Household illness prevalence and its determinants in the under-five children

Tessema Tesfaye, Sirak Hailu, Sisay Anberbir, Getnet Mitike

Abstract

Objective: To determine the household illness prevalence and their risk factors in the under-fives.
Methods: A cross-sectional community based house-to-house survey was conducted on randomly selected one urban and nine rural villages in Dabat district, North Western Ethiopia.
Results: Out of the 457 under-five children enrolled in the study 154 (33.7%) had symptoms of illness two weeks prior to the study day. The most frequently occurring symptoms were fever (n=113), cough (n=57) and diarrhea (n=52). Increased frequency of symptoms of disease was found in children below 12 months of age (p=0.005), with lack of history of vegetable consumption (p=0.0005) and with mid-upper arm circumference of less than 13.5 cms (p=0.004). Only 16.2% (n=26) of those with symptoms sought medical advice.
Conclusions: Household intervention programs targeting the frequently seen illnesses and their risk factors are suggested to reduce burden of disease in the under-fives. [Ethiop. J. Health Dev. 2001;15(3):173-178]

Introduction

Health services should always be directed towards the health need of the population. And this need depends on the disease pattern, which are always different from one region to another. In a community based national survey in Ethiopia, 38.2% of children (6-59 months) had some type of illness (1). But there exist differences in the type of illnesses in different areas (2). Therefore the health need should be surveyed in each region. The health surveys can provide material on risk factors, precursors of diseases and illnesses in the community. There are different survey methods like community mortality and morbidity surveys or hospital-based surveys. One of the community based health survey is the two weeks morbidity data, which is based on the interviewing of parents or caretakers of children using two weeks recall period. This method is crucial in assessing the health of child population and complements data, which are available from mortality or measures of diseases reported from health institutions. This method besides addressing the acute problems of children it has the advantage of enrolling those problems that do not reach hospital, which may be overlooked as trivial by parents. In an era where integrated management of childhood illnesses (IMCI) is advocated rather than specific disease vertical programme, regional data are also required in order to adapt generic materials.

The objective of the study was to identify major illnesses which are manifested by symptoms affecting the under five children and their risk factors so that interventions be undertaken.

Methods

A community based house to house survey was done in Dabat district, north western Ethiopia between April and May 1999 to determine the household illness prevalence pattern of the under fives and their risk factors. Dabat district was chosen as a study site because of the existing Dabat Rural Health Project, which
was initiated in 1995 with, established socio-
demographic and population health status data-
based on a stratified random sampling frame. The project includes population of
24,800 from one urban kebele and nine rural
villages. This present survey utilizes the
sampled population as a source population.
Taking an estimated prevalence of illness of
40%, a confidence level of 95% and 5% marginal error 461 under-fives were found to
be representative. By taking the population
A structured questionnaire was designed
for the purpose of the study. Parents or care-
takers of children under-five were requested to
call any illness their child experienced two
weeks prior to the interview date. Tracers
were used to facilitate recall. The questionnaire
also includes socio-demographic data, environ-
mental health data and feeding practices of the
child under study. History of feeding from the
date of birth was taken in detail. To assess the
quality of diet, consumption of animal sources
and vegetable sources of diet were inquired.
Consumption of any of the green leafy vege-
tables and carrot at least once in a month was
used to analyze the different groups. Nutri-
tional status of all the children under study
was assessed by measuring weight, and height/length based on the recommendations by D.B.
Jelliff 1966 (3). A hanging spring scale was
used to measure the weight and a measuring
board was used to measure the height of
children above three years and length of
children below three years.
Mid-upper arm circumference was measured
for those above 12 months of age using a
plastic measuring tape. Weight for height,
length for age and height for age measure-
ments were expressed as SD scores (Z-scores)
and the results were compared with those for
NCHS/WHO reference data (4). The ques-
tionnaire was prepared by the local language
and was filled by high school completed
enumerators trained for the Dabat rural health
project who also performed the measurements
after appropriate training. A health officer and
the investigators supervised them. Data thus
compiled was entered and analyzed using a
computer soft ware EPI-INFO version 6.01.

Results
Out of the 461 sampled households 457
(99.1%) were willing to be involved in the
study. Of a total of 457 children enrolled in
the study 154 (33.7%) had one or more
symptoms of illness. These children had 354
types of symptoms. The most common symp-
toms of illness were fever, cough and diarrhea.
Fever was found in 113 children (24.7%),
cough in 57 children (12.5%) and diarrhea in
52 children (11.4%) (Figure 1). Of those with
symptoms only 26 (16.2%) had sought medical
advice. The main reason for not seeking
medical advice was lack of money (n=44) and
vomiting was the most frequent symptom for
which medical advice was sought.

Socio-demographic characteristics: Of the
total of 457 children enrolled 52.7% (n=241)
were males and 47.3% (n=216) were females.
Fifty-eight of them were from the urban kebele,
while 399 were from rural villages. Around
51% of the children were less than 12 months
old. The average family size was six. Two
Hundred Twelve (46.4%) of the fathers and
78.8% (n=360) of the mothers were illiterate.
Three Hundred Seventy Seven (82.5%) of the
fathers were farmers and 88.8% (n=406) of
the mothers were housewives. The monthly
family income could be estimated in 352
households out of which 90% (n=317) earn
less than 50 Birr (Table 1).

Gender, place of residence, family size,
parental educational background, parental
occupation and monthly family income were
not found to be associated with presence of
symptoms of diseases.
Table 1: Socio-demographic characteristics of the children, Dabat, 1999.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sick</th>
<th>Not sick</th>
<th>Odds ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>82</td>
<td>159</td>
<td>1.03</td>
<td>0.875</td>
</tr>
<tr>
<td>Female</td>
<td>72</td>
<td>144</td>
<td>0.68-1.56</td>
<td></td>
</tr>
<tr>
<td><strong>Address</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>22</td>
<td>36</td>
<td>1.24</td>
<td>0.455</td>
</tr>
<tr>
<td>Rural</td>
<td>132</td>
<td>267</td>
<td>0.67-2.28</td>
<td></td>
</tr>
<tr>
<td><strong>Age (month)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-12</td>
<td>26</td>
<td>25</td>
<td>2.26</td>
<td>0.005</td>
</tr>
<tr>
<td>≥2</td>
<td>128</td>
<td>278</td>
<td>1.20-4.25</td>
<td></td>
</tr>
<tr>
<td><strong>Fathers Education Background</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>68</td>
<td>144</td>
<td>0.87</td>
<td>0.494</td>
</tr>
<tr>
<td>Literate</td>
<td>86</td>
<td>159</td>
<td>0.38-1.32</td>
<td></td>
</tr>
<tr>
<td><strong>Fathers Occupation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmer</td>
<td>122</td>
<td>255</td>
<td>0.72</td>
<td>0.18</td>
</tr>
<tr>
<td>Others</td>
<td>32</td>
<td>48</td>
<td>0.42-1.22</td>
<td></td>
</tr>
<tr>
<td><strong>Monthly Income (Birr) (n=352)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;50</td>
<td>100</td>
<td>217</td>
<td>0.69</td>
<td>0.31</td>
</tr>
<tr>
<td>≥50</td>
<td>14</td>
<td>21</td>
<td>0.32-1.51</td>
<td></td>
</tr>
<tr>
<td><strong>Maternal Education Background</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>120</td>
<td>240</td>
<td>0.93</td>
<td>0.75</td>
</tr>
<tr>
<td>Literate</td>
<td>34</td>
<td>63</td>
<td>0.56-1.53</td>
<td></td>
</tr>
<tr>
<td><strong>Maternal Occupation Background</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>136</td>
<td>270</td>
<td>0.92</td>
<td>0.79</td>
</tr>
<tr>
<td>Others</td>
<td>18</td>
<td>33</td>
<td>0.48-1.79</td>
<td></td>
</tr>
</tbody>
</table>

But those children above 12 months old seem to be protected from illness in a statistically significant manner (p=0.005) (Table 1).

**Nutritional history and status:** Almost all, 99.6% (n=455) of the children were breast fed initially and 26.7% (n=122) of the children were started with supplementary food before the age of six months. The mean duration of breast-feeding was 28 months. And in 81% (n=370) it was given beyond second year of life. Three Hundred Seventy Four children were given animal source of diet while 308 children were given vegetables.

One Hundred Seventy Four (44.6%) of those above one year of age were found to have a mid upper arm circumference of less than 13.5cms. In 231 children the weight for age, in 28 children the weight for height, and in 321 children the height for age were found to be below -2 SD (Table 2).

A mid-upper arm circumference of less than 13.5 cm, and lack of consumption of vegetables were found to be associated with presence of symptoms in a statistically significant manner (Table 3).

**Environmental health:** Four Hundred Twenty Three (92.6%) of the household were using open field for latrine and 329 (72%) of them were using unsafe water. None of these were associated with the presence of symptoms (Table 3).
Table 2: Nutritional characteristics of the children, Dabat, 1999

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sick</th>
<th>Not sick</th>
<th>Odds ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight for age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; -2 SD</td>
<td>82</td>
<td>149</td>
<td>1.81</td>
<td>0.41</td>
</tr>
<tr>
<td>≥ -2 SD</td>
<td>72</td>
<td>154</td>
<td>0.78-1.78</td>
<td></td>
</tr>
<tr>
<td><strong>Weight for height</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; -2 SD</td>
<td>12</td>
<td>16</td>
<td>1.52</td>
<td>0.289</td>
</tr>
<tr>
<td>≥ -2 SD</td>
<td>142</td>
<td>287</td>
<td>0.65-3.52</td>
<td></td>
</tr>
<tr>
<td><strong>Height for age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; -2 SD</td>
<td>104</td>
<td>217</td>
<td>0.82</td>
<td>0.36</td>
</tr>
<tr>
<td>≥ -2 SD</td>
<td>50</td>
<td>86</td>
<td>0.53-1.29</td>
<td></td>
</tr>
<tr>
<td><strong>Mid upper arm circumference (cms) (n=390)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 13.5</td>
<td>68</td>
<td>106</td>
<td>1.92</td>
<td>0.004</td>
</tr>
<tr>
<td>&gt; 13.5</td>
<td>54</td>
<td>162</td>
<td>1.28-3.05</td>
<td></td>
</tr>
<tr>
<td><strong>Total duration of Breast Feeding (months) (n=196)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 12</td>
<td>8</td>
<td>8</td>
<td>2.75</td>
<td>0.04</td>
</tr>
<tr>
<td>&gt; 12</td>
<td>48</td>
<td>132</td>
<td>0.87-3.71</td>
<td></td>
</tr>
<tr>
<td><strong>Age supplement started (months) (n=437)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 7</td>
<td>40</td>
<td>82</td>
<td>0.98</td>
<td>0.91</td>
</tr>
<tr>
<td>≥ 7</td>
<td>105</td>
<td>210</td>
<td>0.61-1.56</td>
<td></td>
</tr>
<tr>
<td><strong>Consumption of animal source of diet (n=433)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>118</td>
<td>256</td>
<td>0.63</td>
<td>0.1</td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td>34</td>
<td>(0.34-0.74)</td>
<td></td>
</tr>
<tr>
<td><strong>Consumption of vegetable diet (n=433)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>87</td>
<td>221</td>
<td>0.47</td>
<td>0.0005</td>
</tr>
<tr>
<td>No</td>
<td>57</td>
<td>68</td>
<td>0.30-0.74</td>
<td></td>
</tr>
<tr>
<td><strong>Sun Exposure (n=455)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>82</td>
<td>168</td>
<td>0.92</td>
<td>0.62</td>
</tr>
<tr>
<td>No</td>
<td>71</td>
<td>134</td>
<td>0.61-1.39</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Distribution of environmental factors in the households of the children, Dabat, 1999

<table>
<thead>
<tr>
<th>Variable</th>
<th>sick</th>
<th>Not Sick</th>
<th>Odd-ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Source of water</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safe</td>
<td>36</td>
<td>92</td>
<td>0.70</td>
<td>0.11</td>
</tr>
<tr>
<td>Unsafe</td>
<td>118</td>
<td>211</td>
<td>0.43-1.12</td>
<td></td>
</tr>
<tr>
<td><strong>Latrine</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pit</td>
<td>13</td>
<td>21</td>
<td>1.24</td>
<td>0.56</td>
</tr>
<tr>
<td>Field</td>
<td>141</td>
<td>282</td>
<td>0.56-2.70</td>
<td></td>
</tr>
</tbody>
</table>

Discussion
A household illness prevalence is one of the many ways of obtaining health information. Its use is not limited only in assessing the health status but also looking at various determinants, consequences of ill health and in providing broad information in health planning and management. In a country where there is a meager health service and a very low health care seeking behavior household surveys play a major role in identifying the morbidity pattern of a community in a country. Identification of common symptoms of illness is quite important especially in an era where IMCI is the best intervention to reduce morbidity and mortality of the under-fives by improving health workers skill, improving health system and improving household and community practices. The information acquired
Household illness prevalence and its determinants in the under-fives

care also be utilized for adaptation in the region. In this study in order to improve the
validity of illness reporting lists of tracer
conditions was used in locally utilized words
and a two week recall period was used based
on experience in other studies (5,6). This study
discloses an illness prevalence of 33.7%,
which is quite similar to the national survey of
33.2% among children aged 6-59 months (1).

The commonest symptoms of illness found in
this study were fever, cough and diarrhea
which is similar to study done in Gondar in
1994 in a health institution during pre-testing
IMCI (7). The difference lies in the frequency
of ear problems, which is very low in our
study.

But a study in another community based study
in rural Ethiopia revealed ear discharge to be
relatively rare (8).

Malnutrition indicated by mid-upper arm
circumference of ≤ 13.5cm and lack of vegeta-
table consumption seems to be an important
determining factors for household illnesses.
Therefore appropriate intervention towards
proper nutrition may reduce the illness
prevalence.

The health seeking behavior in the study
population was about 16%, which is very low.
But studies recommended a 6-month recall
period for a better yield (6,11). In this study
vomiting was the symptom for which medical
care was sought frequently. This is quite
related to the perception of seriousness of
diseases by the community. A review of
medico-anthropological literature has shown
that the type of illness and the respective
tiological concept is one of the most
important explanatory variables for people’s choice
between treatment alternatives (9). The study
could not associate social status to health status
because of the problem of estimating the average
family income accurately since 85% of the
head of households are farmers. This has been
seen in most developing countries (10). Despite
what is naturally expected the study does
not reveal a statistically significant difference
between those with safe water source and
without (Table 3). This is partly explained by
the way the water is handled from the site of
the source till utilization, which in most cases
would be unhygienic.

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also extend our thanks to the children and their
families involved in the study and Ato Getu
Degu for reviewing the manuscript and
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integrated management of childhood illness in