NON-COMMUNICABLE DISEASE IN CHILDREN IN GHANA: HEALTH AND SOCIAL BURDEN OF CARE ON HOUSEHOLDS

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Abstract

Background: Non-communicable diseases (NCDs) are on the increase among children. This paper determines the health and social burden of care imposed on households by NCDs among children in Ghana.

Methods: This was a cross-sectional study in three hospitals in Ghana, Ashanti, Greater Accra and Volta Regions. Interviewer administered structured questionnaire was used for data collection. Data was analyzed by proportions, ratios and chi square for association between categorical outcome measures (at 95% confidence level) using SPSS version 21.

Discussion: Burden of caregiving for children with NCDs rested heavily on women (169; 75.1%) and immediate family (176; 78.3%). Managing child’s condition was expensive and created financial difficulties for households. In all 87.4% of households depended on the national health insurance scheme (NHIS) and 45.8% indicated NCDs in children was a burden. In addition, 47% of the caregivers said life was much better before they found out about child’s ailment. Families had no financial support from extended families or communities/employers. Despite enormous challenges faced by households, there was no indication families suffered isolation or discrimination. Conclusion: National Health Insurance coverage of NCDs especially childhood cancers will reduce the burden of care on households. Improving access to care at regional/district levels for children with NCDs is imperative.

Key Words: non-communicable diseases, children, financial burden, Ghana

Introduction

Developing countries continue to bear a high burden of morbidity and mortality from infectious diseases while non-communicable diseases are increasing in prevalence1,2. In Ghana, global disease burden estimates by the World Health organization indicates NCDs and injuries account for 46% of the causes of morbidity and 40% of the causes of mortality3. In Ghana, childhood cancers have been on the increase4 and autopsy findings on mortalities in adolescents from the Korle-Bu Teaching Hospital (the largest tertiary care health facility in Ghana) showed NCDs contribute 41% of the deaths among adolescents5. The burden of care of family members who are ill has been shown to rest heavily on the immediate family especially women6, with impact on extended family7,8,9. Health insurance aims at improving access to health care8,10. Unfortunately, the national health insurance scheme of Ghana does not cover all NCDs in children; especially the childhood cancers11 and therefore households of children with these NCDs are likely to suffer the impoverishing effect of the cost of health care. In addition, children with NCDs suffer negative health and social consequences, including time out of school, and social activities12,13. Households of children with NCDs may experience increased family tensions or frictions, social isolation and discrimination. In Ghana, social and cultural believes beliefs and attitudes influence how children with NCDs and congenital conditions may be availed for or denied treatment14. The goal of this analysis is to determine the health, financial and social burden of care imposed on households by NCDs among children in Ghana and implications for health policy.

Methods

Subjects and Methods

This was a cross-sectional study that collected data from care givers (≥18 years) of children with NCDs in three health facilities in different geographical regions of Ghana. Period of study was January, 2013. The study was conducted in the three major national hospitals; Korle-Bu Teaching Hospital, KBTH Komfo Anokye Teaching Hospital, KATH and Volta Regional Hospital, VRH. These referral centres receive cases of NCDs from all over the country and were purposively selected to reflect the health and social factors relating to care. Health facility interviews were conducted in these health facilities. Parent/care givers (≥18 years of age) of children (≤18 years of age) on admission during the study period in the Child Health Departments and the Sickle Cell Units of the Hospitals were enrolled.
An interviewer administered structured questionnaire was used for data collection. The field team in each Hospital consisted of two supervisors and 24 interviewers (made of senior research assistants and research assistants from University of Ghana). Information captured included sociodemographic characteristics, attitude to NCDs, coping mechanisms and financial burden of caregivers. Informed consent was obtained from parent/caregivers.

**Data analysis**

Descriptive statistics such as frequencies, proportions and ratios were used for outcome variables selected for analysis. Summary statistics including mean and median were used for measured variables. All quantitative data was analyzed with Statistical Package for the Social Sciences (SPSS) version 21. In this analysis, primary care givers are persons responsible for the direct care (bathing, feeding, and administering medication) of the child with NCD, other support provided is considered secondary care.

**Ethical issues**

Ethical approval was obtained from the Institutional Review Board of Noguchi Memorial Institute for Medical Research (NMIMR), College of Health Sciences, University of Ghana (Federal Wide Assurance FWA 00001874, IRB 00001276, NMIMR-IRB CPN 014/12-13, IORG 0000908). Written informed consent was obtained from all the participants in the study.

**Results**

As shown in Table 1, a total of 225 parents/caregivers of children with NCDs were interviewed. 43.1% from KBTH, 41% from KATH and 15.1% from VRH. 75.1% were females and 24% males. Age range was 18-68 years with a median of 35 years. Overall, 81.9% were urban residents with some formal education, 86.5% were Christians, and 63.1% were married. Among caregivers, 55.6% were of the Akan ethnic group, while 75.1% were the biological parents. In all, 149 children with NCDs were enrolled during the study as shown in Table 2.

Table 2 shows the basic characteristics of the 149 children with NCDs enrolled. 61.1% were males, while 59.1% were more than 5 years of age. The commonest NCD was sickle cell disease (26.2%) followed by congenital abnormality (17.4%).

Table 3 indicates that only 33.1% of parent/caregivers earned over three hundred Ghana cedis monthly while 12% had no regular monthly income. In all, 38% earned ≤GH 100 monthly, which translates into $1/day (below the poverty line). Among caregivers, 87.4% were covered by the NHIS which was the main source of funding. Interestingly, only 1.2% had support from extended family and employers. Mean spending on each outpatient and inpatient hospital visit (besides transport and feeding) on the child’s condition indicated that majority of caregivers spent GHC 20 or less. Table 4 indicates 103 (45.8%) of caregivers agreed that the child’s ailment has been a burden to the household, however regardless of the burden experienced, 187 (83.1%) indicated this has not increased family tensions or frictions, nor has it led to the family suffering social discrimination 207 (93.2). Overall, 176 (78.3%) of caregiver did not depend on other family members financially to manage child’s illness.

Table 1: Socio-demographic characteristics of parent/caregivers (≥ 18 years) of children on admission with NCDs in the three Hospitals in Ghana.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Place of residence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>184</td>
<td>81.9</td>
</tr>
<tr>
<td>Rural</td>
<td>21</td>
<td>9.3</td>
</tr>
<tr>
<td>Peri Urban</td>
<td>20</td>
<td>8.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>225</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No education</td>
<td>17</td>
<td>7.7</td>
</tr>
<tr>
<td>Primary</td>
<td>27</td>
<td>11.8</td>
</tr>
<tr>
<td>Middle/JSS/JHS</td>
<td>69</td>
<td>30.5</td>
</tr>
<tr>
<td>Sec/SHS/Vocational Technical</td>
<td>42</td>
<td>18.6</td>
</tr>
<tr>
<td>Post-secondary/Polytechnic</td>
<td>30</td>
<td>13.2</td>
</tr>
<tr>
<td>University</td>
<td>41</td>
<td>18.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>225</td>
<td>100.0</td>
</tr>
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</table>
Continuation of Table 1: Socio-demographic characteristics of parent/caregivers (≥ 18 years) of children on admission with NCDs in the three Hospitals in Ghana.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Religion</td>
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<td></td>
</tr>
<tr>
<td>Charismatic/Pentecostal</td>
<td>93</td>
<td>41.3</td>
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<tr>
<td>Protestant(Anglican Methodist/Presbyterian/Baptist/Lutheran)</td>
<td>82</td>
<td>36.5</td>
</tr>
<tr>
<td>Moslem</td>
<td>27</td>
<td>12.0</td>
</tr>
<tr>
<td>Catholic</td>
<td>20</td>
<td>8.7</td>
</tr>
<tr>
<td>Traditional/spiritualist</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>225</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akan</td>
<td>125</td>
<td>55.6</td>
</tr>
<tr>
<td>Ewe</td>
<td>40</td>
<td>17.8</td>
</tr>
<tr>
<td>Ga-Adangme</td>
<td>21</td>
<td>9.3</td>
</tr>
<tr>
<td>Mole-Dagbani</td>
<td>17</td>
<td>7.6</td>
</tr>
<tr>
<td>Other Ghanaian</td>
<td>22</td>
<td>9.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>225</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currently married</td>
<td>140</td>
<td>63.1</td>
</tr>
<tr>
<td>Never Married</td>
<td>57</td>
<td>25.7</td>
</tr>
<tr>
<td>Widowed</td>
<td>12</td>
<td>5.4</td>
</tr>
<tr>
<td>Living together</td>
<td>7</td>
<td>3.2</td>
</tr>
<tr>
<td>Separated</td>
<td>4</td>
<td>1.4</td>
</tr>
<tr>
<td>Divorced</td>
<td>4</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>224</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Profession</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trader, Businessman/woman</td>
<td>72</td>
<td>32.0</td>
</tr>
<tr>
<td>Professional/Technical</td>
<td>56</td>
<td>24.7</td>
</tr>
<tr>
<td>Artisan</td>
<td>32</td>
<td>14.2</td>
</tr>
<tr>
<td>Administrative/managerial</td>
<td>13</td>
<td>5.9</td>
</tr>
<tr>
<td>Agricultural animal husbandry/fishing/hunting</td>
<td>12</td>
<td>5.5</td>
</tr>
<tr>
<td>Homemaker</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td>Other</td>
<td>38</td>
<td>17.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>225</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Relationship of caregiver to child with NCD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>169</td>
<td>75.1</td>
</tr>
<tr>
<td>Self/respondent</td>
<td>26</td>
<td>11.6</td>
</tr>
<tr>
<td>Other relative</td>
<td>24</td>
<td>10.6</td>
</tr>
<tr>
<td>Other non-relative</td>
<td>6</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>225</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Type of care being provided to child with NCD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>196</td>
<td>87.1</td>
</tr>
<tr>
<td>Secondary</td>
<td>29</td>
<td>12.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>225</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Table 2: Age and sex characteristics of children on admission and types of NCDs reported to the three large Hospitals in Ghana

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Age group</th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Under 5 years (%)</td>
<td>5-9 years (%)</td>
<td>10 years and above (%)</td>
<td>Total (%)</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>38 (62.3)</td>
<td>24 (58.5)</td>
<td>29 (61.7)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>23 (37.7)</td>
<td>17 (41.5)</td>
<td>18 (38.3)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>61 (100)</td>
<td>41 (100)</td>
<td>47 (100)</td>
</tr>
<tr>
<td>Non-communicable disease</td>
<td>Cancer</td>
<td>4 (7.0)</td>
<td>2 (5.0)</td>
<td>6 (11.5)</td>
</tr>
<tr>
<td></td>
<td>Diabetes</td>
<td>4 (7.0)</td>
<td>4 (10.0)</td>
<td>16 (30.8)</td>
</tr>
<tr>
<td></td>
<td>Sickle Cell Disease</td>
<td>11 (19.3)</td>
<td>16 (40.0)</td>
<td>12 (23.1)</td>
</tr>
<tr>
<td></td>
<td>Congenital Deformity</td>
<td>13 (22.8)</td>
<td>4 (10.0)</td>
<td>9 (17.3)</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>25 (43.9)</td>
<td>14 (35.0)</td>
<td>9 (17.3)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>57 (100)</td>
<td>40 (100)</td>
<td>52 (100)</td>
</tr>
</tbody>
</table>

Table 3: Financing NCDs in children by households or families in three health facilities in Ghana (N= 225)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of income per month *(in GH₵)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No regular income</td>
<td>27</td>
<td>12</td>
</tr>
<tr>
<td>&lt; 50</td>
<td>23</td>
<td>10.2</td>
</tr>
<tr>
<td>50-100</td>
<td>35</td>
<td>15.7</td>
</tr>
<tr>
<td>101-300</td>
<td>65</td>
<td>28.9</td>
</tr>
<tr>
<td>&gt;300</td>
<td>74</td>
<td>33.1</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100</td>
</tr>
<tr>
<td>Health insurance status of the child with an NCD</td>
<td></td>
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</tr>
<tr>
<td>Insured</td>
<td>197</td>
<td>87.4</td>
</tr>
<tr>
<td>Uninsured</td>
<td>28</td>
<td>12.6</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100</td>
</tr>
<tr>
<td>Source of income for treatment/management of child’s condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health insurance</td>
<td>174</td>
<td>77.5</td>
</tr>
<tr>
<td>Personal (immediate family)</td>
<td>48</td>
<td>21.3</td>
</tr>
<tr>
<td>Others (Extended family/relatives, Employer)</td>
<td>3</td>
<td>1.2</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100</td>
</tr>
<tr>
<td>Rating of how expensive it is to treat/manage child’s condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>135</td>
<td>60.2</td>
</tr>
<tr>
<td>Low</td>
<td>90</td>
<td>39.8</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100</td>
</tr>
<tr>
<td>Mean spending on each outpatient visit (besides transport and feeding) on the child’s condition (in GH₵)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-20</td>
<td>130</td>
<td>57.8</td>
</tr>
<tr>
<td>21-50</td>
<td>38</td>
<td>16.9</td>
</tr>
<tr>
<td>51-100</td>
<td>31</td>
<td>13.9</td>
</tr>
<tr>
<td>101-300</td>
<td>14</td>
<td>6.0</td>
</tr>
<tr>
<td>&gt;300</td>
<td>12</td>
<td>5.4</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100</td>
</tr>
<tr>
<td>Mean spending on each inpatient visit (besides transport and feeding) on the child’s condition (in GH₵)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-20</td>
<td>108</td>
<td>47.8</td>
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<tr>
<td>21-50</td>
<td>47</td>
<td>20.9</td>
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<td>51-100</td>
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<tr>
<td>101-300</td>
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<td>11.2</td>
</tr>
<tr>
<td>&gt;300</td>
<td>23</td>
<td>10.4</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100</td>
</tr>
<tr>
<td>Experience financial difficulties (cost of treatment and transportation) during child’s hospitalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>93</td>
<td>41.2</td>
</tr>
<tr>
<td>No</td>
<td>132</td>
<td>58.8</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100</td>
</tr>
</tbody>
</table>

*The exchange rate prevailing at time of data collection was $1= GH₵ 1.95*
Discussion

The burden of primary care for children with NCD’s rests mostly on mothers, mostly married and residing in urban areas. Caregiving in households among households in Ghana rest heavily on women6. Non-communicable diseases in children impose financial burden on families considering that 38% of them earn less than $1 a day which by definition means poverty per the global World Bank definition. Caring for these children take caregivers away from work which reduces their income6,7,8. In addition, only 1.2% received financial support from extended family and employers. The sick child misses on school activities and time away from other social and personal developmental activities13. This is because financial burden for treating and managing children with NCDs rests almost entirely on the immediate family or household. This analysis shows support from extended family members, community or from employers is almost non-existent; the immediate family bears the entire burden of care. However, 87.4% are covered by the NHIS which reduces some of the financial burden. Unfortunately, the NHIS do not cover all NCDs in children; especially the childhood cancers11 and therefore households of children with these NCDs are likely to suffer the impoverishing effect of the cost of health care12,13,15. Indeed the cost of transportation, feeding and other personal cost to the family may not be covered by the insurance, the catastrophic and impoverishing effect of total cost of health care could be limited10. To improve care of NCD’s, it is important that NHIS covers childhood cancers which accounted for 8.1% of the NCD’s. Access to care for NCD’s can be improved through in-service training for health workers for early detection and treatment. In addition, community sensitization and education are necessary component. Contrary to anthropological accounts on various ethnic groups in Ghana on attitudes towards children with non-communicable diseases14, 91.6% indicated no social discrimination. Anthropological accounts on various ethnic groups in Ghana provide insight on attitude to children with NCDs and congenital conditions and how children may be availed for or denied treatment14. In some Ghanaian traditional societies, children with chronic diseases, congenital defects and similar conditions are considered as embodiment of “mischievous spirits that masquerade as normal children”16. In contrast, some anthropologists report that children with congenital deformities are considered as ancestors who are reincarnated and these therefore should be given special care to avoid any afflictions by ancestral spirits14. NCDs are perceived as afflictions by supernatural powers in traditional Ghanaian societies and by the traditional and faith-healing health systems17,18,19 which thus influence the health seeking behaviours of families and household within the communities.

Limitations

Assessment of incomes and spending on health care was subjective and is likely some income and expenditure sources may not have been adequately captured. The analysis generally demonstrates that Ghanaian families suffer financial challenges in caring for and paying for health care of their children with NCDs.

Conclusion

The burden of care giving for children with NCDs rested mostly on women, immediate family or household. Treating or managing the child’s condition creates financial difficulties for households. To improve care of NCD’s, it is important that NHIS covers childhood cancers. It is essential to improve access to care for children with NCD’s through in-service training for health workers for early detection and treatment.

Acknowledgement

We are grateful to all the children and caregivers of the children in the three health institutions where the survey was conducted. We are thankful to the authorities of the three health institutions (Korle-Bu Teaching Hospital, Komfo Anoyke Teaching Hospital and The Volta Regional Hospital) and the Heads of the Clinical Units where the survey was conducted. Financial assistance for the survey was provided through a grant, (URF/5/LMG-002/2011-2012) from the Office of Research and Innovation for Development (ORID), of the University of Ghana, Legon, Accra, Ghana.
Competing Interests
The authors declare no competing interest. The views expressed in this paper are those of the authors. No official endorsement by the Ministry of Health or Ghana Health Service is intended or should be inferred.

Authors' Contributions
D Badasu, AE Yawson and D Atobra developed the concept, AE Yawson analyzed the survey data and wrote the first draft. AE Yawson, D Badasu, A Abuosi, J Anarfi and F A Adzei contributed to reviewing various sections of the first draft manuscript. All authors reviewed the final version of manuscript before submission.

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References