayed in the radius of 500m-1km radius.

Changazi ward was served by two clinics (Changazi and Gudyanga) and health care services were offered free of charge to children. The two clinics opened eight hours between Monday and Friday and four hours on Saturdays. The major concern at the two clinics (as noted from FGDs and in-depth interviews) was the shortage of drugs.

DISCUSSION

The study noted that there were unprecedented levels of malnutrition among children under the age of five years in Changazi ward attributed to biological, behavioural, cultural and socio-economic factors. Poor diets have a direct negative influence on optimal physical growth. Lack of a balanced diet has negative impacts on well-being of children because all the aspects of early child development are interrelated and interdependent (McConnell, 2004). In addition, nutritional deficiencies in elementary years retard the physical and mental growth as well as depressing psychosocial development of a child.

The high burden of infectious diseases among children in the ward complicates the nutritional status of children. The synergistic relationship between nutrition deficiencies and disease is intertwined and cyclic in nature. Nutrition deficiencies may reduce the body’s resistance to infection or disease and thereby increasing the incidence, severity and duration of disease. The United Nations (Administrative Committee on Coordination, Subcommittee on Nutrition) and International Food Policy Research Institute (2000) noted that underweight children tend to have more severe illnesses, including diarrhea and pneumonia than well-nourished children.

The results also revealed that the high prevalence of these infectious diseases especially diarrhoea and pneumonia may be due to poor sanitation and hygiene and delaying to seek health care. Recognition of symptoms or indicators of illness is essential to the initiation of health seeking and treatment (Ngom et al., 2000). The health personnel at the two clinics in the ward mentioned with concern that caregivers usually sought health treatment especially for pneumonia when the situation became critical. Delaying in seeking medical care is explained in part by a conflict between traditional belief systems and biomedical diagnosis of diseases. The modern education system tends to downplay the role of traditional belief systems in managing child diseases and illnesses. The information about diseases and health, in general, is presented in a didactic way with little or no recognition of other alternatives to knowledge about diseases and illnesses.
CONCLUSION
The results revealed that pervasiveness of child malnutrition in Changazi ward is an indication of cumulative effects of nutritional deficiencies among children under five years. The study also noted that the causes of malnutrition among children under five years are multidimensional and intertwined. The synergistic interaction between inadequate dietary intake and disease is responsible for high prevalence of malnutrition and morbidity among children under five years. Problems of malnutrition in elementary years have negative implications on the child later in school because of poor cognitive development.

REFERENCES


Latham M. C., 1997, Human Nutrition in the Developing World, Food and Agriculture Organization Food and Nutrition Series No. 29


Zimbabwe Demographic and Health Survey 2005-06

Zimbabwe Demographic and Health Survey 1999

Zimbabwe Demographic and Health Survey 1994

Zimbabwe Demographic and Health Survey 1988

Zimbabwe Human Development Report 1998