

COMMUNITY BASED
STUDY OF MENTAL DISORDER IN CHILDREN
IN AMBO WOREDA WESTERN ETHIOPIA

A thesis presented to the
school of graduate studies of
Addis Ababa University

in partial fulfilment
of the requirements for the degree of
master of public health

by

Belayneh Tadesse, MD,

May, 1995

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Abstract

Mental health problems of children in Ethiopia is not known. A survey was conducted in Ambo woreda, western Ethiopia. Mothers of 3001 children aged 5-15 years were interviewed for their children mental status using a WHO standardized screening instrument (RQC). And both mothers and fathers (n=2223) were also interviewed for their own mental status using a WHO standardized screening instrument (SRQ). A psychiatrist interviewed 196 children initially screened by the RQC to evaluate the validity of RQC. The study showed that a cut off point which maximized sensitivity (87.5%) and specificity (65%) of the screening instrument (RQC) was found to be at 0/1, that is one yes answer to any of ten questions. The prevalence of the various mental disorders using RQC at a cut off point (0/1) were therefore estimated. Out of 3001 children, 534 (17.7%) were found to have mental disorder. Males (19.2%) and females (16.4%). Headache 332(11.1%) and Nervousness 123(4.1%) were the most frequently reported symptoms by mothers. After adjusting for potential confounders age of children was found to be associated with mental disorder and that this association was statistically significant. Maternal age, marital status and parental psychopathology were also significantly associated with mental disorder of their children. The findings show that mental disorders in children in this population are as common as elsewhere in developed and developing countries. Mental health services in this and other communities need to be initiated as soon as possible.

Introduction

Mental health is conceptualized as being two dimensional (1) Psychological well-being-how the individual feels inside about himself or herself, including affect, self esteem and psychopathology.

(2) Social adaptation status (SAS)-a societal dimension measuring the adequacy of the individual's role performance as viewed by a significant other in a particular social field (1). Mental health programmes are still neglected in most African countries. This can be attributed to several factors.

1. Absence of scales appropriate for African countries to measure and identify mental illness,
2. Poor training for health workers in the area of mental health,
3. Indifference or negative attitude to mental health problems,
4. Preference for treatment by traditional healers.

As a result, the infrastructure in the Africa region, regarding both services and research for mental illness is still very weak(2).

In the past, one of the barriers to effective communication in mental health, both between and within countries, has been the lack of agreed methods of evaluating and differentiating between the varieties of mental health problems. This situation has made it

difficult to compare findings obtained in different parts of the world and to exchange information and experience. However considerable improvement occurred after a WHO coordinated team work has played an important role in the development of a common language among mental health workers(3). Later on one line of development for extramural research has been the elaboration and testing of various interview techniques for community surveys(4-6). Experts in seven developing countries under the sponsorship of the World Health Organization, have carried out collaborative operational research on providing mental health care through primary health care services. New internationally reliable techniques of identifying mental disorders in children and adults have been developed and tested(7).

Data on the prevalence of mental disorders have practical importance at least for two reasons:- Firstly they are required for scientific understanding of a disease which will enable us to describe the association, etiology, natural history and identification of new syndromes. Secondly they are also of vital importance for planning and evaluation of mental health programmes. Studies done earlier in several developed countries had estimated the prevalence of mental disorder to be greater than 20%.

Although earlier studies done to estimate the prevalence of mental disorder in developing countries were few, recent studies have consistently shown a prevalence rate as high as those of developed countries(8).

Information about childhood mental disorder in primary health care in developing countries is very sparse, but now there is evidence that the rate of mental disorders in children seen in primary care may in fact be of the same order in developing countries as else where(9). In Ethiopia, few attempts were made to get information on the magnitude of mental illness among patients in health institution by conducting institution based studies using various methods. There were also a small number of community based studies which attempted to determine the prevalence of mental disorder in the general population.

This study was designed to determine the prevalence of mental disorder in children in a community using the World health organization (WHO) standardized questionnaire for children (RQC)and their determinants. It also evaluated the validity of RQC as a measure of mental disorder in children in the study area.

Literature Review

Lack of accepted definition for the disorders themselves resulted in divergence of research strategies in child psychiatry (10). According to diagnostic manual, such as the American psychiatric association's diagnostic and statistical manual for mental disorder, (DSM III), mental disorder is defined as : a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is typically associated with either painful symptom (distress) or impairment in one or more areas of functioning (disability) (11).

Primary health care seeks to involve people directly in community health work and to make the essential elements of prevention and treatment accessible and acceptable to all communities(12). In an ideal primary health care system, the simply trained community health worker should spend a significant proportion of his or her time among people in their homes ,and places of work, should be in regular contact with certain groups with special health needs (such as young children, old people, and pregnant women), and should also be available at health posts, dispensaries or health canters for advice, treatment or preventive care. So, to address mental health needs, through

primary health care system, information is needed about the local frequency, and types of mental disorder found among patients already using primary health care services and about the ability of health workers to diagnose these condition. Therefore a reliable and valid technique for case detection is needed. A technique of two stage screening of patients has been developed by WHO in which the first stage consisted of a relatively brief questionnaire allowing a patient to report the presence or absence of clearly defined symptoms. This first stage screening was designed to identify "potential cases" which could then be followed up by the much more time consuming procedure of using the standardized psychiatric interviews to confirm the diagnosis(7).

The child rearing family, a basic social unit in all societies, function in the central roles of genetic transmitter; provider of nurturance, and , in most societies as the primary socializer of the young (1).

According to WHO, the basic requirement for normal psychosocial development (in addition to intact nervous system) include a warm and accepting environment with a stable parents or parent substitutes who are sensitive to the child's emotional needs and who provide appropriate conversational interchange and

opportunities for play as well as consistent discipline, supervision , and support. Mental health problems in child hood have two important characteristics : they represent for the most part ,quantitative deviation from health or normal development ,and many of their manifestations can be seen as responses to specific situation. The majority of children experience emotional or behavioral difficulties (eg. fear, or disturbances of sleep or of eating pattern) at some time or other during their development. Most of these problems are transient in nature. Some children ,however, have problems which ,though not very different in kind from difficulties found frequently in the general population of children, do differ in the degree of severity and the extent to which they impede overall psychosocial development i.e. they are multiple, persistent, and socially handicapping. These may be termed mental disorder (3).

Mental health problems in children are linked to the interaction of the child with the environment. The understanding of this environment is particularly important in evaluating mental health. Screening questionnaire of demonstrated reliability and validity are now available to identify children likely to have mental health problems(3).

Calibration of screening instruments in which a threshold score or cut-off point is used to distinguish between "cases" and "non cases" has proved to be an invaluable procedure in cross cultural application of screening instruments(7). One measure that is frequently employed for evaluating the effectiveness of diagnostic systems is the receiver operating characteristic curve. A perfect test would pick up only true positive at first, then after the true positive rate is 100 percent, only false positive. Conversely a useless test picks up both true and false positive at the same rate. The best cut off point to minimize the overall errors occurs when the tangent to the line is at 45 degree (13).

The reporting questionnaire for children (RQC), is a 10 item questionnaire for children between the ages of 5-15 years old. It is designed to identify moderate to severe mental retardation, significant degrees of emotional or behavioral disorder (those which adversely affect schooling or socialization for more than a limited period of time), and psychotic disorders. Validation data are available from four countries(7). These questions were selected by a process of

(a) Examination of the relevant (but limited) literatures of studies conducted in Ethiopia and Sudan.

(b) Discussion between the collaborating team concerning the relevance of items in primary care settings. These questions are unambiguous, easy to answer and related to recognizable behaviours or experience of the child. A score on one positive item was generally adequate for screening cases and perhaps pointing towards a particular disorder. The adult accompanying the child are the respondents for the questions (9).

The self reporting questioner (SRQ). To enable primary health care workers with limited training to discriminate between patients who are physically ill, and those whose mental illness is disguised by physical symptoms. In an effort to meet this need, the world health organization (WHO) developed the SRQ. It is maintained that by answering the 24- questions comprising this questionnaire with a simple yes or no answer, respondents from different cultures can reveal the presence of a number of psychopathological phenomena. The first 20 items are aimed at uncovering neurotic symptoms, the last 4 items psychotic symptoms(14). If the number of yes answer to the first 20 questions exceeds a certain predetermined marginal value (cut-off points), and/or if at least one yes answer is given to the four psychotic items, it is

likely that the respondent is suffering from some form of mental illness (15,7). Most of the questions in the SRQ have been selected from existing western questionnaires, such as the symptom sign inventory (SSI) (16), the general health questionnaire, (GHQ) (17) and the present state examination (PSE) (18). The questions used in the SRQ are thus the main standard diagnostic questions used in western psychiatry to obtain an impression of psychiatric conditions of the person seeking help (14).

Studies conducted by investigators in a WHO collaborative study in four developing countries (Colombia, India, Sudan, Philippines) used the instrument SRQ and tested it to see its validation. Using the cut-off points after calibration of the instrument in the different study areas 10/11, 5/6, 3/4, 6/7 in Colombia, India, Sudan and Philippines respectively. The sensitivity varied between 73% and 83% while the specificity varied between 72% and 85% in all four study areas (15). Kortman using SRQ questionnaire and found 37% of the yes answers to the neurotic and 68% of the yes answers to the psychotic symptoms were invalid(14).

Prevalence of mental disorder In adults

At least 40 million people in the world suffer from severe forms of mental disorder, such as schizophrenia and dementia: no fewer than 20 million suffer from epilepsy, which, like mental disorders is left untreated in the majority of cases; and a further 200 million are incapacitated by less grave mental and neurological disorder, such as severe neurosis, mental retardation, and peripheral neuropathy. When this figure is augmented by the number of people affected by alcohol and drug related problems, and by mental disorder secondary to physical diseases (such as 20% of all patients with chronic gastrointestinal disorder who suffer from depression), it becomes apparent that in terms of individual suffering, the burden to the families and the cost to the community, the health services are faced with a problem of gigantic magnitude. Clearly, conventional medical and mental health care cannot hope to make a significant impact on a problem of such dimension; According to WHO it was stated that, mental health care should no longer be provided in centralized institutions, nor should its provision be concentrated in the hands of a few mental health specialists (19).

Few studies have been conducted to study the prevalence of mental disorder in developing countries especially in Africa(8).

In adults, Dhadphale and his colleague using SRQ and psychiatric interview, found a prevalence rate of 28.6% at Kisu, Kenya in 1982(8). In Another study, Dejang and his colleagues ,using SRQ and health staff rating found a prevalence rate of 12% in 1984 in south Guinea Bissau(8).

Experts in the WHO collaborative team found the combined minimum frequency of psychiatric disorders in primary health care in four areas is 13.9% (15). The great majority of these cases were diagnosed as being neurotic, while few cases of functional psychosis or mental retardation were diagnosed.

In Ethiopia few studies were conducted ,on frequency of mental disorder using various techniques and population . Most of them were done by foreigners and were institution based and some were community based and found a prevalence rate ranging from 8.6%-19% (20,21,22,23,24,25,).

Prevalence of mental disorder in children.

Surveys of the general population show that the prevalence of persistent and socially handicapping mental health problems among children aged 3-15 years

old in developed countries is about 5-15%(3). The prevalence of clinical maladjustment in children & youth in USA ranges from 11.8% -15% (26,27,). More limited data from developing countries suggest a roughly similar rate(3). Some of the mental disorder (2/5th) seen in adolescence have persisted since childhood and the rest newly developed during early adolescence (26).

In Africa, a study using the RQC, conducted in rural Senegal, among 545 children aged 5-15 years old, attending primary health care services found that 17% were suffering from some form of emotional problem, behavioral disturbance or neuropsychiatric disorder. They also found using a cut-off point of 1/2, the RQC had a sensitivity of 76.3% and specificity of 82% (28). In Kenya, Kanethe and Dhadphle screened 303 children of age 5-15 years using RQC with a cut off 0/1 and found 20% children as having a clinically significant and definable psychiatric disorder. The psychiatric morbidity was 77%, neurotic or emotional disorder, 13% conduct disorder and 10% others. Twenty one percent of boys and nineteen percent of girls had psychiatric morbidity (29).

A WHO collaborative team did a study to measure the frequency of mental disorder in 925 children attending a primary health care service in four

developing countries using the RQC with a cut off point 0/1. They determined the prevalence rate of mental disorder 12% in Sudan, 15% in Philippines in India, and 29% in Colombia. Despite this the primary health worker themselves recognized only between 10% and 22% of cases of mental disorders and the remaining 80-90% of childhood mental health problems were consistently missed at the primary health care level in the communities studied (30). They also found RQC has sensitivity and specificity ranging from 89.7%-100% and 62.7% - 95.8% respectively (30).

Three groups of problems affect prevalence rate: emotional disorders, conduct disorders, and impairment or delays in the development of normal functions. Emotional disorder (eg. fears, anxiety, obsession, depression, hypochondriasis) occur with the same frequency in boys and girls, while conduct disorder (poor peer relationship and destructiveness) are significantly more common in boys. Impairments or delay in development are markedly more common in boys than girls. Developmental disorder of speech and language occur in some 1-5% of children; regular bed wetting is present in about 3% of children at the age of 10; and reading retardation in children of normal intelligence is found to be present in about 3-10% of children. Psychotic disorder are far less prevalent in childhood

than they are in later life. Autism occurs in about 3 or 4 children out of 10,000, functional psychosis such as schizophrenia or manic depression disorder are quite rare before adolescence. Severe mental retardation affect 4 children per 1000 and mild retardation some 30 per 1000 (3).

In Ethiopia, a few community based studies were done using different methods. In 1968 Giel studied 381 children aged 0-20 years using interview as a measure, and found a prevalence 5.2% (31). And in 1989 Samuel using RQC and CBPQ (childhood behavioral and psychological questionnaire) on 860 children of age 3-12 years, found a rate of 24%(32). Most childhood problems seem to be age specific. A problem present at one age will not be found later on. Psychological or behavioral symptoms before the age of 6 or 7 years have little predictive value for later adjustment (33). An independent assessment of the child's diagnosis based on information from multiple informants, including the child, may be the best in assessing psychiatric disorders in children (34).

Risk factors for mental illness in children.

Biological factors. Very few mental disorders in children are inherited. Genetic factors do play a role through their influence on personality and on vulnerability to environmental stress. Brain damage or dysfunction in its own right as a cause of mental illness such as mental retardation has also been described (3).

Maladjustment is more common in males than females; prevalence of conduct disorders are higher in males, while neurosis is higher in females (26). There is a slight rise in the occurrence of mental disorders between late childhood (9-12) and early adolescence (13-16 years) (26).

Environmental factors. Being poor is one of the environmental stressors that may pose a risk to the children mental health (11,3). Poverty play a central role in producing or increasing the severity of risk factors for the child's maladjustment (34). Issues like broken homes, loose family ties, educational disadvantage illegitimate birth, lack of verbal stimulation or poor parent child interaction put the child at a high risk to have mental disorder (3).



The pressure in the family of a parent with psychopathology increases a child's risk of experiencing emotional and behavioral difficulties(11,3). Children of schizophrenic parents have been shown to have a risk of developing schizophrenic 10 times greater than that off-spring of non-schizophrenic parent (11). Children whose parents are alcoholic or substance abusers are at a risk to have varieties of mental disorder (11,32).

Children born to teen age mothers have been found to perform more poorly than the other children on standardized IQ and achievement tests(11).

Children from a divorced family often exhibit a variety of behavioral problems, including oppositional, aggressive, depressive reaction and developmental delay (11,3).

General objective

To measure the magnitude of mental health problems in children of age 5-15 years in semiurban and rural communities of western Ethiopia.

Specific objective

1. To measure the prevalence of mental disorder in children using RQC (reporting questionnaire for children).

2. To identify the associated risk factors for mental disorder in children.

3. To evaluate the validity of RQC (reporting questionnaire for children) as a measure of mental disorders in children in a rural community.

Methods

The study had a cross sectional design and was conducted between September 1994 and May 1995 in Ambo woreda, western Ethiopia.

Profile of the study area The study was done in Ambo woreda which is one of the 23 woredas of Western Showa administrative zone. The woreda is located about 120 km. to the west of Addis Ababa which is the capital of Ethiopia. Ambo woreda has 136 kebeles of which 8 are urban kebeles and the rest, peasant associations. The population of the woreda is estimated to be 198,461, of which 17.3% live in the urban area and 82.7% live in a rural area. The male to female ratio in the woreda is 86:100. Children of age group 5-15 in the woreda is about 13%. 90% of the population in the woreda speaks Amharic and about 98 % of the population are orthodox by religion. Some where 95% of the population are Oromo by ethnicity. The crops mainly produced in the woreda are teff, barely, maze. There is one psychiatric nurse working in the hospital (35).

The instruments used to estimate prevalence of mental disorder in adults and children are self reporting questionnaire (SRQ) for adults and reporting questionnaire for children (RQC) developed by WHO expert committee on mental health for developing countries.

The English version of the reporting questionnaire for children was translated in to Amharic language by three psychiatrists independently. Back translation in to English was done by another psychiatrist who didn't know the original version.

We employed interviewers who completed 12th grade and who spoke Oromifa (the local language of the residents of the area) and Amharic language which is the national language. Fifteen male 15 female interviewers were recruited. Two male supervisors were recruited for supervising the interviewers. Training of supervisors and interviewers was given for three days.

To pretest the questionnaire, 10 parents or care takers were interviewed from one of the kebeles in the woreda not chosen for the main study. For this 10 households were selected by choosing every n^{th} households ($N = \text{total households in the Kebele divided by } 10$). From each house hold parents or child care takers were interviewed. In cases where both father and mother lived together both the father and the mother were interviewed separately to respond especially for the child's reporting questionnaire and self reporting questionnaire. When a refusal or a house hold with no child with the age group between 5-15 year were encountered the alternate house number next was chosen in the order of +1, -1, +2 or -2 of the original house

number chosen. Using the results of the pretest, appropriate modification to the questionnaire were made.

Sampling procedure. The source of the study population was all parents or child caretakers and all the children whose age is between 5-15 years old living in the accessible kebeles. The sampling units were the households in the woreda. A sample size large enough to detect the prevalence of mental illness in adults and children was calculated on the basis of prevalence estimates for mental disorder in developing countries. The average prevalence of mental disorder in community survey was taken as 10% for adults and 5% for children. The required sample size was 3,098.

The information about the population in rural and urban kebeles was obtained from the woreda municipality and agriculture department. The rural kebeles were stratified in terms of accessibility with regard to transportation. All the urban eight kebeles were included in the study. To get this sample size 30 clusters were selected out of the 36 accessible rural and urban kebeles in proportion to population size. For a household selection a total number of households in the clusters were divided to get the value " N " (the sampling interval).

For both rural and urban areas households from each kebeles were chosen by starting from randomly selected households in the kebeles and continuing with every Nth households until 50 households were chosen from each cluster. Parents or care takers of the child/children responded for themselves and only mothers were asked for all children in the age group between 5-15 years old in the household.

Data collection was completed in 15 days using one interviewer in each cluster. It was possible to obtain the necessary sample size in 1440 households with a compliance of 96%. From these households 3001 children and 2223 parents or child care taker were participated in the study.

Exclusion criteria were: (1) Absence of at least one child whose age is between 5-15 years old. (2) Refusal to participate. (3) Absenteeism for twice visits. In both these cases replacements were in order of +1, -1, +2, -2 from the original house hold number selected.

After the respondents were identified, the interviewers first read out a note to inform the subjects the purpose of the study, the type of interview, the way it was to be conducted and the potential benefits for the respondents and their children and her Consent was then requested. After

obtaining consent, the interviewers read a loud each question. If there were a doubt in deciding answer the interviewers repeated the question without any form of further explanation.

Methods of validation of RQC. Every parent or child care taker with at least one answer positive to RQC and parents of the next house hold with negative answer to RQC were appointed to Ambo hospital to be seen by a psychiatrist in any of the working days which was convenient for them . A total of 196 children (77 negative(119) positive by the RQC were seen in 10 days by a psychiatrist.

The psychiatrist used a multi axial check list from DSM IV (Diagnostic and statistical manual for mental disorder). The psychiatrist did not have prior knowledge of the RQC status of the 196 children . Those children who needed treatment for their psychiatric medical illness were given appropriate medications.

A child was said to have mental illness if she/he score at least one out of ten RQC items.
Parental neurosis : defined as a parent scoring at least 8 yes answer out of the 20 neurotic symptoms(7/8)

Parental psychosis: defined as a parent scoring at least one yes answer out of the four psychotic symptoms (0/1).

Data were entered and analyzed using EPI-INFO version 5.0. Program and multivariate analysis was conducted using Statistical Analytic System (SAS) version 6.03 program.

To evaluate the association of several potential risk factors with mental illness in children odds ratios and 95% confidence intervals were estimated. To adjust for confounding, a logistic regression model was employed. Test for trend was calculated by including the adjusted odds ratio as a continuous variable in a regression model. Test of statistical significance was put at 0.05 level.

Results.

A total of 1400 households and 2223 parents were included in the study, out of which, 1400 mothers responded on the mental status of a total of 3001 children.

Of the 3001 children, 1481 (49.4%) were males and 1520 (50.6%) were females, while 878 (29.3%), 895 (29.8%), 1026 (34.2%), and 202 (6.7%) were in the age group 5-7, 8-10, 11-14 and 15 years respectively. Of the parents 1400 (63%) were females and 823 (37%) were males, 1493 (67.2%) were in the age group \geq 35 years, while 565 (25.4%) and 165 (7.4%) were in the age groups 25-34, and \leq 24 years age, respectively. Twenty three (1.6%) of the mothers were unmarried.

Of the children 1574 (52.5%) and 295 (9.8%) had completed 1-6 grades, and 7-9 grades, respectively. In the parents 1290 (58%) were not literate, while, 422 (19.0%) and 511 (23%) have completed 1-6 and 7-9 grades, respectively.

Over forty five percent of households had an average family size of 5-7, while 585 (26.3%) and 632 (28.5%) had an average family size of 2-4, and \geq 8 respectively. A large proportion of parents 2204 (90.1%) had income \leq 100 Birr (20 US dollars) per month. There were 866 (39%), housewife 439 (20%), farmers 318 (14.3%), daily labourers and 211 (9.5%) skilled

worker. The majority 1767 (79.5%) were from the Oromo ethnic group and Amhara: 375 (16.9%). Orthodox Christian constituted 92% and Moslems 2% of the households.

Evaluation of the RQC.

Comparable number of male (47%) and female (53%) included in the validation sub-study. As to the age characteristics more male than female in the age group (5-7) years were brought to the psychiatrist. In the other age group almost similar proportion of sexes in specific age group were seen by the psychiatrist.

As shown in table(1) A total of 196 children out of which 119 (60.7%) children were detected as potential cases as they scored at least one "yes" answer on the RQC and 77(39.3%) RQC negative children were examined by the psychiatrist. Of the 119 children detected as cases by the screening instrument 84 children were confirmed as cases and out of 77 non cases 65 were also confirmed as non cases (Table 1).

And out 96 children confirmed by psychiatrist 84(87.5%) of them also cases by the instrument, and 65(65%) are also non cases out of 100 non cases confirmed by the psychiatrist. Among 119 potential cases 84(71%) were confirmed to be cases ; thus the positive predictive value (PVPT) of the instrument is estimated to be 71%.

Table 1 Comparison of RQC and psychiatrist diagnosis among 196 children 5-15 years of age, Ambo western Ethiopia, 1994/95

Psychiatrist diagnosis			
	Positive	Negative	Total
Positive	84 (87.5%)	35 (35%)	119 (61%)
RQC status			
Negative	12 (12.5%)	65 (65%)	77 (39%)
Total	96 (49%)	100 (51%)	196 (100%)

As shown in figure as the cut off point to discriminate cases and non cases increases , the specificity of the screening instrument increases at the expense of the sensitivity, the maximum specificity (97%) and least sensitivity (10.4%) is found when the cut off point to discriminate cases 4/5 or at least 5 yes answers are responded. Conversely the maximum sensitivity (87.5%) and least specificity (65%) is obtained when cases are considered when they responded at least one yes answer to any of the ten item.

Hence the best cut-off point which minimize the overall errors or which maximize true positivity and minimize false positivity as seen from the ROC curve is at 0/1 , i.e. children who scored at least one or more of the yes answer to any of the ten items.

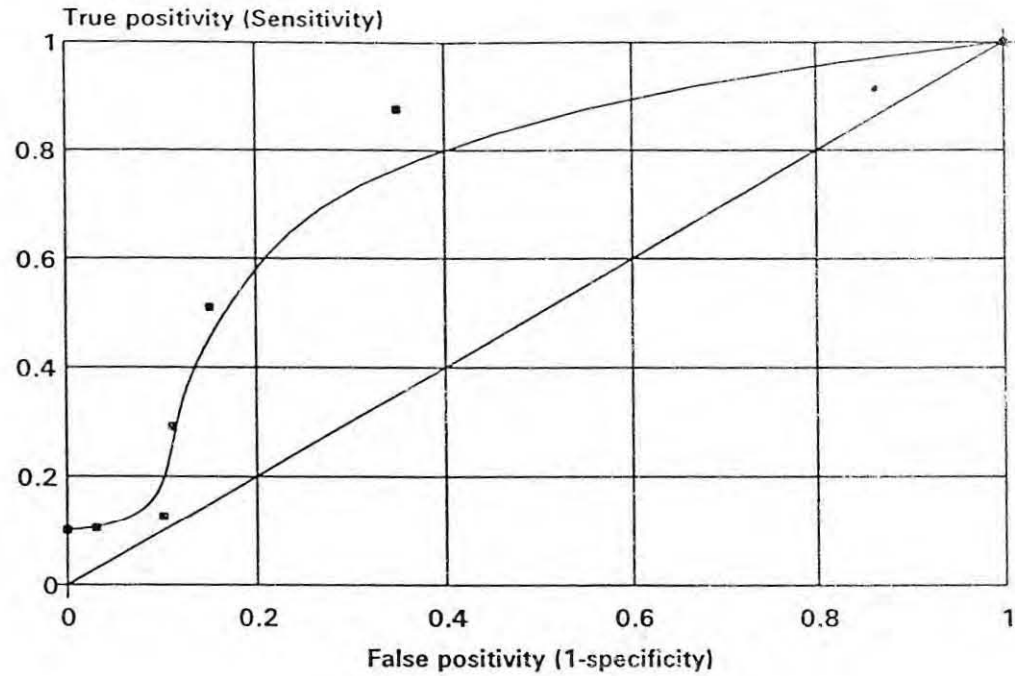
As shown in table 2 the value of discriminating power of an item is computed as the percentage of psychiatrically ill subjects with a positive response divided by the percentage of normal children with a positive response. It is a measure of the tendency for the given item to be responded to positively by children with a mental disorder and negatively by the children in the normal sample. The higher the discriminating power for an item the better the item is in discriminating cases and non cases. The

discriminating power of items 10 (enuresis) and 9 (Never play with the others) are highest in the study sample.

2. Prevalence estimate of mental disorders.

Using a cut- off point 0/1 among the 3001 children who were screened by RQC, 534 (17.7%) children responded yes, (82.3%) responded non of the yes answer to any of ten items. The prevalence of mental disorder in children was found to be 17.7%. Mental disorder was found to be more common in males 284(19.2%) than females 250(16.4%). The prevalence increase with age: 13.6%, 16.7%, 21.1%, and 24.3% in the age group 5-7, 8-10, 11-14, and 15 years age, respectively (Table 3).

Figure: ROC curve for the Reporting Questionnaire for Children (RQC), Ambo, western Ethiopia, 1995



<u>Cut-off</u>	<u>Sensitivity(%)</u>	<u>specificity(%)</u>
0/1	87.5	65.0
1/2	51.0	85.0
2/3	29.1	89.0
3/4	12.5	90.0
4/5	10.4	97.0
5/6	8.3	100.0
6/7	3.1	100.0
7/8	2.1	100.0
8/9	1.04	100.0

Table 2 Distribution of 196 children according to their responses to a 10 item RQC in Ambo western Ethiopia, 1994/95.

RQC items	Psychiatrist diagnosis		
	Positive	Negative	(D)
	(N=96) (%)	(N=100) (%)	positive/negative
1.abnormal speech	10 (10.4)	10	1.0
2.sleeping badly	15 (15.6)	7	2.2
3.fits or falling	29 (30.2)	6	5.0
4.frequent headache	44 (45.8)	23	1.9
5.running away	15 (15.6)	5	3.1
6.stealing things	3 (3.1)	0	-
7.nervousness	26 (27.1)	8	3.4
8.back wardness	12 (12.5)	6	2.1
9.never play with others	11 (11.5)	2	5.8
10.wetting/soiling himself	33 (34.4)	4	8.6

Table 3 Age and sex distribution of mental disorder and prevalence of specific symptoms among children 5-15 years of age in Ambo, western Ethiopia, 1994/95.

Variable	Total 3001	Mental disorder number (%)	
Sex			
male	1481	284	19.2
female	1520	250	16.4
Age			
5-7	878	119	13.6
8-10	895	150	16.7
11-14	1026	216	21.1
15	202	49	24.3
symptoms			
1. Abnormal speech		54	1.8
2. Sleeping badly		86	2.8
3. Fits or falling		90	2.9
4. Frequent headache		332	11.1
5. Running away from home		31	1.0
6. Stealing things from home		21	0.7
7. Nervousness		123	4.1
8. Back wardness		70	2.3
9. Never play with others		34	1.1
10. Wetting/soiling him/her self		99	3.3

Table 3 shows the relative frequencies yes response of each item and the most frequent yes respond to the items are frequent headache (11.2%) and nervousness (4.1%). the least prevalent symptom is stealing things from home (0.7%). Mental retardation and fits account for similar prevalence, 2.3% and 2.8% respectively. Withdrawal (never plays with others) account for 1.1%.

Risk factors of mental disorders.

To evaluate the role of potential risk factors of child hood mental disorders, 302(21.6%) households with at least one child with mental disorder were compared with the rest of 1098 households which do not have any child with mental disorder. Although males seem to be at a higher risk of having mental disorders than females, this association was not statistically significant. As the age increased , the risk of mental disorder increased. The risk is statistically significant in the age group 15 years old group (OR:2.03 95%CI:1.19-3.44). Adjustment for potential confounding variables gave similar result (OR:1.89,95% CI: 1.08-2.85) as shown in table 4. Children who have formal school education are at a slightly higher risk to have mental disorder as compared to those children

who do not have any formal school education, but this difference is not statistically significant.

Children who were born after the 1st child tend to be at a relatively lower risk to have mental disorder than those first born, but this risk is also not statistically significant.

Analysis of parental socio-demographic characteristics with child mental disorder shows that there is no statistically significant association with parental income, family size, education, occupational status, ethnicity and religion.

There is a statistically significant association between childhood mental disorder and parental; age and marital status. Children whose parents are ≤ 24 years old are at a higher risk of having mental disorders (OR: 2.03 95%CI:1.30-3.16) as compared to those children whose parents are in the 45+ age group. children whose parents are in the category of unmarried, divorced, separated, widowed are at a higher risk to have mental disorder (OR: 2.22, CI: 1.70-2.91) than children whose parents are married. The odds ratios of mental disorders with parental age and marital status did not alter appreciably when potential confounders were controlled for in a multi variate model (table 5).

TABLE 4 DEMOGRAPHIC CHARACTERISTICS AND OTHER SELECTED DETERMINANTS OF MENTAL DISORDER IN CHILDREN 5-15 YEARS OF AGE AMBO, WESTERN ETHIOPIA 1994/95.

CHARACTER		TOTAL 1400	MENTAL DISORDER POSITIVE	O.R. (C.I. 95%) *	
				CRUDE	ADJUSTED
SEX	MALE	691	160 (23%)	1.2 (0.92-1.57)	1.12 (0.8-1.4)
	FEMALE	709	142 (20%)	1.00**	1.00**
AGE					
	5-7	410	79 (19%)	1.00**	1.00**
	8-10	418	85 (20%)	1.7 (0.75-1.53)	1.02 (0.62-1.3)
	11-14	480	108 (22.5%)	1.22 (0.87-1.71)	1.15 (0.77-1.6)
	15	92	30 (32.6%)	2.04 (1.19-3.44)	1.89 (1.08-2.85)
EDUCATION					
ILLITERATE		528	115 (22%)	1.00**	1.00**
	1-6	734	152 (20%)	0.94 (0.6-1.41)	0.87 (0.7-1.3)
	7-12	138	35 (25%)	1.22 (0.83-2.03)	1.3 (0.7-2.01)
BIRTH ORDER					
	1ST	644	144 (22%)	1.00**	1.00**
	2-4	508	103 (20%)	0.88 (0.54-1.32)	1.05 (0.5-1.4)
	≥ 5	248	55 (22.1%)	0.98 (0.76-1.65)	1.08 (0.45-1.35)

* ODDS RATIO AND 95% CONFIDENCE INTERVAL

** REFERENCE GROUP

The prevalence of psychoneurosis in the parents was; 335 (23.9%) for mothers and 180 (21.8%) for fathers respectively. Twenty two percent and 4.7% of mother had neurosis and psychosis. Also 15.7% and 8.2% of fathers had neurosis and psychosis.

As shown in the table 5, there was a statistically significant association between parental psychoneurosis and their children mental disorder: children whose mother had psychoneurosis were at a higher risk of having mental disorders (OR:1.78, 95%CI: 1.34-2.35) as compared to those children with mental disorder who are from mothers with out psychoneurosis. This association also holds true for maternal neurosis (OR: 1.82, 95%CI: 1.37-2.43) and psychotic states (OR: 2.85, 95%CI: 1.71-4.12). Also children whose father had psychoneurosis were at a higher risk of having mental disorders (OR:1.66 95%CI: 1.12-2.46) as compared to those children whose fathers did not have psychoneurosis. The association was also significant for paternal psychosis (OR: 2.48, 95%CI: 1.44-4.26). No statistical significant association was found between paternal neurosis and children's mental disorder. The association between maternal psychoneurosis and mental disorder in their children persisted when potential confounding variables were adjusted for (table 5)

TABLE (5) THE DISTRIBUTION OF CHILD MENTAL DISORDERS WITH PARENTAL CHARACTERISTICS AMONG 3001 CHILDREN 5-15 YEARS OF AGE, AMBO WESTERN ETHIOPIA 1994/95

PARENTAL CHARACTERS	CHILD MENTAL DISORDER			
	TOTAL 1400	POSITIVE	(CRUDE)	OR (95% CI) * (ADJUSTED)
AGE				
< 24	153	46 (30%)	2.03 (1.30-3.16)	1.78 (1.06-2.65)
25-34	407	85 (21%)	1.24 (0.87-1.78)	1.2 (0.49-1.52)
35-44	440	94 (21%)	1.28 (0.98-1.82)	1.23 (0.53-1.8)
≥ 45	400	77 (19%)	1.00**	1.00**
EDUCATION				
ILLIT.	907	203 (22%)	1.21 (0.84-1.76)	1.05 (0.79-1.56)
1-6	248	52 (20%)	1.12 (0.70-1.78)	1.10 (0.6-1.6)
7-12	245	47 (19%)	1.00**	1.00**
MARITAL STATUS				
MARRIED	823	131 (15%)	1.00**	1.00**
OTHERS	577	171 (29%)	2.22 (1.70-2.91)	1.98 (1.50-2.01)
OCCUPATION				
HOUSE WIFE	866	177 (20%)	1.00**	1.00**
FARMER	176	44 (25%)	1.30 (0.87-1.93)	1.2 (0.8-1.83)
UNEMPLOYED	83	17 (21%)	1.00 (0.55-1.80)	1.1 (0.44-1.5)
DAILY LABOUR	153	38 (25%)	1.29 (0.84-1.96)	1.21 (0.74-1.2)
OTHERS	122	26 (21%)	1.05 (0.65-1.71)	1.03 (0.5-1.65)
PSYCHONEUROSIS				
MOTHER				
POSITIVE	335	99 (29%)	1.78 (1.34-2.35)	1.74 (1.3-2.32)
NEGATIVE	1065	203 (19%)	1.00**	1.00**

* ODDS RATIO AND 95% CONFIDENCE INTERVAL

** REFERENCE GROUP

Discussion

Comparable number of children in both sex in each age category were included in the validation part of the study. Among 196 children potential cases and non cases screened by the RQC, the psychiatrist diagnosed 96 children as cases and 100 as non-cases, out of 96 and 100 children diagnosed as cases and non-cases, 84 (87.7%) and 65 (65%) were also detected as potential cases by the screening instrument. The screening instrument was also found to have a positive predictive value of 71%. As to the discriminative power of the instrument, items enuresis and withdrawal symptoms (never play with others) were best in discriminating cases and non-cases. The best cut off point which maximize true positive and minimize false positive was found to be 0/1.

Using a cut off point 0/1, (a child with at least one yes answer out of the ten items) were used for prevalence estimation of mental disorder. Hence, it was found 17.7% of children were found to have mental disorder. Metal disorder was found to be higher in males, and increase with age. The most frequent specific symptoms responded were frequent headache and nervousness. The least prevalent symptoms is an item (stealing things).

No statistically significance difference was found between children with mental disorder with respect to sex, educational status and birth order. Otherwise, a statistically significant association was found between mental disorder and child age. Children aged 15 years were found to be a highest risk to have mental disorder than other ages group. This difference is also significant even when the other variable are adjusted.

Statistically significance association was found between children with mental disorder and mental age \leq 24 and parents other than married. This difference were also statistically significant when the other variable are adjusted with respect to maternal age and marital status.

Children with mental disorder are at a higher risk to have parental psychopathology. This risk is even significant when the other variable are agisted with respect to psychopathology.

These results are unlikely to be due to bias. In order to minimize possible bias, in the validation RQC, all children with at least one yes answer to RQC in the community and were invited. For every positive case each next household with a negative child were also invited to be seen by the psychiatrist. Both the investigator and psychiatrist were unaware of the RQC and diagnostic status of a child before the end of a

study period. Since the psychiatrist used DSM IV check list for diagnostic purpose also minimized the limitation of subjectivity of the psychiatrist.

Data collection was carried out by non-health professionals, who were given appropriate training, so as to minimize the introduction of possible bias during data collection. The sample size was large enough so as to reduced the variability of the study population and increase the reliability of the response. The probability of getting the result by chance was thus unlikely. Mothers were the respondents of child mental status, in all households so that there was a consistency of respondents at least by sex pattern. Since the items were unambiguous and were pointing to recognizable behavioral and developmental problem, of the child it did not require a literate parent to respond. And in order to minimize the possibility of selection bias all children in a household in the specific age group were included in the study.

In risk factor identification all households with at least one child with mental disorder (302) were compared with the rest (1098) households: Then a multi-variate logistic analysis was also employed to minimize the effects of confounders.

The results of the evaluation of the validity of RQC are comparable to other studies in developing

countries. A WHO collaborative team did a study in four developing countries and found a cut off point 0/1 to be optimal. They also found a sensitivity of 89.7% in Sudan and 62.7% in Colombia (30). And the instrument was also found to have a specificity of 69.7% in Philippines (9). Items enuresis and "never play with others" also ranked highest in Sudan and Philippines (30). And at least one of the items, "never play with other" were also ranked highest in Senegal in discriminating cases from non-cases (28).

A prevalence of mental disorder found in this study approximates that of the other studies using the same instrument but different methodology. Community surveys in developed countries have found prevalence ranging 3-15% (3). In a rural Senegal using a cut off 0/1 prevalence was 16.9% (28). And using the same instrument and cut off point 0/1, Giel et al found a prevalence of 12% in Sudan 15% in Philippines, 22% in India, 29% in Colombia(30). In Kenya the prevalence was 20% (29). Setting all of the above studies institution based they used the same instrument and age group.

A higher prevalence rate (24%) found in Ethiopia by Samuel could be due to differences in age groups, and different methodology, proportion of urban children and different socio-cultural community (32).

The association of child age, maternal age, single

parent with child mental disorder was also in line with other studies in developing and developed countries (3,11,32).

The positive association of child mental disorder and maternal age \leq 24 years could be due to the teenage parenting, high chance of pregnancy and birth complication, high chance of the child being unwanted child and poor up bringing of the child (3,11). And the relation of mental disorder in children with single parent could be due to higher stressful family environment in which the child had to cope with the external demand (3,11,32), as the mother is unlikely to be supported due to physical absence of the father (1,3,11).

The significant association of parental psychopathology and child mental disorder could be explained by genetic inheritance of a schizophrenic gene, which increases the vulnerability of child to mental disorder (3); and mother with psychopathology tend to have high chance of pregnancy and birth complication (3,11) or it could be due to the physical presence of the parent with psychopathology which may increases the risk for the child to experience emotional or behavioral problems, (3,11) or due to all factors but the relative contribution of each is still obscure (11).

The other possible explanation for positive association of parental psychopathology and child mental disorder could be due to differential recall between mothers with or without a mentally ill child. It is possible that mothers of children with mental disorder recall better their experiences, past illness, behaviour etc., better than those mothers whose children are not mentally ill.

Conclusion

In this study the Amharic translation of (RQC), was found to be non ambiguous, simple to understand and non time consuming. It can be administered by a person with out any medical training and responded to easily by a lay mother. The instrument was found to have good levels of sensitivity (87.5%) and specificity (65%). As a screening instrument it can pull as many cases as possible from the general population. The optimal cutoff point to discriminate cases from non-cases was 0/1, that is at least one yes answer out of the ten questions was found to discriminate cases & non cases. The symptom wetting/soiling was found to have a highest discriminate power (8.6) between cases and non-cases. At least the community surveyed, it was found mental disorder in children is (17.2%). This indicates that mental disorders in children are as common as in developing and developed countries. Mental disorders were also found to increased in prevalence as age increases and more prevalent in male than female. The commonest symptom found in the study are frequent headache and nervousness (11.1%) and (4.1%) and a child with a mental disorder can have multiple symptoms, this shows that the problems are interrelated. It was found Family function and structure were associated with

mental disorder in children. A child with a mental was disorder more prone to have younger parents and single parents.

It was also found that a child with mental disorder is more likely to have parents with psychoneurosis. The result of this study will be useful as a baseline data if mental health programmes are initiated.

Recommendation

On the basis of the findings the following recommendations are forwarded:

1. There is an evidence from this study the prevalence of mental disorder of children is as common as in the community studied as else where, and it is high time that intervention should be made.

Areas of research recommended on the basis of the study are :-

1. Replication of the study in a different socio-cultural community.
2. Evaluation of individual items as to how mothers understand when they respond (Yes or No) answer to each of the items.
3. Evaluating the Knowledge of primary health workers using the health staff rating instrument and then compare which case and non cases are also rated by the RQC.
4. Do parents of the same child or children evaluate (rate) equally?

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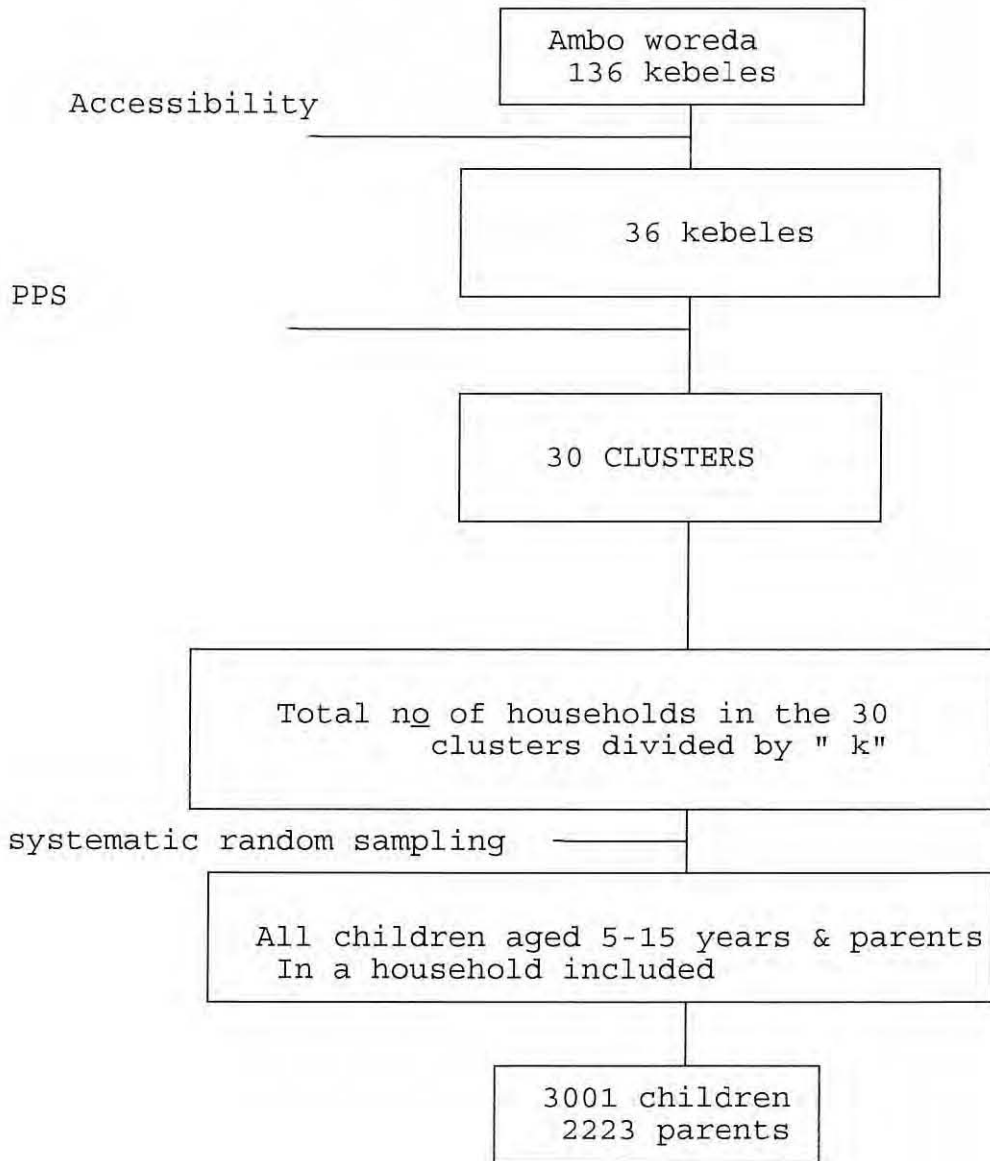
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Annex1

Schema of sampling procedure



PARENTS QUESTIONNAIRE FORMAT.

1. Date ___ Month ___ Year ___ Enumerator code _____
Signature of supervisor _____ I.D. NO. _____.
2. Respondents Name _____ Address _____
Woreda _____ Kefteegna ___ Kebele _____ House
NO. _____ Family NO. _____.
3. Sex /1/Male /2/Female.
4. Age in years _____.
5. Marital status /1/unmarried /2/married
/3/ divorced /4/ separated /5/ widowed.
6. Level of education in figure _____.
7. Family size (in number). _____.
8. Occupational status /1/un employed /2/ daily
labourer /3/ Farmer /4/ professional
/5/ Merchant /6/ House wife /7/ Retired
/8/ Student /9/ Others specify _____
9. Ethnicity /1/Oromo /2/ Amhara /3/ Tigray
/4/Gurage /5/ other specify _____
10. Religion /1/ Orthodox /2/ Catholic
/3/ Protestant /4/ Muslim
/5/ other specify. _____.
11. Do you have family history of mental illness
/1/ yes /2/ No
12. Do you often have headache. _____
/1/ yes /2/ no

13. Do you sleep badly. _____
/1/yes /2/ no
14. Are you easily frightened _____
/1/yes /2/ no
15. Do your hands shake? _____
/1/ yes /2/ no
16. Is your appetite poor? _____
/1/yes /2/ no
17. Do you feel nervous, tense or worried? _____
/1/ yes /2/ no
18. Is your digestion poor? _____
/1/ yes /2/ no
19. Do you have trouble thinking clearly? _____
/1/ yes /2/ no
20. Do you feel un happy? _____
/1/ yes /2/ no
21. Do you cry more than usual? _____
/1/ yes /2/ no
22. Do find it difficult to enjoy your daily
activities? ____
/1/yes /2/no
23. Is your daily work suffering? _____
/1/ yes /2/ no
24. Do you find it difficult to make decision? ____
/1/yes /2/ no

25. Are you unable to play a use full part in your life?__
/1/ yes /2/ no
26. Have you lost interest in things?_____
- /1/ yes /2/ no
27. Do you feel that you are worthless person?__
- /1/ yes /2/ no
28. Has the thought of ending your life been in your mind?_____
- /1/ yes /2/ no
29. Do you feel tired all the time?_____
- /1/yes /2/ no
30. Do you have un comfortable feelings in your stomach?_____
- /1/ yes /2/ no
31. Are you easily tired?_____
- /1/ yes /2/ no
32. Do feel that some body has been trying to harm you in some way?_____
- /1/ yes /2/no
33. Are you much more important person than most people think?_____
- /1/ yes /2/no
34. Have you noticed any interference or any thing else unusual with your thinking?_____
- /1/ yes /2/no

35. Do you ever hear voices with knowing where they
come from or which other people cannot
hear? _____

/1/ yes /2/ no

CHILD'S QUESTIONNAIRE FORMAT (ROC).


1. Date___ Month___ Year___ Enumerator
code_____ Signature of supervisor_____
ID NO. _____
2. Respondents Name _____
Address _____
Woreda _____ Kefteгна _____ Kebele _____
House no. _____
3. Sex_____ /1/ Male /2/ Female.
4. Age(in year) _____
5. Birth order _____
6. Educational status in year _____
7. Is your child's speech in any way abnormal? _____
/1/yes /2/no
8. Did the child sleep badly? _____
/1/yes /2/no
9. Did the child ever have fit or fall to the
ground for no reason?
/1/yes /2/ no
10. Did the child suffer from frequent headache? _____
/1/yes /2/ no
11. Does the child run away from home frequently? _____
/1/yes /2/no
12. Does the child steal things from home? _____
/1/yes /2/no

13. Does the child get scared or nervous for no good reason?____
/1/yes /2/no
14. Does the child in any way appear back ward or slow to learn as compared with other children of about the same age?____
/1/yes /2/no
15. Does the child nearly never play with other children?
/1/yes /2/no
16. Does the child wet or soil himself/herself?____
/1/yes /2/no

DECLARATION

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in any other university and that all resources of material used for this thesis have been fully acknowledged.

Name : BELAYNEH TADESSE

Signature:  _____

Place : Addis Ababa, Ethiopia

Date of Submission : May, 1995