
We describe the design and results of a study conducted to determine the magnitude and healthy years of life lost due to morbidity and mortality for major causes in rural Ethiopia. The design included a cross-sectional household survey to determine the magnitude and causes of morbidity and a retrospective longitudinal study to determine the magnitude and causes of mortality. The study was conducted between June 1 and July 12, 1998, within the Butajira Rural Health Project (BRHP) setting. The source population was all people residing in the district and the study population were the sample of households for the BRHP which are the inhabitants of nine rural and one urban Kebeles (villages) in Butajira area, which is located about 130 Kms south of Addis Ababa. The sample was previously selected randomly using probabilities proportional to size, constituting 10% of the total district population (approximately 32,000) and has been under continuous demographic surveillance since 1987. All individuals who were sick two weeks preceding the survey and all those who deceased in the two years prior to the survey were included in the present analysis. The Disability-Adjusted Life Years (DALYs) lost was used as a measure of the burden of disease from the analyzed data. According to the results, prevalence of morbidity within the preceding two weeks was 13.8% (95% CI = 12.8-14.8). In addition, there were 875 deaths during the preceding two years making an annual mortality rate of 13.5 per 1,000 populations (95% CI = 13.13-13.87). The total burden of disease in terms of DALYs lost calculated from these data was 59,125 per 100,000 populations (95% CI = 58,591-59,659). Communicable, maternal, perinatal and nutritional problems contributed to 72% of the total DALYs lost; non-communicable diseases contributed to 24% of the DALYs lost while the proportion of DALYs lost due to injuries was only 4%. The results were similar to previous estimates for countries in Sub-Saharan Africa.


Background: Voluntary counseling and testing (VCT) for HIV is one of the strategies for HIV/AIDS prevention, and yet, there is very little information on what influences the services in Ethiopia. Objective: To assess the perception and attitude of students towards VCT services using the Health Belief Model. Methods: A cross sectional descriptive study was conducted in January 2006, among Butajira senior secondary school students where a multi stage sampling method was used. Results: About ninety seven percent of the students had heard about VCT services but less than one fifth of them had undergone VCT. Eighty two percent of the students were willing to undergo VCT. It was shown that willingness to VCT was significantly associated with perceived susceptibility [AOR=0.37(0.28, 0.89)], perceived barrier [AOR= 0.45 (0.23, 0.89)] and perceived benefit [AOR=1.79 (1.44, 2.49)]. Conclusions: The majority of students had heard about VCT and revealed willingness to undergo VCT. High perceived susceptibility and barriers were associated with low willingness to undergo VCT. On the other hand, students with high perceived benefits showed better willingness to undergo VCT. It is recommended that messages on VCT give emphasis on personal susceptibility to HIV/AIDS and benefits of VCT.

One hundred key informants were interviewed about their awareness, attitudes and practices regarding mental illness using the Key Informant Questionnaire developed by WHO. Case vignettes of seven common neuropsychiatric disorders were presented to the key informants. Informants' awareness about these disorders and help-seeking practices for mental and physical symptoms or conditions were assessed. An additional question on the prototype symptoms of mental disorders was also posed. Among the presented seven conditions, epilepsy was perceived as the most common condition and major depression was regarded as the least common one. Schizophrenia was judged as the most severe problem, and mental retardation was considered the second most severe condition. Talkativeness, aggression and strange behaviour were the most frequently perceived prototype symptoms of mental illness. Traditional treatment methods were preferred more often for treating symptoms of mental disorders and modern medicine was preferred more often for treating physical diseases or symptoms. Findings of this study are similar to other studies conducted in socio-culturally different communities. Working in close connection with traditional healers would give the primary health care worker a better opportunity to gain acceptance from the community and modify certain harmful practices.


One hundred key informants were interviewed regarding their awareness and attitudes toward suicidal behaviour. Eighty-eight informants were male, 58 were Muslim and 42 were Christian. Informants on average, claimed to know more persons who had completed suicide than those who had attempted suicide. Almost all informants mentioned more than one cause for suicide. Of these, frustration was the most frequently mentioned cause. Most informants believed that suicide attempters are cruel, feared and not trustworthy. Their attitude toward suicide completers was expressed as condemned sinners, do not deserve funeral ceremony, and should be buried separately from others. Christians gave importance to the funeral issue more than did the Muslims. Generally, the attitudes of informants were punitive and disapproving.

In a cross-sectional survey, 10,468 adults of a rural and semi-urban community were interviewed to determine lifetime suicide attempts. Among the study population, 58% were female, 74.4% were Muslim and 79.3% had had no formal education. The majority of the population were in the age group 25-59 years. Lifetime suicide attempt was reported by 3.2% (n = 332) of the study population. Of these, 63% (n = 208) were women. The most frequent age of attempt was between 15 and 24 years and the frequency of attempt decreased with increasing age. Hanging and poisoning were the most frequently reported methods of attempting suicide. Marital or family conflict was the most frequently reported cause for attempting suicide and most of those who reported this cause were women (Chi-square = 17.42; P < 0.001). Men were significantly more likely to use hanging to attempt suicide than women (Chi-square = 8.21; P < 0.001). Among Christians 3.9% had a lifetime suicide attempt compared to 2.9% among Muslims (Chi-square = 6.15; P < 0.05). People who currently had mental distress and problem drinking reported lifetime suicide attempt more often than others.


In order to determine the prevalence and socio-demographic correlates of problem drinking, a total of 10,468 persons aged 15 and above, most residing in a rural district, were interviewed using the CAGE questionnaire as an important element of a general mental health survey. Twenty-three per cent of the respondents admitted that they currently drank alcohol. The prevalence of alcohol drinking was 15% for women and 36% for men. Among those who drank, 16% met the criterion for problem drinking as defined by two or more positive responses to the CAGE. The overall prevalence for problem drinking was found to be 3.7%. Stratified analysis for sex showed that Christian religion, male sex, being ethnically non-Gurage, and smoking were strongly associated with problem drinking in both sexes. Marital status, mental distress and income were found to be associated factors with problem drinking only in men.


A house-to-house survey was carried out in a rural Ethiopian community to determine the prevalence and socio-demographic correlates of khat use. A total of 10,468 adults were interviewed. Of these, 58% were female, and 74% were Muslim. More than half of the study population (55.7%) reported lifetime khat chewing experience and the prevalence of current use was 50%. Among current chewers, 17.4% reported taking khat on a daily basis; 16.1% of these were male and 3.4% were female. Various reasons were given for chewing khat; 80% of the chewers used it to gain a good level of concentration for prayer. Muslim religion, smoking and high educational level showed strong association with daily khat chewing.

One of the major difficulties in mental health research is finding suitable research instruments. In the last few decades questionnaires that are supposed to work in different languages and cultures have been developed by WHO to solve this problem. One of such instruments is SCAN, an instrument which uses computer algorithm to make a diagnosis. It is meant to be used for semi-structured interview by qualified psychiatrists or clinical psychologists. This and a few other research instruments have been translated and used in clinical and community settings for psychiatric research in Ethiopia over the last few years. In this study computer assisted SCAN Diagnoses and clinical diagnoses made by trainee psychiatrists in Butajira, a rural setting in Ethiopia, were compared. Seven hundred twenty nine persons were diagnosed to have schizophrenia and bipolar disorder using both methods. The agreement between the clinical and SCAN derived diagnosis was shown to be 100% for schizophrenia (Kappa = 1.0). However, the agreement between the two methods of diagnosis was shown to be lower when it comes to subtypes of schizophrenia. The agreement for the diagnoses of bipolar disorder was 95.3%, kappa = 0.9, P < 0.0001 and for depression it was 93.0%, kappa = 0.8, p < 0.0001. Taking into account the limited number of psychiatrists and clinical psychologists in the third world countries like Ethiopia we have shown that using trainees in psychiatry for SCAN interview is a feasible and reliable method to identify major categories of mental disorders in community studies.


A cross-sectional survey was conducted on 10,468 rural and semi-urban adults in an Ethiopian district using the Self Reporting Questionnaire (SRQ) to detect the prevalence of mental distress and its association with socio-demographic risk factors. Fifty-eight per cent of the study population were women, 74% were Muslim, 79% were illiterate. Those experiencing 11 or more symptoms out of the 20 SRQ items were considered as having mental distress. Accordingly, the prevalence of mental distress was 17%, which is comparable with the previous hospital-based studies in Ethiopia and elsewhere. However, it was higher than the previous community-based studies in Ethiopia. Mental distress was more prevalent among women. Part of the explanation was that women in the study population were older and that they were more often widowed or divorced, which were factors associated with mental distress. Illiteracy, which was more common among women and older individuals, was also independently associated with mental distress.

Traditionally, very simple statistical techniques are used in the analysis of epidemiological studies. The predominant technique is logistic regression, in which the effects predictors are linear. However, because of their simplicity, it is difficult to use these models to discover unanticipated complex relationships, i.e., non-linearities in the effect of a predictor or interactions between predictors. Specifically, as the volume of data increases, the traditional methods will become inefficient and impractical. This in turn calls the application of new methods and tools that can help to search large quantities of epidemiological data and to discover new patterns and relationships that are hidden in the data. Recently, to address the problem of identifying useful information and knowledge to support primary healthcare prevention and control activities, health care institutions are employing the data mining approach which uses more flexible models, such as, neural networks and decision trees, to discover unanticipated features from large volumes of data stored in epidemiological databases. Particularly, in the developed world, data mining technology has enabled health care institutions to identify and search previously unknown, actionable information from large health care databases and to apply it to improve the quality and efficiency of primary health care prevention and control activities. However, to the knowledge of the researcher, no health care institution in Ethiopia has used this state of the art technology to support health care decision-making. Thus, this research work has investigated the potential applicability of data mining technology to predict the risk of child mortality based up on community-based epidemiological datasets gathered by the BRHP epidemiological study. The methodology used for this research had three basic steps. These were collecting of data, data preparation and model building and testing. The required data was selected and extracted from the ten years surveillance dataset of the BRHP VIII epidemiological study. Then, data preparation tasks (such as data transformation, deriving of new fields, and handling of missing variables) were undertaken. Neural network and decision tree data mining techniques were employed to build and test the models. Models were built and tested by using a sample dataset of 1100 records of both alive and Died children. Several neural network and decision tree models were built and tested for their classification accuracy and many models with encouraging results were obtained. The two data mining methods used in this research work have proved to yield comparably sufficient results for practical use as far as misclassification rates come into consideration. However, unlike the neural network models, the results obtained by using the decision tree approach provided simple rules that can be used by nontechnical health care professionals to identify cases for which the rule is applicable. In this research work, the researcher has proved that an epidemiological database could be successfully mined to identify public health and socio-demographic determinants (risk factors) that are associated with infant and child mortality in rural communities.

A phase II open and parallel reactogenicity, immunogenicity and safety trivalent meningitis vaccine (Mencevax) trial was conducted on 413 volunteer 2–29-year-old rural residents in Ethiopia in November/December 2005. Adverse events (AE) were monitored at 1 h, 1, 2, 3, 7 and 28 days after vaccination. No serious AE occurred except for burn injury (one) and severe malaria (one) after day 28. Irritability (45/411), loss of appetite (27/411), pain at injection site (26/412), dizziness (18/409), crying (14/411), insomnia, headache and diarrhoea (13/411) were the most frequent AEs. Overall, the vaccine is safe in the age groups studied.


OBJECTIVE: To describe the magnitude and socio-demographic correlates of specific mental and behavioural disorders. DESIGN: A cross-sectional survey. SETTING: Butajira district, southern Ethiopia. PARTICIPANTS: The Amharic version of the Diagnostic Instrument for Children and Adolescents (DICA) was used to interview parents of 1,477 children. MAIN OUTCOME MEASURES: Attention Deficit Hyperactivity Disorder (ADHD), Disruptive behaviour disorders, mood and anxiety disorders. RESULTS: Using a multivariate logistic model, age was significantly associated with ADHD. Children between 10 and 14 years of age had more than three-fold increased risk of ADHD compared to younger children: adjusted odds ratio and 95% confidence interval (OR, 95% CI) = 3.17 (1.16, 8.67), p=0.02. Residence in urban area was also significantly associated with ADHD: adjusted OR (95% CI) = 2.84 (1.14-7.07), p=0.03. Disruptive behaviour disorders were significantly associated with increasing age: adjusted OR (95% CI) = 4.24 (1.43, 12.6). Mood and anxiety disorders were not significantly associated with any of the sociodemographic variable studied. CONCLUSION: The study shows that age and residence in urban areas are significant correlates of behavioural disorders in children.


OBJECTIVE: To determine the magnitude of specific mental and behavioural disorders in children in Butajira, southern Ethiopia. DESIGN: A cross-sectional survey. SETTING: Butajira district, southern Ethiopia. SUBJECTS: Amharic version of the diagnostic instrument for children and adolescents was used to interview parents of 1,477 children. RESULTS: Of the surveyed children 3.5% had at least one or more mental or behavioural disorders. The most frequent diagnoses were anxiety disorders (1.6%), attention deficit hyperactivity disorder (1.5%) and disruptive behaviour disorders (1.5%). Mood disorders (1%) and elimination disorders (0.8%) were relatively less common. CONCLUSION: The study shows that specific mental and behavioural disorders in these children are significant public health problems.

Previous studies conducted in Ethiopia lack information on the prevalence of specific mental disorders in rural communities. The lifetime and one-month prevalence of specific ICD-10 mental disorders and their associated socio-demographic factors were determined using the translated Amharic version of the Composite International Diagnostic Interview (CIDI) in a rural population. A total of 501 community subjects selected from a predominantly rural district by stratified random sampling were interviewed by non-clinician interviewers. The weighted aggregate lifetime prevalence of psychiatric morbidity was 31.8% (26.7% when substance dependence was not included). The most frequent specific diagnoses were: dissociative disorders (6.3%), mood disorders (6.2%), somatoform disorders (5.9%), and anxiety disorders (5.7%). After adjustment in a multivariate logistic model, female sex was shown to have a statistically significant association with mood disorders (Odds Ratio, OR = 3.84, 95% CI: 1.90, 7.73) and somatoform disorders (OR = 2.30, 95% CI: 1.13, 4.60). Severe cognitive and mood disorders were significantly associated with being elderly, i.e. 60 or more years of age (OR = 7.71, 95% CI: 1.58, 7.53; and OR = 3.68, 95% CI = 1.36, 9.95, respectively). Khat dependence was associated with being Muslim and with earning a low income. (OR = 3.5, 95% CI: 1.02, 11.98; and OR = 0.32, 95% CI: 0.10, 0.96, respectively). It is concluded that psychiatric morbidity is a major public health problem in the rural community.


A descriptive cross sectional study on mothers' knowledge and practice related to weaning was conducted in Butajira in 1994. A total of 1,543 mother-child pair were included in the study, of which 1,052 (68%) children were on weaning diet and 491 (32%) were exclusively breast feeding. Among children who were already weaned, 40% were reported to have been started on weaning food at the age of 4-6 months. Of the children who were reported to be exclusively breast feeding, 34% were beyond the age of 7 months. The most commonly used weaning food were cow's milk, adult food, sorghum water and cereal gruel in descending order and the most important reasons for mothers to start weaning were reduction of the amount of breast milk and mothers' belief that the child is at the right age to start weaning food. The majority of the mothers used "swallow or suffocate" method in feeding their children, though cups and bottles were also mentioned as important feeding methods. The study demonstrated the presence of inappropriate weaning practice in the area which needs appropriate intervention.

ABSTRACT: Background Soil-transmitted helminths (STHs) are widespread in underdeveloped countries. In Ethiopia, the prevalence and distribution of helminth infection varies by place and with age. We therefore investigated the prevalence of and risk factors for STH infection in mothers and their one year-old children living in Butajira town and surrounding rural areas in southern Ethiopia. Methods In 2005-2006, 1065 pregnant women were recruited in their third trimester of pregnancy. In 2006-2007, when children reached their first birthdays, data on the infants and their mothers were collected, including stool samples for qualitative STH analysis. Questionnaire data on various demographic, housing and lifestyle variables were available. Logistic regression analysis was employed to determine the independent risk factors for STH infection in the mothers and children. Results 908 mothers and 905 infants provided complete data for analysis. Prevalence of any STH infection was 43.5% (95% confidence interval (CI) 40.2-46.8%) in mothers and 4.9% (95% CI 3.6-6.5%) in children. In the fully adjusted regression model, infrequent use of soap by the mother was associated with increased risk (odds ratio (OR) 1.40, 95% CI 1.04-1.88, and 1.66, 95% CI 0.92-2.99, for use at least once a week and less frequent than once a week respectively, relative to daily use; p for trend=0.018), and urban place of residence (OR 0.45, 95% CI 0.28-0.73, p=0.001) was associated with reduced risk of maternal STH infection. The only factor associated with STH infection in infants was household source of water, with the greatest risk in those using piped water inside the compound (OR 0.09, 95% CI 0.02-0.38 for river water, 0.20, 95% CI 0.28-0.73, p=0.001) was associated with reduced risk of maternal STH infection. The only factor associated with STH infection in infants was household source of water, with the greatest risk in those using piped water inside the compound (OR 0.09, 95% CI 0.02-0.38 for river water, 0.20, 95% CI 0.56-0.69 for either well or stream water and 0.21, 95% CI 0.09-0.51 for piped water outside compared with piped water inside the compound, overall p=0.002) Conclusion In this rural Ethiopian community with a relatively high prevalence of STH infection, we found a reduced risk of infection in relation to maternal hygiene and urban living. Daily use of soap and a safe supply of water are likely to reduce the risk of STH infection.

There are reports indicating a worsening of women's health in transitional rural societies in sub-Saharan Africa in relation to autonomy, workload, illiteracy, nutrition and disease prevalence. Although these problems are rampant, proper documentation is lacking. The objective of this study was to reflect the health situation of women in rural Ethiopia. Furthermore, the study attempts to address the socio-demographic and cultural factors that have potential influence on the health of women in the context of a low-income setting. A combination of qualitative and quantitative research methods was utilised. In-depth interviews and a cross-sectional survey of randomly selected women were the main methods employed. The Butajira Rural Health Program demographic surveillance database provided the sampling frame. Heavy workload, lack of access to health services, poverty, traditional practices, poor social status and decision-making power, and lack of access to education were among the highly prevalent socio-cultural factors that potentially affect the health of women in Butajira. Though the majority of the women use traditional healers younger women show more tendency to use health services. No improvement of women's status was perceived by the younger generation compared to the older generation. Female genital mutilation is universal with a strong motivation to its maintenance. Nail polish has replaced the rite of nail-extraction before marriage in the younger generation. As the factors influencing the health of women are multiple and complex a holistic approach should be adopted with emphasis on improving access to health care and education, enhancing social status, and mechanisms to alleviate poverty.


AIMS: To describe the epidemiological development of a rural Ethiopian population from 1987 to 2004 in terms of mortality and associated sociodemographic factors. METHODS: A rural population comprising 10 communities was defined in 1987 and has since been followed by means of regular household visits. After an initial census, births, deaths and migration events were recorded, together with key background factors, on an open cohort basis. Over 97,000 individuals were observed during a total of over 700,000 person years. RESULTS: The initial population of 28,614 increased by an average of 3.64% annually to 54,426 from 1987 to 2004, and also grew older on average. Birth and mortality rates fell, but were still subject to short-term variation due to external factors. Overall mortality was 13.5 per 1000 person years. Increasing mortality in some adult age groups was consistent with increasing AIDS-related deaths, but a new local hospital in 2002 may have contributed to later falls in overall mortality. Sex, age group, time period, literacy, water source, house ownership and distance to town were all significantly associated with mortality differentials. CONCLUSIONS: This population has undergone a complex epidemiological transition during a generation. Detailed long-term surveillance of this kind is essential for describing such processes. Many factors that significantly affect mortality cannot be directly controlled by the health sector and will only improve with general development.

SETTING: Butajira, Southern Ethiopia. OBJECTIVE: To compare the diagnostic capacity of the clinical criteria for tuberculous lymphadenitis (TBLN) with histological and/or culture results and to assess the association of human immunodeficiency virus (HIV) with tuberculosis (TB) lymphadenitis. DESIGN: Patients (n=171) were included in the study from October 2005 until July 2006 at Butajira Hospital. Laboratory tests were performed to confirm TBLN. HIV status was identified in TBLN patients and retrospectively in 1608 healthy individuals. RESULT: A total of 136/161 (84.5%) patients were diagnosed with TBLN by histology. TBLN was culture-confirmed in 107/156 (68.6%) patients. The sensitivity, specificity, positive and negative predictive values of histology were respectively 92.5%, 49%, 79.8% and 75% when compared to culture as gold standard. Patients positive for TBLN by cytology and Ziehl-Neelsen (ZN) were also positive by histology and culture. Among the 143 confirmed TBLN patients, nine (6.3%) were HIV-positive. Of the 1608 healthy individuals, 77 (4.8%) were HIV-positive. Younger age (P=0.0001), female sex (P=0.016), not being married (P=0.0001) and illiteracy (P=0.016) showed a strong association with HIV in healthy individuals. CONCLUSION: Clinical criteria alone over-diagnosed TBLN by 15.4% compared to histological and/or bacteriological results. The HIV prevalence in TBLN patients and healthy individuals was the same.


BACKGROUND: In Ethiopia, little has been done to assess how Mycobacterium bovis has contributed to human tuberculosis, though the population routinely consumes unpasteurized milk and raw meat. The aim of this study was to determine the proportion of M. tuberculosis and M. bovis as etiological agents of tuberculous lymphadenitis (TBLN). METHODS: Patients with lymphadenopathy (n = 171) were included in a cross-sectional study at Butajira Hospital, Southern Ethiopia. Lymph node biopsies were cultured. Patients' HIV status was identified. DNA from positive cultures was tested by PCR to identify M. bovis and M. tuberculosis. Isolates were genotyped by multiplex ligation-dependent probe amplification (MLPA) assay. RESULTS: Among 171 patients, 156 had culture results. Of these, 107 (69%) were positive for M. tuberculosis complex (MTC). Six of the 10 HIV-positive patients were culture positive. M. tuberculosis specific sequences were identified in the DNA of each of 100 samples as assessed by RD10 targeted PCR, and each of the 95 isolates exhibited the M. tuberculosis specific TbD1 deletion by MLPA analysis. No M. bovis was identified. These results indicate that all the isolates were modern M. tuberculosis strains. Furthermore, MLPA studies confirmed that 42% of the isolates showed the Haarlem genotype and 12% displayed sequences compatible with INH resistance. No mutations conferring resistance to ethambutol or rifampicin were detected. CONCLUSIONS: Our data showed that M. tuberculosis strains had common characteristics with strains causing pulmonary TB, which appears to be the main etiological agent of TBLN.

This study aimed to estimate the lifetime prevalence and socio-demographic correlates of psychiatric disorders among the Borana semi-nomadic community of the Oromia region of Ethiopia. 1854 people of both sexes, aged 15 years and above, were interviewed during the survey. The households were selected by using a cluster sampling method proportionate to population size. The interviews were conducted by trained high school graduates using the Oromiffa version of the Composite International Diagnostic Interview (CIDI). The lifetime prevalence of ICD-10 mental disorders, including substance abuse, was 21.6%. Affective disorders were found in 1.7% of the study population, whereas neurotic and somatoform disorders constituted 14%. No cases of schizophrenia were detected. The prevalence of substance use was 10.1%. Studies using other methods, including interview by clinicians, might shed more light on the nature of mental illness in this unique community.


Longitudinal demographic surveillance systems (DSSs) in selected populations can provide important information in situations where routine health information is incomplete or absent, particularly in developing countries. The Butajira Rural Health Project is one such example, initiated in rural Ethiopia in 1987. DSSs rely on regular community-based surveillance as a means of vital event registration, among a sufficient population base to draw meaningful conclusions about rates and trends in relatively rare events such as maternal death. Enquiries into specific health problems can also then use this framework to quantify particular issues or evaluate interventions. Demographic characteristics and trends for a rural Ethiopian population over a 10-y period are presented as an illustration of the DSS approach, based on 336 000 person-years observed. Overall life expectancy at birth was 50 y. Demographic parameters generally showed modest trends towards improvement over the 10-y period. The DSS approach is useful in characterising populations at the community level over a period of time, providing important information for health planning and intervention. Methodological issues underlying this approach need further exploration and development.

AIMS: In the context of the Butajira Rural Health Programme (BRHP) in Ethiopia, which has maintained demographic surveillance in selected communities since 1987, this paper investigates patterns of migration and their consequences within that population over a ten year period 1987-1996. METHODS & RESULTS: Based on observations of over 336,000 person-years in nine rural villages and one small town, 48% of individuals migrated in or out of the study area at some stage, as recorded in monthly household visits. There was a net incidence of migration into the urban area, particularly among young adults. Mortality was higher among residents compared with in-migrants, with rates of 10.5 (95% CI 7.5 to 14.9) and 8.2 (95% CI 5.8 to 11.7) per 1,000 person-years respectively after adjustment for age, sex and area of residence, a rate ratio of 1.3. Fertility among in-migrant and resident women was similar, at rates of 0.26 and 0.28 births per reproductive year respectively. CONCLUSIONS: The causes of the observed differences in mortality are not clear, though they may be partly due to self-selection effects among migrants, and may have important implications for future health policy and planning in Ethiopia and other similar settings.


Long-term birth cohorts from developing countries are uncommon. Here a unique birth to 18-years cohort based on all births during 1987 in a rural area of Ethiopia is presented. This was the first year of the ongoing Butajira Rural Health Programme, since when the sampled population has been followed up in regular household visits. A total of 1884 livebirths in 1987 formed the cohort, corresponding to a birth rate of 0.31 per woman per year; the male : female ratio was 1.10. Perinatal mortality was 22 per 1000 livebirths, and infant mortality 65 per 1000 livebirths. Survival from birth to 18 years was 760 per 1000. Living in Butajira town had a considerable survival advantage compared with the surrounding villages. Most deaths were due to infections. Four per cent of the cohort experienced the death of their mothers before the age of 18 years, and 15 of the girls delivered their own children, suggesting that 1 in 25 women may bear a child before their eighteenth birthday in this community. The children in the cohort received no consequent special care or attention, and so they probably accurately represent the harsh realities of growing up in rural Ethiopia at the turn of the Millennium. The huge gaps between their experience and that of their contemporaries in more affluent settings are a scandal of the 21st century.

ABSTRACT: BACKGROUND: In countries where routine vital registration data are scarce, Demographic Surveillance Sites (DSS: locally defined populations under longitudinal surveillance for vital events and other characteristics) and Demographic and Health Surveys (DHS: periodic national cluster samples responding to cross-sectional surveys) have become standard approaches for gathering at least some data. This paper aims to compare DSS and DHS approaches, seeing how they complement each other in the specific instance of child and adolescent mortality in Ethiopia. METHODS: Data from the Butajira DSS 1987-2004 and the Ethiopia DHS rounds for 2000 and 2005 formed the basis of comparative analyses of mortality rates among those aged under 20 years, using Poisson regression models for adjusted rate ratios. RESULTS: Patterns of mortality over time were broadly comparable using DSS and DHS approaches. DSS data were more susceptible to local epidemic variations, while DHS data tended to smooth out local variation, and be more subject to recall bias. CONCLUSION: Both DSS and DHS approaches to mortality surveillance gave similar overall results, but both showed method-dependent advantages and disadvantages. In many settings, this kind of joint-source data analysis could offer significant added value to results.


BACKGROUND: Studies in developed countries suggest that acetaminophen use is associated with increased risk of asthma, but it is unclear whether this association is causal. OBJECTIVE: To determine the relation among acetaminophen use, asthma, and allergy, and to explore potential biases in acetaminophen use, in a developing country population. METHODS: We surveyed 7649 adults and children from Butajira, Ethiopia, collecting data on self-reported symptoms of allergic disease, skin sensitization to Dermatophagoides pteronyssinus and cockroach, acetaminophen use, and potential confounders. We then collected detailed data on indications for acetaminophen use and reasons for aspirin avoidance in a nested follow-up study. RESULTS: Allergic symptoms increased significantly with frequency of acetaminophen use, with odds ratios in those using >3 tablets in the past month relative to none 1.89 (95% CI, 1.51-2.36) for wheeze, 2.14 (1.72-2.67) for nocturnal shortness of breath, 2.52 (1.99-3.20) for rhinitis, and 1.90 (1.39-2.61) for eczema. Cockroach sensitization was also more common in the highest acetaminophen category (odds ratio, 1.40; 95% CI, 1.10-1.79), but D pteronyssinus sensitization was not. Less than 1% of participants with asthma or wheeze in our nested study reported avoidance of aspirin because of asthma symptoms. None volunteered using acetaminophen to treat allergic symptoms. CONCLUSION: There is a dose-related association between acetaminophen use and self-reported allergic symptoms in this population that is not a result of aspirin avoidance, reverse causation, or other bias. Acetaminophen may therefore be involved in the etiology of asthma and allergic disease.

BACKGROUND: The effect of geohelminth infection on wheeze and allergen sensitization is inconsistent across different epidemiological studies. OBJECTIVE: To investigate the association between self-reported wheeze, self-reported asthma, allergic sensitization and geohelminth infection in urban and rural areas of Butajira, southern Ethiopia. METHODS: Questionnaire data on wheeze, asthma and a range of confounding variables was gathered in a cross-sectional study of 7649 people aged 5 years or more from the Butajira Rural Health Project database. Allergic skin sensitization to Dermatophagoides pteronyssinus and cockroach was measured, and a stool sample collected for qualitative and quantitative geohelminth analysis. RESULTS: Wheeze was weakly associated with allergic sensitization to D. pteronyssinus and cockroach (odds ratios (OR) 1.21, 95% confidence interval (CI) 0.98-1.51, and 1.27, 95% CI 1.00-1.62, respectively). Self-reported asthma was related to sensitization to D. pteronyssinus only (OR 4.09, 95% CI 2.86-5.84). Geohelminths were present in 33.8% of participants, and the median egg load in infested individuals was 6 eggs/g. Overall, presence of any geohelminths was associated with a diminished risk of cockroach sensitization (adjusted OR 0.82, 95% CI 0.68-0.99) but there were no significant protective effects of any geohelminth infection against wheeze or asthma. CONCLUSION: In a developing country community with relatively low geohelminth prevalence and intensity, we found weak association between allergic sensitization and wheeze, but no evidence of a protective effect of geohelminths against wheeze or asthma.


OBJECTIVES: To quantify the use of self-treatment and to determine the actions taken to manage malaria illness. METHODS: A cross-sectional study was undertaken in six peasant associations in Butajira district, southern Ethiopia, between January and September 1999. Simple random sampling was used to select a sample of 630 households with malaria cases within the last six months. FINDINGS: Overall, 616 (>97%) of the study households acted to manage malaria, including the use of antimalarial drugs at home (112, 17.8%), visiting health services after taking medication at home (294, 46.7%), and taking malaria patients to health care facilities without home treatment (210, 33.3%). Although 406 (64.5%) of the households initiated treatment at home, the use of modern drugs was higher (579, 92%) than that of traditional medicine (51, 8%). Modern drugs used included chloroquine (457, 73.5%) and sulfadoxine-pyrimethamine (377, 60.6%). Malaria control programmes were the main sources of antimalarials. In most cases of malaria, treatment was started (322, 52.3%) or health services visited (175, 34.7%) within two days of the onset of symptoms. Cases of malaria in the lowland areas started treatment and visited health services longer after the onset of malaria than those in the midland areas (adjusted odds ratio, 0.44; 95% confidence interval (CI), 0.30-0.64; and adjusted odds ratio, 0.37; 95% CI, 0.25-0.56, respectively). Similarly, those further than one hour's walk from the nearest health care facility initiated treatment later than those with less than one hour's walk (adjusted odds ratio, 0.62; 95% CI 0.43-0.87). This might be because of inaccessibility to antimalarial drugs and distant health care facilities in the lowland areas; however, statistically insignificant associations were found for sex, age, and religion. CONCLUSION: Self-treatment at home is the major action taken to manage malaria. Efforts should be made to improve the availability of effective antimalarials to communities in rural
areas with malaria, particularly through the use of community health workers, mother coordinators, drug sellers, and shop owners.


Background: Community perceptions relating to causation, diagnosis, treatment and prevention are the main socio-cultural factors which can influence malaria prevention and control. Objective: To assess the knowledge, attitudes and practices of a rural community on malaria, the mosquito vector and antimalarial drugs. Methods: A cross-sectional study of 630 randomly selected rural households was carried out in 6 peasant associations' of Butajira District in southern Ethiopia between January and September 1999. Results: Fever, headaches, chills and shivering were the most frequently mentioned symptoms of malaria reported by 89.7%, 87.5% and 81.3% of the study subjects, respectively. About 66% of the study community related the mode of transmission to the bite of infective mosquitoes and 43.7% of them believed that malaria could be transmitted from person to person through the bite of mosquitoes. Mosquitoes are mainly believed to bite human beings at night (73.2%), breed in stagnant water (71%) and rest in dark places inside houses during daytime (44.3%). Malaria was thought to be preventable by 85.7% of the respondents. Of them, 62.4% reported chemoprophylaxis, 39.6% mentioned indoor residual spraying and 25% indicated eliminating breeding sites as preventive methods. The use of modern drugs for malaria was high (92%) including chloroquine (73.5%) and Sulfadoxine-Pyremethamine (60.6%). Chloroquine was believed to be effective for the treatment of malaria by 59% of the respondents, while the remaining replied that it was ineffective. Four hundred two (63.8%) respondents reported Sulfadoxine-Pyremethamine to be the most effective antimalarial drug for the treatment of malaria in contrast to others. Conclusions: Study subjects are familiar with the symptoms of malaria and to a lesser degree, are aware of an association between mosquito and malaria. Health workers at different levels of the health care delivery system should disseminate relevant information about malaria to help community members to be involved more in malaria control.

BACKGROUND: Although malaria is one of the most important causes of death in Ethiopia, measuring the magnitude of malaria-attributed deaths at community level poses a considerable difficulty. Nevertheless, despite its low sensitivity and specificity, verbal autopsy (VA) has been the most important technique to determine malaria-specific cause of death for community-based studies. The present study was undertaken to assess the magnitude of malaria mortality in a predominantly rural population of Ethiopia using VA technique at Butajira Rural Health Programme (BRHP) Demographic Surveillance Site (DSS). METHODS: A verbal autopsy was carried out for a year from August 2003 to July 2004 for all deaths identified at BRPH-DSS. Two trained physicians independently reviewed each VA questionnaire and indicated the most likely causes of death. Finally, all malaria related deaths were identified and used for analysis. RESULTS: A verbal autopsy study was successfully conducted in 325 deaths, of which 42 (13%) were attributed to malaria. The majority of malaria deaths (47.6%) were from the rural lowlands compared to those that occurred in the rural highlands (31%) and urban (21.4%) areas. The proportional mortality attributable to malaria was not statistically significant among the specific age groups and ecological zones. Mortality from malaria was reckoned to be seasonal; 57% occurred during a three-month period at the end of the rainy season between September and November. About 71% of the deceased received some form of treatment before death, while 12 (28.6%) of those who died neither sought care from a traditional healer nor were taken to a conventional health facility before death. Of those who sought treatment, 53.3% were first taken to a private clinic, 40% sought care from public health facilities, and the remaining two (6.7%) received traditional medicine. Only 11.9% of the total malaria-related deaths received some sort of treatment within 24h after the onset of illness. CONCLUSION: The results of this study suggest that malaria plays a considerable role as a cause of death in the study area. Further data on malaria mortality with a relatively large sample size for at least two years will be needed to substantially describe the burden of malaria mortality in the study area.

ABSTRACT: BACKGROUND: Studies from high-income countries have shown intimate partner violence to be associated with depression among women. The present paper examines whether this finding can be confirmed in a very different cultural setting in rural Ethiopia. METHOD: A community-based cross-sectional study was undertaken in Ethiopia among 1994 currently married women. Using the Composite International Diagnostic Interview (CIDI), cases of depressive episode were identified according to the ICD-10 diagnosis. Using a standardized questionnaire, women who experienced violence by an intimate partner were identified. A multivariate analysis was conducted between the explanatory variables and depressive status of the women, after adjusting for possible confounders. RESULTS: The 12-month prevalence of depressive episode among the women was 4.8% (95% CI, 3.9% and 5.8%), while the lifetime prevalence of any form of intimate partner violence was 72.0% (95% CI, 70.0% and 73.9%). Physical violence (OR = 2.56, 95% CI, 1.61, 4.06), childhood sexual abuse (OR = 2.00, 95% CI, 1.13, 3.56), mild emotional violence (OR = 3.19, 95% CI, 1.98, 5.14), severe emotional violence (OR = 3.90, 95% CI, 2.20, 6.93) and high spousal control of women (OR = 3.30, 95% CI, 1.58, 6.90) by their partners were independently associated with depressive episode, even after adjusting for socioeconomic factors. CONCLUSION: The high prevalence of intimate partner violence, a factor often obscured within general life event categories, requires attention to consider it as an independent factor for depression, and thus to find new possibilities of prevention and treatment in terms of public health strategies, interventions and service provision.

BACKGROUND: Several previous studies have reported on socioeconomic and sociodemographic factors associated with depression among women, but knowledge in this area remains scarce regarding women living in extreme poverty in developing countries. OBJECTIVE: The study was aimed at examining the 12-month prevalence of depressive episodes as related to socioeconomic and sociocultural conditions of women in the reproductive age group in rural Ethiopia. METHODS: A community-based cross-sectional study was undertaken among 3016 randomly selected women in the age group 15-49 years. Cases of depression were identified using the Amharic version of the Composite International Diagnostic Interview. A standardized World Health Organization questionnaire was used to measure the socioeconomic status of the women and their spouses. Data were analysed among all women and then separately among currently married women. RESULTS: The 12-month prevalence of depression among all women was 4.4%. After adjusting for common sociodemographic characteristics, only marital status showed a significant association with depressive episode in terms of higher odds ratios (ORs) for divorced/separated women and widowed women than for not-married women (4.05 and 4.24, respectively). Among currently married women, after adjusting for common sociodemographic characteristics, living in rural villages (OR=3.78), a frequent khat-chewing habit (OR=1.61), having a seasonal job (OR=2.94) and being relatively better off in terms of poverty (OR=0.48) were independently associated with depression. CONCLUSIONS: The prevalence of depression among women was in the lower range as compared to studies from high-income countries, but very poor economic conditions were associated with a higher prevalence of depression in this overall very poor setting. This further supports the notion that the relative level of poverty rather than the absolute level of poverty contributes to depression among women. Whether the association with khat chewing and depression is a causative effect or can be explained by self-medication remains unclear.

Objective: This study explores violence against women in a low-income setting in relation to residency and literacy. Setting: The study was conducted within the Butajira Rural Health Programme (a Health and Demographic Surveillance Site), which includes rural and semi-urban settings in south-central Ethiopia. Design: This is a community-based cross-sectional study and is part of the WHO Women’s Health and Life Events multi-country study. It included 1,994 randomly selected married women. Methods: A standardised WHO questionnaire was used to measure physical violence, residency, literacy of the woman and her spouse, and attitudes of women about gender roles and violence. Analyses present prevalence with 95% confidence intervals and odds ratios derived from bivariate and multivariate logistic regression models. Results: In urban and rural areas of the study area, the women were of varying ages, had varying levels of literacy and had spouses with varying levels of literacy. Women in the overall study area had beliefs and norms favouring violence against women, and women living in rural communities and illiterate women were more likely to accept such attitudes. In general, violence against women was more prevalent in rural communities. In particular, violence against rural literate women and rural women who married a literate spouse was more prevalent. Literate rural women who were married to an illiterate spouse had the highest odds (Adj. OR 3.4; 95% CI: 1.7-6.9) of experiencing physical violence by an intimate partner. Conclusion: Semi-urban lifestyle and literacy promote changes in attitudes and norms against intimate partner violence; however, within the rural lifestyle, literate women married to illiterate husbands were exposed to the highest risks of violence. Keywords: intimate partner violence; health system and gender; Africa


The seriousness in magnitude of physical violence globally, and lack of information on the dimensions and context of the problem in Ethiopia is very visible. A cross-sectional survey was conducted in Meskanena Mareko Woreda, Southern Ethiopia, from November 1 to 30, 1995 to assess the magnitude, type and outcomes of physical violence against married women. A total of 673 married women were included in the study. The study found out the overall prevalence of physical violence against married women to be 45% and 10% in their lifetime and last three months, respectively. Two hundred and twenty nine (76%) and 39 (60%) of the lifetime and three month's physically abused women respectively, were slapped with fist. Four (1%) of the lifetime physically abused women have been abused using a knife or a gun. Among the 303 physically abused women, 161 (53%) reported minor and serious somatic injuries in their lifetime. One hundred and nine (46%) of them had acquired minor lacerations or scars; 22 (7%) had reported to have fracture or dislocation; and 5 (2%) had lost their vision. It is concluded that physical violence among married women is quite high and a serious problem. We recommended that policy makers need to urgently explore for appropriate strategies to curtail the problem of physical violence against married women.

BACKGROUND: During 1999-2000, great parts of Ethiopia experienced a period of famine which was recognised internationally. The aim of this paper is to characterise the epidemiology of mortality of the period, making use of individual, longitudinal population-based data from the Butajira demographic surveillance site and rainfall data from a local site. METHODS: Vital statistics and household data were routinely collected in a cluster sample of 10 sub-communities in the Butajira district in central Ethiopia. These were supplemented by rainfall and agricultural data from the national reporting systems. RESULTS: Rainfall was high in 1998 and well below average in 1999 and 2000. In 1998, heavy rains continued from April into October, in 1999 the small rains failed and the big rains lasted into the harvesting period. For the years 1998-1999, the mortality rate was 24.5 per 1,000 person-years, compared with 10.2 in the remainder of the period 1997-2001. Mortality peaks reflect epidemics of malaria and diarrhoeal disease. During these peaks, mortality was significantly higher among the poorer. CONCLUSIONS: The analyses reveal a serious humanitarian crisis with the Butajira population during 1998-1999, which met the CDC guideline crisis definition of more than one death per 10,000 per day. No substantial humanitarian relief efforts were triggered, though from the results it seems likely that the poorest in the farming communities are as vulnerable as the pastoralists in the North and East of Ethiopia. Food insecurity and reliance on subsistence agriculture continue to be major issues in this and similar rural communities. Epidemics of traditional infectious diseases can still be devastating, given opportunities in nutritionally challenged populations with little access to health care.


BACKGROUND: Public health research characterising the course of life through the middle age in developing societies is scarce. The aim of this study is to explore patterns of adult (15-64 years) mortality in an Ethiopian population over time, by gender, urban or rural lifestyle, causes of death and in relation to household economic status and decision-making. METHODS: The study was conducted in Butajira Demographic Surveillance Site (DSS) in south-central Ethiopia among adults 15-64 years old. Cohort analysis of surveillance data was conducted for the years 1987-2004 complemented by a prospective case-referent (case control) study over two years. Rate ratios were computed to assess the relationships between mortality and background variables using a Poisson regression model. In the case-referent component, odds ratios (95% confidence intervals) were used to assess the effect of certain risk factors that were not included in the surveillance system. RESULTS: A total of 367,940 person years were observed in a period of 18 years, in which 2860 deaths occurred. One hundred sixty two cases and 486 matched for age, sex and place of residence controls were included in the case referent (case control) study. Only a modest downward trend in adult mortality was seen over the 18 year period. Rural lifestyle carried a significant survival disadvantage [mortality rate ratio 1.62 (95% CI 1.44 to 1.82), adjusted for gender, period and age group], while the overall effects of gender were negligible. Communicable disease mortality was appreciably higher in rural areas [rate ratio 2.05 (95% CI 1.73 to 2.44), adjusted for gender, age group and period]. Higher mortality was associated with a lack of literacy in a household, poor economic status and lack of women's decision making. CONCLUSION: A complex pattern of adult mortality prevails, still influenced
by war, famine and communicable diseases. Individual factors such as a lack of education, low economic status and social disadvantage all contribute to increased risks of mortality.


OBJECTIVES: This study assessed trends in survival to old age and identified the factors associated with longevity among the elderly (age ≥ 65 years). STUDY DESIGN: Cohort analysis of demographic surveillance data. METHODS: The study was conducted in the Butajira Rural Health Programme Demographic Surveillance Site in Ethiopia. Using data collected between 1987 and 2004, the probability of survival to 65 years and remaining life expectancy for women and men aged 65 years were computed. Cox regression analysis was used to assess survival by different factors. RESULTS: Although the elderly represented 3% of the population, their person-time contribution increased by 48% over the 18-year period. Less than half reached 65 years of age, with remaining life expectancy at 65 years ranging from 15 years in rural men to 19 years in urban women. Rural residence, illiteracy and widowhood were associated with lower survival adjusted for other factors, whereas gender did not show a significant difference. However, the effect of these factors differed between men and women, as demonstrated by survival curves and Cox regression. Widowhood [hazard ratio (HR) 2.02, 95% confidence interval (CI) 1.59-2.57] and illiteracy (HR 2.26, 95% CI 1.86-2.73) affected males to a greater extent than females, and rural residence was associated with poorer female survival (HR 1.68, 95% CI 1.55-1.83). CONCLUSIONS: The number of elderly people is increasing in Ethiopia, with the chance of survival into older age being similar between men and women and approaching that in developed countries. However, rural women and illiterate women and men, particularly widowers, are disadvantaged in terms of survival.


AIMS: To assess the influence of household decision making, social capital, socio-economic factors and health service use on under-five mortality. SETTING: Butajira Demographic Surveillance Site, Ethiopia. METHODS: A prospective case-referent design with a total of 209 under-five year old deaths occurring in an 18-month period, together with 627 referents matched for age, sex and community of residence were included. Questionnaires were administered to mothers or caretakers. Matched case control analysis investigated the effect of risk factors on mortality and the presence of avoidable factors was assessed for each death. RESULTS: Lack of immunization was strongly associated with mortality (adjusted OR=9.8, 95% CI 5.9, 16.1). Low decision making capacity of women (adjusted OR=3.2 95% CI 2.0, 5.0) and low social capital scores (adjusted OR=1.9 95% CI 1.1, 3.5) were also related to high under-five mortality in multivariate analyses. Potentially avoidable household and health facility factors were identified, respectively in 71% and 40% of the deaths. CONCLUSION: Combined efforts to improve women's involvement in household decision making, social capital and immunization may decrease the high child mortality in this setting where the level of poverty is high and no appreciable trend in child mortality decline has been noted over the years.

OBJECTIVE: Verbal autopsy (VA) -- the interviewing of family members or caregivers about the circumstances of a death after the event -- is an established tool in areas where routine death registration is non-existent or inadequate. We assessed the performance of a probabilistic model (InterVA) for interpreting community-based VA interviews, in order to investigate patterns of cause-specific mortality in a rural Ethiopian community. We compared results with those obtained after review of the VA by local physicians, with a view to validating the model as a community-based tool. METHODS: Two-hundred and eighty-nine VA interviews were successfully completed; these included most deaths occurring in a defined community over a 1-year period. The VA interviews were interpreted by physicians and by the model, and cause-specific mortality fractions were derived for the whole community and for particular age groups using both approaches. FINDINGS: The results of the two approaches to interpretation correlated well in this example from Ethiopia. Four major cause groups accounted for over 60% of all mortality, and patterns within specific age groups were consistent with expectations for an underdeveloped high-mortality community in sub-Saharan Africa. CONCLUSION: Compared with interpretation by physicians, the InterVA model is much less labour intensive and offers 100% consistency. It is a valuable new tool for characterizing patterns of cause-specific mortality in communities without death registration and for comparing patterns of mortality in different populations.


OBJECTIVE: To determine the clinical outcome of bipolar disorder in a developing country setup. METHOD: After assessing 68,378 individuals, aged 15-49 years, in a double-sampling design in a rural community in Ethiopia, 312 patients with bipolar disorder were prospectively monitored with symptom rating scales and clinically for an average of 2.5 years. RESULTS: Overall, 65.9% of the cohort experienced a relapse--47.8% manic, 44.3% depressive and 7.7% mixed episodes--and 31.1% had persistent illness. Female gender predicted depressive relapse, while male gender predicted manic relapse. Being on psychotropic medication was associated with remission. CONCLUSION: This large community-based study confirms the relapsing nature of bipolar disorder and a tendency for chronicity. This may be partly because of lack of appropriate interventions in this setting; however, it may also indicate the underlying severity of the disorder irrespective of setting.

A case-control study was carried out to identify factors that influence fertility in rural Butajira, Ethiopia. Data collection was done during March-April 2001. Cases were women with <5 children ever born alive (CEB). Women with 5 or more CEB served as controls. 219 cases and 899 controls were included in the study. Women whose age at first marriage was ≥20 years had lower CEB (odds ratio (OR), 1.92; 95% confidence interval (CI), 1.24-2.83) when compared with women whose age at first marriage was below 15 years. Mothers who breast fed their child for more than 6 months had significantly less CEB than mothers who breast for less than 6 months. Women who breast fed for 7-12 months and 13-18 months showed significantly lower fertility rates (OR=1.92; 95% CI =1.12, 8.15 and OR=1.38; 95% CI=1.16, 1.88, respectively) than those who breast fed for more than 19 months.


OBJECTIVES: To determine the effects of child mortality and fertility preference on fertility status in rural Ethiopia. DESIGN: Case-referent where the cases were women with number of children ever born alive was less than five and controls were women with number of children ever born alive greater or equal to five. SETTING: Butajira rural health project study base which is a field epidemiologic laboratory found 35 Kms south of the capital city of Ethiopia, Addis Ababa run by the Department of Community Health of Tikur Anbessa Medical Faculty. MAIN OUTCOME MEASURES: Fertility status measured by number of children ever born alive; death of a child or an infant is a predictor. SUBJECTS: A total of 219 women with number of children ever born alive less than five and 899 women with number of children ever born alive greater or equal to five were included in the study. RESULTS: Child mortality affected number of children ever born alive significantly (OR= 7.39, 95% CI: 4.62, 9.08). As the number of children died increased proportionally, there is a proportional increase in the risk of higher fertility (X2 for trend 4.92, d.f =4, p-value 0.02). Number of children desired before marriage, desire for more children and sex preference were not associated with increased fertility in this study. Of all the socio-demographic and reproductive variables, later age at first marriage and first birth showed lower number of children ever born alive with (OR= 1.82, 95 % CI: 1.24, 2.83) and (OR= 3.08, 95 % CI: 2.03, 4.68) respectively. Breast-feeding duration of more than six months showed association with less number of children ever born alive (OR= 1.92, 95% CI: 1.30,2.80). CONCLUSION: The study finding implies high fertility status is strongly associated with child death and hence measures that curb child mortality are believed to decrease fertility status besides promoting child survival.

OBJECTIVES: Effective early warning systems of humanitarian crises may help to avert substantial increases in mortality and morbidity, and prevent major population movements. The Butajira Rural Health Programme (BRHP) in Ethiopia has maintained a programme of epidemiological surveillance since 1987. Inspection of the BRHP data revealed large peaks of mortality in 1998 and 1999, well in excess of the normally observed year-to-year variation. Further investigation and enquiry revealed that these peaks related to a measles epidemic, and a serious episode of drought and consequent food insecurity that went undetected by the BRHP. This paper applies international humanitarian crisis threshold definitions to the BRHP data in an attempt to identify suitable mortality thresholds that may be used for the prospective detection of humanitarian crises in population surveillance sites in developing countries. STUDY DESIGN: Empirical investigation using secondary analysis of longitudinal population-based cohort data. METHODS: The daily, weekly and monthly thresholds for crises in Butajira were applied to mortality data for the 5-year period incorporating the crisis periods of 1998-1999. Days, weeks and months in which mortality exceeded each threshold level were identified. Each threshold level was assessed in terms of prospectively identifying the true crisis periods in a timely manner whilst avoiding false alarms. RESULTS: The daily threshold definition is too sensitive to accurately detect impending or real crises in the population surveillance setting of the BRHP. However, the weekly threshold level is useful in identifying important increases in mortality in a timely manner without the excessive sensitivity of the daily threshold. The weekly threshold level detects the crisis periods approximately 2 weeks before the monthly threshold level. CONCLUSION: Mortality measures are highly specific indicators of the health status of populations, and simple procedures can be used to apply international crisis threshold definitions in population surveillance settings for the prospective detection of important changes in mortality rate. Standards for the timely use of surveillance data and ethical responsibilities of those responsible for the data should be made explicit to improve the public health functioning of current sentinel surveillance methodologies.

BACKGROUND: As in any measurement process, a certain amount of error may be expected in routine population surveillance operations such as those in demographic surveillance sites (DSSs). Vital events are likely to be missed and errors made no matter what method of data capture is used or what quality control procedures are in place. The extent to which random errors in large, longitudinal datasets affect overall health and demographic profiles has important implications for the role of DSSs as platforms for public health research and clinical trials. Such knowledge is also of particular importance if the outputs of DSSs are to be extrapolated and aggregated with realistic margins of error and validity. METHODS: This study uses the first 10-year dataset from the Butajira Rural Health Project (BRHP) DSS, Ethiopia, covering approximately 336,000 person-years of data. Simple programmes were written to introduce random errors and omissions into new versions of the definitive 10-year Butajira dataset. Key parameters of sex, age, death, literacy and roof material (an indicator of poverty) were selected for the introduction of errors based on their obvious importance in demographic and health surveillance and their established significant associations with mortality. Defining the original 10-year dataset as the 'gold standard' for the purposes of this investigation, population, age and sex compositions and Poisson regression models of mortality rate ratios were compared between each of the intentionally erroneous datasets and the original 'gold standard' 10-year data. RESULTS: The composition of the Butajira population was well represented despite introducing random errors, and differences between population pyramids based on the derived datasets were subtle. Regression analyses of well-established mortality risk factors were largely unaffected even by relatively high levels of random errors in the data. CONCLUSION: The low sensitivity of parameter estimates and regression analyses to significant amounts of randomly introduced errors indicates a high level of robustness of the dataset. This apparent inertia of population parameter estimates to simulated errors is largely due to the size of the dataset. Tolerable margins of random error in DSS data may exceed 20%. While this is not an argument in favour of poor quality data, reducing the time and valuable resources spent on detecting and correcting random errors in routine DSS operations may be justifiable as the returns from such procedures diminish with increasing overall accuracy. The money and effort currently spent on endlessly correcting DSS datasets would perhaps be better spent on increasing the surveillance population size and geographic spread of DSSs and analysing and disseminating research findings.


Key informant interviews of herbalists were conducted to document the traditional management of malaria in Ethiopia. The perceptions of the cause and symptoms of malaria, the use of plants, their preparation and administration were recorded. Interviews were performed in rural Butajira and Addis Ababa (the main city). The result showed that 33 (75%) of the interviewed healers treat malaria using herbal drugs. Sixteen plants were reported to have been used of which eight were used as a single remedy and the rest as composite remedies with other plants. The ethnopharmacological data generated in this study on antimalarial plants is useful for further evaluations of the traditional claims of antimalarial plants in Ethiopia.

Medicinal plants are an important element of Ethiopian traditional medicine. This questionnaire survey examined the extent and type of medicinal plants used in self-care by rural Ethiopian community. Six hundred mothers were interviewed using a semi-structured questionnaire. The prevalence of the use of herbal drugs in self-care was found to be 12.5%. Twenty-five plant species belonging to 21 families were reported, each with local names, methods of preparation and parts used. This study showed that self-care using medicinal plants is a major part of health care options in Butajira community.


The control of tuberculosis (TB) requires improved vaccines in addition to chemotherapy. It is essential to understand the immune response in tuberculosis to successfully evaluate potential vaccines. Current investigations have focused on immune responses in pulmonary forms. We studied the T-cell response of peripheral blood mononuclear cells (PBMC) from HIV-infected (n=8) and non-infected patients (n=19) with lymph node tuberculosis to PPD and short-term culture filtrates (ST-CF) of M. tuberculosis. PBMC from HIV-negative TB lymphadenitis patients proliferated in response to both antigens (p<0.001) and produced variably higher levels of IFN-gamma compared to healthy controls (p=0.02) (n=19) from the same area. Such responses were suppressed in HIV co-infected subjects. The results indicate that circulating PBMC in the apparently localized form of tuberculous lymphadenitis react to mycobacterial antigens in a similar pattern as those of patients with pulmonary disease.

BACKGROUND: The cultural validity of instruments to detect perinatal common mental disorders (CMD) in rural, community settings has been little-investigated in developing countries. METHODS: Semantic, content, technical, criterion and construct validity of the Edinburgh Postnatal Depression Scale (EPDS) and Self-Reporting Questionnaire (SRQ) were evaluated in perinatal women in rural Ethiopia. Gold-standard measure of CMD was psychiatric assessment using the Comprehensive Psychopathological Rating Scale (CPRS). Community-based, convenience sampling was used. An initial validation study (n=101) evaluated both EPDS and SRQ. Subsequent validation was of SRQ alone (n=119). RESULTS: EPDS exhibited poor validity; area under the receiver operating characteristic (AUROC) curve of 0.62 (95%CI 0.49 to 0.76). SRQ-20 showed better validity as a dimensional scale, with AUROC of 0.82 (95%CI 0.68 to 0.96) and 0.70 (95%CI 0.57 to 0.83) in the two studies. The utility of SRQ in detecting 'cases' of CMD was not established, with differing estimates of optimal cut-off score: three and above in Study 1 (sensitivity 85.7%, specificity 75.6%); seven and above in Study 2 (sensitivity 68.4%, specificity 62%). High convergent validity of SRQ as a dimensional measure was demonstrated in a community survey of 1065 pregnant women. LIMITATIONS: Estimation of optimal cut-off scores and validity coefficients for detecting CMD was limited by sample size. CONCLUSIONS: EPDS demonstrated limited clinical utility as a screen for perinatal CMD in this rural, low-income setting. The SRQ-20 was superior to EPDS across all domains for evaluating cultural equivalence and showed validity as a dimensional measure of perinatal CMD.


BACKGROUND: There is a dearth of methodological studies critically evaluating reliability, validity and feasibility of measures of common mental disorders (CMD) in low-income countries. METHODS: Test-retest and inter-rater reliability of categorisation of CMD caseness, according to locally agreed criteria using the Comprehensive Psychopathological Rating Scale (CPRS), was measured in 99 women from out-patient clinics (inter-rater) and 99 women from a primary healthcare centre (test-retest) in Ethiopia. The construct validity of CMD as measured with CPRS was assessed with exploratory factor analysis using maximum likelihood with varimax rotation. RESULTS: Test-retest reliability was fair (kappa = 0.29). Subsequent assessment of inter-rater reliability found excellent agreement (kappa = 0.82). The construct of CMD appeared unidimensional, combining depressive, anxiety and somatic symptoms. CONCLUSIONS: Detection of socioculturally meaningful cases of CMD in Ethiopia can be reliably achieved with local psychiatrist assessment using CPRS, although thorough training is essential.
OBJECTIVES: To examine the impact of antenatal psychosocial stressors, including maternal common mental disorders (CMD), upon low birth weight, stillbirth and neonatal mortality, and other perinatal outcomes in rural Ethiopia. METHODS: A population-based sample of 1065 pregnant women was assessed for symptoms of antenatal CMD (Self-Reporting Questionnaire-20: SRQ-20), stressful life events during pregnancy (List of Threatening Experiences: LTE) and worry about the forthcoming delivery. In a sub-sample of 654 women from six rural sub-districts, neonatal birth weight was measured on 521 (79.7%) singleton babies within 48 h of delivery. Information about other perinatal outcomes was obtained shortly after birth from the mother's verbal report and via the Demographic Surveillance System. RESULTS: After adjusting for potential confounders, none of the psychosocial stressors were associated with lower mean birth weight, stillbirth or neonatal mortality. Increasing levels of antenatal CMD symptoms were associated both with prolonged labour (>24 h) (SRQ 1-5: RR 1.4; 95% CI 1.0-1.9, SRQ >=6: RR 1.6; 95% CI 1.0-2.6) and delaying initiation of breast-feeding more than eight hours (SRQ 1-5: RR 1.4; 95% CI 0.8 to 2.4, SRQ >=6: RR 2.8; 95% CI 1.3-6.1). Worry about delivery was also associated with labour longer than 24 h (RR 1.5; 95% CI 1.0-2.1). CONCLUSIONS: This study provides preliminary evidence of important public health consequences of poor maternal mental health in low-income countries but does not replicate the strong association with low birth weight found in South Asia.


The high prevalence of antenatal common mental disorders in sub-Saharan Africa compared to high-income countries is poorly understood. This qualitative study explored the sociocultural context of antenatal mental distress in a rural Ethiopian community. Five focus group discussions and 25 in-depth interviews were conducted with purposively sampled community stakeholders. Inductive analysis was used to develop final themes. Worry about forthcoming delivery and fears for the woman's survival were prominent concerns of all participants, but only rarely perceived to be pathological in intensity. Sociocultural practices such as continuing physical labour, dietary restriction, prayer and rituals to protect against supernatural attack were geared towards safe delivery and managing vulnerability. Despite strong cultural norms to celebrate pregnancy, participants emphasised that many pregnancies were unwanted and an additional burden on top of pre-existing economic and marital difficulties. Short birth interval and pregnancy out of wedlock were both seen as shameful and potent sources of mental distress. The notion that pregnancy in traditional societies is uniformly a time of joy and happiness is misplaced. Although antenatal mental distress may be self-limiting for many women, in those with enduring life difficulties, including poverty and abusive relationships, poor maternal mental health may persist.

Sociocultural patterning of the postnatal period in non-Western settings has been hypothesised to protect against postnatal depression. In 2004, in a predominantly rural area of Ethiopia, we conducted 25 in-depth interviews and five focus group discussions with purposively selected participants including perinatal women, fathers, grandmothers, traditional and religious leaders, birth attendants and community leaders. Our main objectives were (1) to examine societal recognition of problematic distress states in the postnatal period and relate this to Western conceptualisations of postnatal depression and (2) to relate the occurrence of distress states to sociocultural patterning of the postnatal period. Inductive analysis was employed to identify salient themes. Participants spontaneously described culturally problematic distress states occurring in the postnatal period, although did not consider them to be illness. Vulnerability and danger of the postnatal period was emphasised, with risk of supernatural attack and physical harm leading to distress states. Participants also spoke of how gender disadvantage and economic strain intersect with cultural patterning of the postnatal period, threatening mental health due to the resulting disappointed expectations and exclusion, as well as exacerbation of pre-existing problems. Cultural dissonance, where a person's beliefs or actions are out of kilter with strong prevailing cultural norms, may be an important risk factor for postnatal distress in rural Ethiopia, where the postnatal period is extensively culturally elaborated.


OBJECTIVES: To describe the socio-demographic correlates of depressive disorder and their interactions. DESIGN: Cross sectional study. SETTING: Rural population in Ethiopia. SUBJECTS: Two hundred and twelve cases of depressive disorders. MAIN OUTCOME MEASURE: Clinically confirmed depressive disorder. METHODS: We conducted a door-to-door survey of a predominantly rural population of close to 70,000 individuals. Cases of depressive disorder were identified by use of the SCAN (Schedule for Clinical Assessment in Neuropsychiatry) and clinical assessment. RESULTS: Age was associated with the disorder: those aged 35 and above had over twice the risk of those aged 24 or below: adjusted odds ratio (95% Confidence interval) = 2.24 (1.38, 3.64). On aggregate, those previously married (separated/divorced/widowed) had an almost two-fold increased risk of the disorder compared to the singles [Adj. OR (95% CI) = 1.93 (1.00, 3.70)]. As a result of effect modification by age, being married was positively associated with depressive disorders [Adj. OR (95% CI) = 3.52 (1.96, 6.32)] among the younger age group (16 to 24 years), but this association was reversed in older (25 to 34 years) age groups [Adj. OR (95% CI) = 0.50 (0.29, 0.88)]. CONCLUSION: The study shows that age and marital status are associated with depressive disorders independently of each other and that age modifies the association of marital status with depressive disorder.

BACKGROUND: Limited information is available on the outcome of bipolar disorder in developing countries. OBJECTIVE: To describe the symptomatic and functional outcome of bipolar disorder. METHODS: The psychoses and affective disorder modules of the CIDI were used to screen 68,378 individuals by a door-to-door survey of a defined district in Ethiopia. In addition, key informants were used to identify individuals with probable major mental illnesses. SCAN interviews were completed at the second stage to confirm the diagnosis. A total of 315 cases of bipolar disorder were identified, of which 264 (69 recent-onset and 195 prevalent cases) were prospectively followed for a mean of 2.5 (range 1-4) years by baseline and annual clinical assessments using symptom rating scales. Functional dimensions of the SF-36 scale were used to describe functional outcome. Random coefficient analyses were used to evaluate potential correlates of outcome. RESULTS: The magnitudes of mania and depression symptoms were elevated at baseline but improved with follow-up, although the improvement was less marked for depression. Sociodemographic or clinical variables were not associated with the improvements in symptomatic outcome. Between 35% and 47% of the recent-onset cases had functional role restrictions, while 42-52% of long-standing cases had such restrictions during the follow-up years. Similarly, social and physical functioning deficits were also present in 52-86% and 35-47% of recent-onset and long-standing cases, respectively. The magnitude of depression and mania symptoms was associated with poor functional outcome, while male sex, rural residence and being married were associated with better functional outcome. CONCLUSION: Although there were improvements in function with follow-up, between one-third and one-half of cases continued to have functional deficits.


The SF-36 health survey, a generic measure of health related quality of life (HRQOL), has been translated, evaluated in various languages and used in over 40 countries worldwide, although it has not been used in Ethiopia. OBJECTIVE: To measure the reliability and validity of the SF-36, to establish general population norms for various sex and age groups, to describe the effects of socio-demographic factors on SF-36 scores, and SF-36 scores in patients with major mental disorders. METHODS: Following the standard procedures of forward and back translation and adaptation, an Amharic SF-36 was developed This was subsequently used in a health survey of a general rural population of 1,990 in Butajira. The instrument was also used to interview a group of patients with schizophrenia, bipolar and depressive disorders. RESULTS: Mean scores of all of the eight domains of the SF-36 general population of Butajira decreased (indicating poorer HRQOL) with increasing age in both males and females. The odds of being in the lowest quartile of the PCS were 3.6 times higher in those aged 40-49 years when compared to those younger than 20 years Adjusted Odds Ratio (95% CI) = 3.62 (2.32, 5.66). In both males and females, the SF-36 scores for the eight domains and the two summary scales were significantly lower among all the three cases of major mental disorders compared to the general population. CONCLUSION: The SF-36 appears to be an appropriate measure for measuring health related quality of life in various population groups in Ethiopia.

OBJECTIVES: To describe the major sociodemographic correlates of schizophrenia, and their interactions, in a rural population of Ethiopia. METHODS: We have recently completed a study in Butajira to identify cases of major mental disorders for description of course and outcome. A total of 318 cases of schizophrenia were identified by a door-to-door survey of a predominantly rural population of close to 68,500 individuals. Cases were confirmed by use of the SCAN and clinical assessment. FINDINGS: The study showed that being male, under 35 years of age, unmarried, educated and living in an urban area were factors all associated with schizophrenia independently of each other. The risk of schizophrenia associated with being male was much higher in those aged 35 and over compared to those under 35 years of age. The risk of schizophrenia among males was higher in those not married (never married, separated, divorced or widowed) compared to those who were married. The association of marital status with schizophrenia was also more pronounced among those aged 35 year or over compared to those under 35. The association between schizophrenia and being unmarried was higher in urban than in rural areas. CONCLUSION: The sociodemographic correlates of schizophrenia in this rural population were similar to those described for the developed world. Furthermore, there were significant interactions between sex, age, marital status, area of residence and education as correlates of schizophrenia.


OBJECTIVES: To describe the socio-demographic correlates of bipolar disorder and their interactions. DESIGN: Cross sectional study. SETTING: Rural population in Ethiopia. SUBJECTS: We conducted a door-to-door survey of a predominantly rural population of close to 70,000 individuals. A total of 315 cases of bipolar disorder were identified by use of the SCAN and clinical assessment. RESULTS: The lifetime prevalence of biopolar disorder in this population was 0.5% (0.6% for men and 0.4%) for women. Adjusted odds ratios show that males had 80% higher risk of bipolar disorder: OR (95% CI) = 1.81 (1.42, 2.32). Those aged 25-34 years had 45% higher risk than those aged under 25: adjusted OR (95% CI) = 1.45 (1.03, 2.06). Area of residence and educational level were not associated with the disorder. The association of marital status with bipolar disorder was modified by age and sex. Among males the odds of bipolar disorder among the married was 3.6 times higher than those who have never married. Among the age group of 15 to 24 years, those married had a 84% higher risk of disease, while those previously married had a 55% increase. On the other hand the association between marital status and bipolar disorder is reversed in older age groups, with those who have never married having a higher risk compared to those married. CONCLUSION: The study shows that the prevalence of bipolar disorder in this population is within ranges of prevalence reported in the literature, although on the lower side. It also shows that age, sex and marital status are associated with bipolar disorder and these variables interacts with each other.

BACKGROUND: Prospective outcome studies based on a community sample of mostly neuroleptic naive cases of schizophrenia are uncommon. OBJECTIVES: To describe short-term symptomatic and functional outcomes of schizophrenia, and potential predictors of outcome. METHODS: After a baseline assessment, 63 incident and 208 prevalent cases of schizophrenia were followed by a yearly clinical assessment for an average of 2.5 (range 1-4) years. Scores of negative symptoms and positive symptoms were used as indicators of symptomatic outcomes. SF-36 scores of physical and social functioning, and role limitation due to mental health problems were used as indicators of functional outcomes. Several variables were evaluated as potential predictors of outcome in random coefficient models. RESULTS: Functioning and other measures of health related quality of life were significantly diminished in cases as compared to the general population of the area at baseline and follow up. Of the socio-demographic and clinical factors evaluated, only lower negative and positive symptom scores were significantly associated with improvements in functioning. The level of functioning observed in cases from Butajira was lower than that reported for cases from developed countries. CONCLUSIONS: Our findings are not in accord with other outcome studies that have reported better functional outcome for cases of schizophrenia from developing countries.


BACKGROUND: There are reports on favourable course and outcome of schizophrenia in low income countries. The aim of the present study was to examine onset and clinical course of the illness in a community-based sample in rural Ethiopia based on cross-sectional information. METHOD: A two-stage survey was carried out in Butajira-Ethiopia, a predominantly rural district. Altogether 68,378 individuals aged 15-49 years were CIDI-interviewed, of whom 2,159 were identified as cases according to the CIDI interview with regard to psychotic or affective disorders. Key informants identified another group of 719 individuals as being probable cases and a total of 2,285 individuals were SCAN-interviewed. The present paper reports on cases with schizophrenia. RESULTS: There were 321 cases of schizophrenia giving an estimated lifetime prevalence of 4.7/1,000. Of the cases, 83.2% (N = 267) were males. Mean age of first onset of psychotic symptoms for males was 23.8 (sd 8.6) compared to 21.0 (sd 7.8) for females (P = 0.037; 95 %CI 0.16-5.47). Over 80% had negative symptoms and over 67% reported continuous course of the illness. Less than 10% had a history of previous treatment with neuroleptic medication. About 7% were vagrants, 9 % had a history of assaultive behaviour,and 3.8% had attempted suicide. The male to female ratio was nearly 5:1. CONCLUSION: This large community-based study differs from most previous studies in terms of higher male to female ratio, earlier age of onset in females and the predominance of negative symptoms.

BACKGROUND: It is now recognized that surveys of unique communities are important to better understand the epidemiology of mental disorders. The Zeway islanders are completely different from the surrounding cultural groups, in the midst of whom they have been living in isolation for over three centuries. OBJECTIVES: To describe the prevalence and sociodemographic correlates of major mental disorders in this community. METHODS: Trained and supervised field workers were employed to conduct a door-to-door survey of the entire adult population of the islands using the Amharic CIDI (Composite International Diagnostic Interview). RESULTS: A total of 18.3% of the study subjects were classified as having ICD-10 diagnoses, excluding substance use disorders. The most prevalent CIDI/ICD-10 disorder in the study were neurotic and somatoform disorders (17%). Affective disorders were present in 2.2% while no cases of psychoses were found. The prevalence of tobacco use and alcohol dependence was 0.4% and 1.5%, respectively, with all cases being males. CONCLUSION: The pattern of occurrence of mental disorders in this isolated community is different from other populations in Ethiopia and elsewhere with no reported case of psychoses.


Background: Eleven million children under age of five die annually in the world as a whole, of which over ten million are in the developing world. A large proportion of these deaths are preventable and uncounted. To this end a realistic picture of an epidemiological profile and intervention developments require an understanding of the determinants of child mortality. Moreover, a relatively less expensive and feasible method that can yield reliable and valid data is necessary. Though many studies that have been done to determine factors associated with child deaths, no sound methods were used. Objective: Therefore, this study was designed to identity factors associated with death of children in the first five years of life. Method: This study was a retrospective cohort study that took secondary data of BRHP and qualitative study design to supplement on the quality of data collection. All birth cohorts born between Jan 1st to Dec 31st, 2000 were considered as the study population. Data was analyzed using the Cox proportional Hazard model to track survival pattern of children and factors associated with child death. Results: Infant and under five mortality rates were 83.9 and 118 deaths per 1000 live births. Excess mortality was observed in female children than in males; moreover, multiple births were at increased risk of dying than singleton. Urban children had more (50%) chances of survival compared to rural ones. upon stepwise multivariate Cox regression source of water esp. pipe water, sex of child, multiple births, urban places of residence and availability of radio in the household were found to be independent predictors of child survival. Conclusions and recommendation: mortality is relatively high and the provision of safe and adequate water supply and promotion of child health should be considered in the area.

Background: Poor housing condition is one of the major public health concerns in many developing nations due to its association with the health status. Objectives: To determine the size of traditional Tukul by altitudinal zone in rural communities. Methods: During a census enumeration 5113 rural housing units were physically assessed. Axis, radius, and wall height were measured to the nearest centimeter by trained enumerators using a tape meter. Results: The mean (SD) values of axis, radius, and wall height were found to be as 537.92cm (84.88), 329.43cm (64.81), and 236.38cm (22.65), respectively. The mean (SD) space for floor area was 35.43 (13.72)m² and space by indoor volume was 123.42 (60.26)m³ per habitable Tukul. According to the WHO literatures for a dwelling units, about 85% of the Tukuls in a rural area are crowded and far behind to satisfy the physiological needs of a resident. Nearly 95% of housing units had only one room. Conclusions and Recommendations: The high magnitude of overcrowding in rural housing units indicates the poor living and sanitation conditions. As this predisposes to many adverse health conditions, appropriate interventions need to be done with out delay.


BACKGROUND: Unprocessed biomass fuel is the primary source of indoor air pollution (IAP) in developing countries. The use of biomass fuel has been linked with acute respiratory infections. This study assesses sources of variations associated with the level of indoor nitrogen dioxide (NO₂). MATERIALS AND METHODS: This study examines household factors affecting the level of indoor pollution by measuring NO₂. Repeated measurements of NO₂ were made using a passive diffusive sampler. A Saltzman colorimetric method using a spectrometer calibrated at 540 nm was employed to analyze the mass of NO₂ on the collection filter that was then subjected to a mass transfer equation to calculate the level of NO₂ for the 24 hours of sampling duration. Structured questionnaire was used to collect data on fuel use characteristics. Data entry and cleaning was done in EPI INFO version 6.04, while data was analyzed using SPSS version 15.0. Analysis of variance, multiple linear regression and linear mixed model were used to isolate determining factors contributing to the variation of NO₂ concentration. RESULTS: A total of 17,215 air samples were fully analyzed during the study period. Wood and crop were principal source of household energy. Biomass fuel characteristics were strongly related to indoor NO₂ concentration in one-way analysis of variance. There was variation in repeated measurements of indoor NO₂ over time. In a linear mixed model regression analysis, highland setting, wet season, cooking, use of fire events at least twice a day, frequency of cooked food items, and interaction between ecology and season were predictors of indoor NO₂ concentration. The volume of the housing unit and the presence of kitchen showed little relevance in the level of NO₂ concentration. CONCLUSION: Agro-ecology, season, purpose of fire events, frequency of fire activities, frequency of cooking and physical conditions of housing are predictors of NO₂ concentration. Improved kitchen conditions and ventilation are highly recommended.

Half of the world's population and about 80% of households in Sub-Saharan Africa depend on biomass fuels. Indoor air pollution due to biomass fuel combustion may constitute a major public health threat affecting children and women. The purpose of this study was to measure levels of indoor NO(2) concentration in homes with under-five children in rural Ethiopia. The study was undertaken in the Butajira area in Ethiopia from March 2000 to April 2002. 24-h samples were taken regularly at about three month intervals in approximately 3300 homes. Indoor air sampling was done using a modified Willems badge. For each sample taken, an interview with the mother of the child was performed. A Saltzman colorimetric method using a spectrometer calibrated at 540 nm was employed to analyze the mass of NO(2) in field samples. Wood, crop residues and animal dung were the main household fuels. The mean (s.d.) 24-h concentration of NO(2) was 97 microg/m(3) (91.4). This is more than double the currently proposed annual mean of WHO air quality guideline. Highland households had significantly higher indoor NO(2) concentration. This study demonstrates high levels of indoor NO(2) in rural homes of Ethiopia. PRACTICAL IMPLICATIONS: Respiratory infection is a major cause of morbidity and mortality, globally. Acute respiratory symptoms are also related to high levels of air pollution. Interventions aimed at reducing exposure to indoor air pollution should focus on cooking and heating practices in developing countries. This study is not undermining the role of other biomass smoke constituents in determining respiratory infections.


The public health impact of Helicobacter pylori (HP) infection is gradually becoming obvious, the bacterium now being implicated as an aetiologic agent in a variety of gastric diseases. Transmission routes still remain unknown, although single risk factors, such as domestic crowding (especially bed-sharing) in childhood and low parental socioeconomic status, have been pointed out in studies from developed countries. In an attempt to study the risk factors in a developing country, we performed a case control study of 242 randomly selected children aged 2-4 y in Butajira rural area in Ethiopia. Blood samples were drawn and a questionnaire administered. The total prevalence of IgG antibody to HP among the children in the region was 48% (116/242). Several risk factors such as: crowding, water, animals, sanitation, etc. correlated strongly to seropositivity in a univariate analysis. After controlling for possible confounding, independent predictors of seropositivity were: living in town (OR = 2.15, p = 0.001), increasing age (OR = 1.71, p = 0.060), and being a Muslim (OR = 1.54, p = 0.005). It could not be excluded that a bad water supply in town could explain the difference in seroprevalence between town and village. These results indicate that, in developing countries, factors relating to community and religion might be as important risk factors for infection with HP in children as characteristics of the family or the home.

BACKGROUND: Information on adult mortality is essentially non-existent in Ethiopia particularly from rural areas where access to health services is limited and most deaths occur at home. This study was conducted with the aim of identifying causes of adult death in a rural population of Ethiopia using a simplified verbal autopsy instrument. METHODS: All deaths in the age-group 15-49 years during the period of 1995-99 were taken from computerized demographic surveillance database maintained by the Butajira Rural Health Program. Data on the causes of death were collected from close relatives of the deceased persons by lay interviewers. Causes of death were diagnosed using "expert algorithm" programmed onto a computer. RESULTS: The major causes of death were acute febrile illnesses (25.2%), liver diseases (11.3%), diarrheal diseases (11.1%), tuberculosis (9.7%) and HIV/AIDS (7.4%). Overall communicable diseases accounted for 60.8% of the deaths. The high levels of mortality from communicable diseases reflect the poor socioeconomic development of the country, and the general poor coverage of health and education services in rural Ethiopia. The tools used in this study can easily be added-on to the numerous health surveys conducted in the country. CONCLUSION: The simplified approach to verbal autopsy diagnosis can produce useful data that can effectively guide priority health interventions in rural areas where routine information system is either very weak or non-existent.


Mortality rates in this country are very high, but most of the deaths occur unattended by a health worker and hence pass unrecorded. As a result, there is a critical lack of information to make sound judgement on what kind of interventions are needed to reduce the high toll of death. This case-control study was conducted in the Meskan and Mareko District, in the ten kebeles that are under continuous demographic surveillance by the Butajira Rural Health Program (BRHP). Included in the study were 515 cases, of which 49.3% were females and 50.7% were males, and 785 controls, of which 52.1% were females and 47.9% males. The most important sociodemographic factors that were found to influence adult death were single marital status (OR 1.63; 95% CI: 1.13, 2.35), having no educated person in the family (OR 1.91; 95% CI 1.11, 3.29), not having gainful occupation (OR 1.40; 95% CI 1.01, 1.82), and perceived poor and very poor economic status (OR 1.97; 95% CI 1.31, 2.94 and OR 2.98, 95% CI 1.73, 5.13, respectively). The male sex (OR 1.46; 95% CI 1.09, 1.95) and living in the rural lowlands (OR 1.54; 95% CI 1.03, 2.31) are also significantly associated with adult mortality. This study revealed that many of the factors associated with adult mortality are related to poor socioeconomic conditions and to the prevailing under development of the rural areas.

ABSTRACT: BACKGROUND: Child undernutrition is a major public health problem in low income countries. Prospective studies of predictors of infant growth in rural low-income country settings are relatively scarce but vital to guide intervention efforts. METHODS: A population-based sample of 1065 women in the third trimester of pregnancy was recruited from the demographic surveillance site (DSS) in Butajira, south-central Ethiopia, and followed up until the infants were one year of age. After standardising infant weight and length using the 2006 WHO child growth standard, a cut-off of two standard deviations below the mean defined the prevalence of stunting (length-for-age <-2), underweight (weight-for-age <-2) and wasting (weight-for-length <-2). RESULTS: The prevalence of infant undernutrition was high at 6 months (21.7% underweight, 26.7% stunted and 16.7% wasted) and at 12 months of age (21.2% underweight, 48.1% stunted, and 8.4% wasted). Significant and consistent predictors of infant undernutrition in both logistic and linear multiple regression models were male gender, low birth weight, poor maternal nutritional status, poor household sanitary facilities and living in a rural residence. Compared to girls, boys had twice the odds of being underweight (OR= 2.00; 95%CI: 1.39, 2.86) at 6 months, and being stunted at 6 months (OR = 2.38, 95%CI: 1.69, 3.33) and at 12 months of age (OR= 2.08, 95%CI: 1.59, 2.89). Infant undernutrition at 6 and 12 months of age was not associated with infant feeding practices in the first two months of life. CONCLUSION: There was a high prevalence of undernutrition in the first year of infancy in this rural Ethiopia population, with significant gender imbalance. Our prospective study highlighted the importance of prenatal maternal nutritional status and household sanitary facilities as potential targets for intervention.

To date all efforts that are aimed at developing a drug that completely clears HIV infection and a vaccine that prevents it have ended up in no conclusive outcomes. The disease is overwhelmingly spreading and it is resulting in huge tolls of morbidity and mortality of human kind all over the world. The only option to avert the spread of the infection is changing behavior through proper behavior change communication. In this study, Knowledge, Attitude and practices related to HIV test and counseling and its link with FP, ANC, and Delivery care services were assessed on those mothers coming to health facilities for the later services. A cross-sectional study was carried out from Jan10-Feb 15, 2006 among attendees of FP, ANC, and Delivery care Services at Butajira Hospital and Butajira Health center. A total of 405 women participants involved using quota sampling technique. Quantitative and qualitative methodologies used. Questions addressed socio-demographic characteristics, VCT related knowledge, attitude and practices, and the linkage between VCT and FP, ANC, and Delivery care services. Data collected using an interviewer administered Amharic version structured questioner, nonparticipant observation checklist for the process of service delivery, and indepth interview with service providers. Trained interview teams administered the questioner. Finally the data were analyzed for the target group as appropriate. Overall, 52.8% of the study subjects have sufficient knowledge score and 81.2% have favorable attitude and 44% have good VCT practice. There was a significant difference between ANC and FP attendees, respectively, level of knowledge 53% & 50%, favorable attitude 86%& 77%, and good VCT practice 86% and 29% (p<0.05). Generally, VCT service linkage with FP, ANC and Delivery care services was weak. Specifically the linkage vii with FP was very weak. FP services were not available in VCT settings. Similarly, on both sides almost no referral. Respondents from ANC and delivery were better informed and referred for PMTCT. The study revealed that participants have high level of knowledge and also favorable attitude but low VCT practice. To increase utilization of services need to strengthen the PMTCT programs, VCT providers should refer their clients to MCH (FP&ANC) and vice versa to minimize missed opportunities and service delivery guideline to integrate especially FP with VCT is required.


This study aimed to assess the applicability of the Theory of Planned Behavior (TPB) in predicting intended and self reported condom use and to examine the effect of previous condom use (PCE) among young adults in rural Ethiopia. A TPB interview was completed by 802 adults (mean age 20.7 years, 74.7% women) and 743 adults (mean age 20.7 years, 76.4% women) reported use of condom at three-months follow-up. The TPB and PCE explained 36% and 2.2% of the variance in intended condom use. Subjective norms discriminated strongly between individuals with and without PCE. The TPB and PCE accounted for 5.3% and 8.5% of the variance in reported condom use. This study concludes that the TPB provided a fairly accurate description of the process underlying intention but was less sufficient to account for self-reported condom use. Ethiopian youth decided on condom use if they anticipated predominantly positive consequences associated with performance and social support, whereas perceived barriers seemed to have less impact. Once they had started to use condoms, they were more likely to continue to do so in the future.

Background: Behavioural modification is the only means for the prevention of the deadly disease HIV/AIDS as there is no vaccine or cure for it. A lot of effort was in place for about two decades to control HIV/AIDS in Ethiopia. However, there is a paucity of community-based information that tracks the knowledge, perception and voluntary counseling and testing (VCT) uptake among rural youth. Methodology: We conducted a cross-sectional study among 3743 randomly selected youth aged 15-24 years from June-September 2004, in south central Ethiopia, Butajira. Results: We found a very high level of awareness (n=3666, 97.7%) and an above average comprehensive knowledge about the mode of prevention of HIV/AIDS (n=3362, 91.7%). Female (OR= 1.86; 5% CI=1.10-5.66), students (OR=4.87; 95% CI=1.54-15.36), those who were employed in government or private sector (OR=6.69; 95% CI=1.96-22.84), literates (OR=7.83; 95% CI=3.20-19.15) and urban residents (OR=9.14; 95% CI=1.23-68.08) were more likely to be aware about HIV/AIDS than their counterparts. However, a substantiate proportion of the youth (49%), had misconception about the mode of transmission. Eighty one percent of the youth do not perceive themselves to be at risk of HIV with their current behaviour and 75% (n=774 of 3006) with their lifetime behaviour. Seventy-nine percent (n=2905) of the youth were aware of VCT. However, among those who were aware, only 6% (n=178) were tested. Married youth, (OR=15.9; 95% CI=8.5-29.1) and literate (OR=1.66; 95% CI=(1.08-2.55) were more likely to be tested for HIV than their counterparts. Conclusion: After two decades of HIV prevention intervention in the country, misconception about the prevention of HIV/AIDS was high among youth in rural Ethiopia. The low level of risk perception and VCT use makes the youth population vulnerable to HIV. Provision of quality information is necessary to avoid misconceptions, change their risk perceptions and behaviour.

Background: Despite the anticipated high impact of HIV and AIDS among young people, AIDS related mortality is not well documented because of the lack of death registration systems in Ethiopia. The objective of this analysis was to investigate the trends in mortality among young adults (aged 10-24 years) in the era of the AIDS epidemic. Methods: We analyzed data for young adults aged between 10-24 years using the Butajira Rural Health Programme (BRHP) open cohort database. The study covers 1 urban and 9 rural communities, which were initially randomly selected from the Butajira district. The BHRP database covers the period 1987-2004, recording vital events and migration at the household level after an initial baseline census in 1987, using village-based data collectors. The data included 34,150 young people who contributed a total of 248,154 person years. Results: In the 18-year follow-up period, 1,030 young adults died, giving an age-specific crude mortality rate of 4.2 per 1,000 person-years. The trends of mortality in this population declined from 6 per 1,000 person-years in 1987-1989 to less than 2 per 1,000 person-years in 2002-2004. Deaths due to HIV were recorded at a rate of only 0.02 per 1,000 person-years, according to causes of death reported by family care givers. A multivariate regression model showed that young adults from the rural highlands and lowlands had a higher risk of death (adjusted rate ratios 1.99 [1.40-2.83] and 2.58 [1.82-3.66] respectively) than young urban adults, even after adjusting for water source, literacy and housing type. The earlier cohorts (1987-1989 and 1990-1994) had higher risks of mortality than the latest cohort (1999-2004) - (adjusted rate ratios 1.91 [1.59-2.29] and 2.03 [1.75-2.35] respectively). Conclusion: A remarkable decline in mortality was observed in this population with little sign of excessive HIV/AIDS-related mortality appearing during this 18-year period. However, the occurrence of AIDS-related deaths in the latter part of the study period suggests appropriate interventions to counter the developing HIV epidemic are justified.


A prospective weekly home surveillance study was undertaken to determine morbidity patterns within the Butajira Rural Health project in central Ethiopia. Overall prevalence of illness was 5.8% in 1216 person-years observed among rural Ethiopian children aged under 5 years. Acute respiratory infections (ARI) (prevalence 2.8%) and acute diarrhoea (2.4%) were the commonest conditions. Episodes of illness were distributed unequally among children, with a mean of 2.34 episodes per child. These included an average of 1.13 episodes of ARI (of which 0.16 had lower respiratory symptoms [ALRI]) and 1.17 episodes of acute diarrhoea. Sanitation factors were the principal risks for gastroenteritis, while living in rural areas predisposed children to ARI. Parental factors such as illiteracy were also linked to morbidity.

Based on a one-year weekly home surveillance study, morbidity patterns of 1,304 children under five years of age in a rural Ethiopian community were measured, together with nutritional and health behavioural determinants. Using Poisson regression models, the study showed that nutritional and health care factors make a significant impact on under-five morbidity. Gastroenteritis was particularly associated with child care factors, while acute respiratory infections were particularly associated with nutritional factors. Lack of immunization, low birthweight and pre-term delivery (more than one month early) were not found to have any independent effect on morbidity. Breast feeding was universal, but the introduction of supplementary foods was found to protect from excess morbidity. The study concludes by discussing possible applications of the results in intervention programmes.


OBJECTIVE: To analyze the clinical presentation, causes, outcomes of surgical intervention (as measured by postoperative morbidity and mortality), and variables associated with adverse outcomes of patients with surgically important acute abdominal pain. DESIGN: A cross sectional hospital based longitudinal case series analysis. SETTING: Glen C Olsen Memorial Primary General Hospital. Butajira, Ethiopia. SUBJECT: All patients admitted and operated for acute abdominal pain over a period of two years. (Oct. 10, 2004 -Nov. 20, 2006) OUTCOME MEASURES: Being referred from other centers, duration of symptoms, types of symptoms and physical findings, relevant investigations, diagnosis and procedure done, hospital stay, mortality, morbidity, and variables associated with adverse outcomes. RESULTS: A total of 143 patients were operated and of them 55.2% were referred from other health care facilities. Male to female ratio was 2.5:1 and mean age of presentation was 26.6 +/- 16.6 years. Patients presented after an average of 88.4 +/- 87.9 hours of symptom onset. Intestinal obstruction 50 (34.9%), acute appendicitis 35 (24.5%), Intussusceptions 23 (16.1%) and bowel perforation 16 (11.2%) were the leading causes of admission. Clinical variables found to have statistical significant association (P < 0.05) with adverse outcomes were referred patients, those with abdominal distension, absolute constipation, deranged vital signs, abdominal mass, guarding, positive vaginal/rectal examination and/or leukocytosis. The average hospital stay was 8.74 +/- 4.66 days and 28.7% of patients develop one or more of acute complications. Forty two (29.4%) patients presented with deranged vital signs from either septic or hypovolemic shock and of them 7 (4.9%) died with subsequent multiple organ failure. CONCLUSION: Patients who presented early and immediate corrective measures were instituted had better outcome while those seen late developed unfavorable outcome with significantly higher complications. Therefore early detection and treatment of acute abdomen is essential.

BACKGROUND: Bipolar disorders have been extensively studied in the high-income countries but community-based studies from low-income countries are very rare. The main objectives of the current study are to estimate the lifetime prevalence of bipolar I disorder in the general population of the Butajira district in Ethiopia and to characterize the onset and course of the disorder in a predominantly treatment naive population. METHOD: Cases were identified by a door-to-door screening of the district's entire adult population aged 15 to 49 years (N=83,387), where 68,378 were successfully screened. CIDI and key informant method were used in the first stage of screening followed by confirmatory SCAN interviews. RESULTS: Three hundred fifteen cases were identified and complete information could be collected for 295 individuals. Of these, 55.3% were males, 83.1% were from a rural area, and 70.2% were illiterate. Lifetime prevalence of bipolar I disorder was estimated to be 0.6% for males and 0.3% for females. The mean age of cases was 29.5 years, with no significant sex difference. The mean age of first recognition of illness was 22.0 years; for men 22.3 years and for women 21.2 years. The mean age at onset of manic phase of the illness was found to be 22.0 years (22.5 for men and 21.4 for women). The mean age at onset of depressive phase was 23.4 years (24.1 for men and 22.5 for women). There was no significant sex difference in the age of onset of manic or depressive phases. In 22.7% of the cases bipolar I illness started with a depressive episode and in 77.3% of the cases it started with a manic episode. Two or more episodes of the illness were reported by 64.1%. Over half of the study subjects (55.9%) had never sought any help from modern healthcare sector, and only 13.2% had ever been admitted to psychiatric hospital. During the survey 7.1% of the cases were undergoing treatment. A previous suicide attempt was reported by 8.1% of the males and 5.4% of the females. CONCLUSION: The overall lifetime prevalence and age of onset are within the range of findings from other studies in Western countries. In contrast to most previous studies, prevalence of the disorder among females was half of that among males. Our finding that prevalence of this disorder among males and females appeared to be different from many other studies warrants further research.

BACKGROUND: Neurological soft signs (NSS) have been reported to be more prevalent in patients with schizophrenia compared to other psychiatric and non-psychiatric controls. However, this issue in bipolar I disorder seems to be understudied. AIMS: The aims of the study were to examine the extent to which NSS are associated with bipolar I disorder cases compared to healthy controls, to assess the possible relationship between NSS and clinical dimensions of the disorder, and to explore the association of sociodemographic characteristics with the occurrence of NSS in cases with this disorder. METHODS: Predominantly treatment naive cases of bipolar I disorder from rural communities were assessed for NSS using the Neurological Evaluation Scale (NES). RESULTS: This study showed that patients with bipolar I disorder performed significantly worse on two NES items from the sensory integration subscale, on one item from motor coordination and on four items from the 'others' subscale, the highest difference in performance being in items under the sequencing of complex motor acts subscale. Clinical dimensions and sociodemographic characteristics appeared to have no relationship with NES total score. CONCLUSIONS: Bipolar I disorder patients seem to have more neurological dysfunction compared to healthy controls particularly in the area of sequencing of complex motor acts. In addition, the finding suggests that NSS in bipolar I disorder are stable neurological abnormalities established at its onset or may be essential characteristic features of the disorder representing stable disease process that existed long before its onset.


OBJECTIVE: To assess the suitability of using oral-fluid samples for determining the prevalence of immunity to vaccine-preventable infections. METHODS: Paired blood and oral-fluid samples were obtained from 853 individuals of all ages from a rural Ethiopian community. Oral fluid around the gums was screened for measles- and rubella-specific antibodies using enhanced IgG antibody capture (GAC) enzyme-linked immunosorbent assays (ELISAs), and for anti-HBc antibodies using a prototype GACELISA. IgG antibodies in serum to measles, rubella and HBc were determined using commercial ELISAs. FINDINGS: Relative to serum, oral fluid assay sensitivity and specificity were as follows: 98% and 87% for measles, 79% and 90% for rubella, and 43% and 87% for anti-HBc. These assay characteristics yielded population prevalence estimates from oral fluid with a precision equal to that of serum for measles (all ages) and rubella (ages <20 years). CONCLUSION: Our results suggest that oral fluid could have the potential to replace serum in IgG antibody prevalence surveys. Further progress requires assessment of variation in assay performance between populations as well as the availability of standardized, easy to use assays.

Background: In order to design effective tobacco control policy in low income countries, it is essential to understand smoking prevalence and predictors. In Ethiopia, most of what is known on the prevalence of smoking comes from studies in larger towns. Little is known about predictors of smoking in any Ethiopian setting. Objectives: The analyses reported were designed to determine smoking prevalence and social factors associated with ever smoking in Butajira town. Methods: Cross-sectional study nested within a large questionnaire-based survey undertaken in Butajira, southern Ethiopia, between February and April 2003. Results: Prevalence data were available on 1895 individuals aged 15 years and over. 15.4% of men and 0.2% of women had ever smoked, and 11.8% and 0.2% respectively, were current smokers. Using logistic regression, male gender (p<0.001), increasing age (p<0.001), being a follower of Islam (p=0.002), and being in formal employment (p=0.033) were found to be independent predictors of ever smoking. Conclusions: Socio-demographic predictors of cigarette smoking in Butajira Ethiopia are different to those found in high income countries. The predictors found here suggest that increased taxation may be the most effective tobacco control measure in this low income country setting.


The associations between under-5 mortality and its health and behavioural determinants were investigated in a rural district of Ethiopia, by means of a concurrent case-referent technique nested within a study-base population established in 1987. Three-hundred and six infant and child deaths registered over a period of 1 year, were contrasted with 612 controls, matched for age, sex and study area. Data were collected by trained non-medical workers using a structured questionnaire. Breastfeeding and supplementary feeding came out as strongly protective against under-5 mortality, even when controlling for parental and environmental determinants. Early termination of breastfeeding was demonstrated to have a substantial impact on mortality, particularly on that caused by diarrhoea. Late introduction of supplementary feeding, particularly of protein origin, was also associated with increased under-5 mortality. When the relative impacts of parental, environmental and behavioural determinants are compared, the greater impact of parental factors can be demonstrated, especially among infants.

A total of 492 deaths of children below 5 years of age were registered during a 2-year period of demographic surveillance in a rural population of Ethiopia, where an epidemiologic study base population of 28,780 individuals was established in 1987. Data were collected by lay-reporters using a verbal autopsy method. The under-five cumulative mortality rate was 209 per 1000 children. When sub-divided into infants and children 1-4 years, the respective yearly mortality rates were 101 and 32.3 per 1000. There were considerable variations within the district by Peasants' Associations. Rural Lowlands experienced the highest mortality rates, especially for children 1-4 years. Mortality trends over a 2-year period indicate a significant increase for the child population, but not for infants. Similar trends were observed for boys and girls although the rates for boys were generally higher especially during infancy. More deaths occurred in the months of April, June, and July, and October and November indicating two peak seasons in both years. More deaths occurred in Peasant's Associations that were furthest from the health centre. Major probable causes of death were acute respiratory infections, measles, and diarrhoea. It is concluded that even in rural areas of a developing country it is possible to collect from mothers the much needed and valid fertility and mortality data through epidemiological surveillance by using lay-reporters.


During one year of follow-up, 306 deaths of children under the age of 5 years were included in a concurrent case-referent study that was based on a population estimated at 28,780 in 1987. A total of 612 live referents, matched for age, sex and study area, were also selected from the study population through density sampling. Data were collected by lay reporters by verbal autopsy. For the study period the estimated cumulative under-five mortality rate was 293 and the infant (0-11 months old) mortality rate was 136 per 1000. Major probable causes of death were diarrhoeal disease or acute respiratory infections (ARI). The relative importance of parental and environmental characteristics was assessed using conditional multiple logistic regression analysis. Under-five mortality was associated with paternal illiteracy, maternal ethnicity, and not being in the committee of people's organizations. Parental factors affected the infants relatively more than they did the children, especially with regard to ARI mortality. This was also noted with "absence of window", a proxy measure for evaluating the type of housing. In terms of etiological fractions a greater number of under-five deaths could be ascribed to parental than environmental conditions, with relatively more infants being affected than children.

Ten study populations sampled from a total of 86 communities in a rural Ethiopian area, have been registered and followed for a period of four years. A baseline census revealed a median age of 15 years, a literacy rate of 24%, poor housing and environmental conditions, and low utilization of the existing health care facilities. A surveillance system was established which made it possible to estimate the occurrence of vital events. This showed a crude birth rate of 40.3/1000, a crude death rate of 16.4/1000, a life-expectancy at birth of 48 years, an infant mortality rate of 114/1000, a yearly child (1-4 years) mortality rate of 36/1000, and an under-five mortality rate of 210/1000. The implications of these data in terms of the planning and operations of research and health services are discussed, and on-going and projected studies are outlined emphasizing the methodological potentials of this epidemiological study base.


Various infectious agents, such as Toxoplasma gondii, have been hypothesized to be potentially relevant etiological factors in the onset of some cases of schizophrenia. We conducted a randomized, double-blind, placebo-controlled treatment trial in an attempt to explore the hypothesis that the symptoms of schizophrenia may be related to infection of the central nervous system with toxoplasma gondii. Systematically selected patients with ongoing and at least moderately severe schizophrenia from Butajira, in rural Ethiopia, were randomly allocated to trimethoprim or placebo, which were added on to participants' regular antipsychotic treatments. Trial treatments were given for 6 months. The Positive and Negative Syndrome Scale (PANSS) was used to assess outcome. Ninety-one patients were included in the study, with 80 cases (87.9%) positive for T. gondii immunoglobulin G antibody. Seventy-nine subjects (87.0%) completed the trial. The mean age of subjects was 35.3 (SD = 8.0) years, with a mean duration of illness of 13.2 (SD = 6.7) years. Both treatment groups showed significant reduction in the overall PANSS score with no significant between-group difference. In this sample of patients with chronic schizophrenia, trimethoprim used as adjuvant treatment is not superior to placebo. However, it is not possible to draw firm conclusion regarding the etiological role of toxoplasmosis on schizophrenia based on this study because the timing and the postulated mechanisms through which toxoplasmosis produces schizophrenia are variable.

Background: The occurrence of psychosocial problems related to epilepsy is well recognized and in certain situations could even be more troublesome than the effect of the seizure disorders themselves. Objective: This study was conducted to assess the magnitude of stigma experienced by patients and relatives of people with epilepsy in a rural Ethiopian community, and to identify socio-demographic and other factors that may be associated with stigma in this setting. Method: Hospital based cross-sectional survey. Result: The prevalence estimate of perceived stigma was found to be 81%. Students with epilepsy reported experiencing significantly greater levels of stigma at school (X²=39.065, p=0.000) compared with people living and working in other settings. Those who had seizure at least once a month reported being stigmatized more often compared to those who had less frequent seizure attacks (X²=12.76, p=0.002). Conclusion: Stigma was found to be a common problem among patients suffering from epilepsy, and their relatives. The results reinforce the need for creating awareness among patients, relatives and the community at large about epilepsy and addressing misconceptions attached to it.


Several studies have reported neurological soft signs (NSS) to be common in individuals with schizophrenia. The majority of these studies are based on clinical samples exposed to neuroleptic treatment. The present study reports on 200 treatment-naive and community-identified cases of schizophrenia and 78 healthy individuals from the same area, evaluated using the Neurological Evaluation Scale (NES). The median NES score was 5.0 for cases of schizophrenia and 1.5 for healthy subjects. The impairment rate of NSS in cases with schizophrenia was 65.0% against 50.0% in healthy subjects, and the difference was statistically significant (chi² = 5.30; df = 1; P < 0.021). NSS abnormality is as common in treatment-naive cases as reported in many studies in those on neuroleptic medication. There was no significant relation between the NSS impairment and duration of illness, remission status, positive symptoms, negative symptoms and disorganized symptoms.

BACKGROUND: Studies have consistently shown that both the subjective and objective dimensions of burden among family members of schizophrenia patients and other psychiatric disorders are prevalent. However, as most of these reports were from western societies, we lack information on the subject in developing countries. METHOD: The study was conducted within the framework of the ongoing epidemiological study of course and outcome of schizophrenia and bipolar disorders in a rural population of 15-49 years of age. Three hundred and one cases of schizophrenia and their close relatives participated in the study. RESULTS: Family burden is a common problem of relatives of cases with schizophrenia. Financial difficulty is the most frequently endorsed problem among the family burden domains (74.4 %). Relatives of female cases suffered significantly higher social burden (Z = 2.103; p = 0.036). Work (Z = 2.180; p = 0.029) and financial (Z = 2.088; p = 0.037) burdens affected female relatives more often than males. Disorganised symptoms were the most important factors affecting the family members in all family burden domains. Prayer was found to be the most frequently used coping strategy in work burden (adj. OR = 1.99; 95 % CI = 1.08-3.67; p = 0.026). CONCLUSION: Negative impact of schizophrenia on family members is substantial even in traditional societies such as those in Ethiopia where family network is strong and important. The scarce existing services in the developing countries should include family interventions and support at least in the form of educating the family members about the nature of schizophrenia illness and dealing with its stigma and family burden.


BACKGROUND: Mental disorders are known to be as prevalent in Ethiopia as in other countries. Only 26 psychiatrists are working in the country with close to 80 million inhabitants. To this should be added clinics run by psychiatric nurses in most of the general hospitals. This means that still most of the mentally ill in the country are treated and cared for in a traditional way. OBJECTIVES: This paper presents the situation regarding traditional treatment of mental illness in a rural area in central Ethiopia, Butajira, with a population of about 350,000 persons, predominantly Muslim. METHODS: All traditional healers in Butajira area were mapped by asking key informants. Twenty-four healers were so identified and interviewed about their perception of mental illness and the treatment they offer. Clients from the healers and patients from the local health centre were interviewed about their opinions on the service given. FINDINGS: A majority of both clients and patients were satisfied with the consultation, but the clients of the healers were more satisfied than the patients in health centres. CONCLUSION: As most persons with mental disorders are treated by traditional healers in rural Ethiopia and in most other developing countries it is important to do more comprehensive studies on the traditional treatment and to find ways of collaboration between traditional practice and modern medicine.

OBJECTIVE: To estimate and compare dietary energy intake (DEI) and total energy expenditure (TEE) among adults, using questionnaires. DESIGN: Comparative, cross-sectional study. SETTING: Community-based, at the demographic surveillance site (DSS) in Butajira District of Ethiopia. SUBJECTS: A total of 619 adults, 18-64 years of age, were randomly selected from among the urban and rural population of Butajira using the DSS sampling frame. Habitual dietary intake and physical activity were assessed using questionnaires. BMR was estimated using a regression equation, and TEE was calculated from BMR and the metabolic energy equivalent task (MET) and duration of reported activities. Physical activity level (PAL) was calculated as TEE/BMR, while food intake level (FIL) was calculated as DEI/BMR. The mean DEI:TEE ratio was used to evaluate reported DEI at the population level, while individual misreporters were identified by applying the Goldberg cut-off points at three levels of PAL. RESULTS: Based on the Goldberg method, 57% of the study participants were identified as acceptable reporters of DEI, among whom mean TEE was 8.21 (95% CI 8.01, 8.42) MJ (1963 (95% CI 1914, 2012) kcal), mean DEI was 8.13 (95% CI 7.93, 8.34) MJ (1944 (95% CI 1895, 1993) kcal) and mean DEI:TEE was 1.01 (95% CI 0.99, 1.04). CONCLUSION: The dietary history and physical activity questionnaires provide comparable estimates of mean energy intake and expenditure at a population level. Acceptable reporters have to be identified in order to obtain better estimates. Questionnaire-based estimates of energy intake should not be interpreted without an inherent system of comparison or validation.


BACKGROUND: The Edinburgh Postnatal Depression Scale (EPDS) has been used successfully across diverse cultural settings. However, a recent study found poor validity in detecting postnatal common mental disorders (CMD) in rural Ethiopia. Using similar methodology, the study was replicated in the capital, Addis Ababa. METHODS: Semantic, content and criterion validity of EPDS, Kessler Scale-6 (K6) and Kessler Scale-10 (K10) were assessed in postnatal women attending vaccination clinics. Criterion validation was undertaken on 100 postnatal women, with local psychiatrist diagnosis of CMD using the Comprehensive Psychopathological Rating Scale (CPRS) as the criterion measure. RESULTS: The areas under the Receiver Operating Characteristic (AUROC) curve for the EPDS, K6 and K10 were 0.85 (95%CI 0.77-0.92), 0.86 (95%CI 0.76-0.97) and 0.87 (95%CI 0.78-0.97), respectively. The EPDS generated sensitivity, specificity and misclassification rates of 78.9%, 75.3% and 24.0%, respectively at an optimal cut-off point of 6/7. The corresponding values for the K6 were 84.2%, 82.7% and 17.0% at a cut-off point of 4/5, and for K10 were 84.2%, 77.8% and 21.0% at a cut-off point of 6/7, respectively. The internal reliability Cronbach's alpha for the EPDS, K6 and K10 were 0.71, 0.86 and 0.90, respectively. LIMITATIONS: Not all postnatal women bring their infants to vaccination clinics which may limit generalisability. CONCLUSION: The EPDS, K6 and K10 all demonstrated acceptable clinical utility as screening scales for postnatal CMD in an urban setting in Ethiopia. The marked urban-rural difference in EPDS performance within Ethiopia highlights the difficulty of applying urban-validated instruments to rural settings in LAMIC.

Cross-sectional survey using a self-administered anonymous questionnaire was conducted to assess knowledge, attitude and practice of contraception and sexuality. The questionnaire was filled out in April 2000 by 752 high school students in Butajira, Ethiopia. The mean age of the subjects was 17.1 years. One hundred thirteen never married students (17.5%) claimed to have experienced intercourse; 22.0% of boys and 8.8% of girls. Sexual abstinence was not dictated by perception of risk. About 78% of boys and 91% of the females did not use modern contraceptives at their last sexual intercourse. Nine female students claimed to have been pregnant: two had delivered and seven had induced abortion. The most important reasons for non-use of contraception were lack of adequate knowledge, partner refusal, perception of diminished pleasure and embarrassment to buy. Seventy-one percent of the respondents knew at least one contraceptive method. Over half of the students had no source of information on sexuality and for 25.9% school was the main source of information. The attitude to sexuality was conservative, but liberal to introduction of sex-education at secondary schools. Higher percentage of boys admitted that they had exaggerated their response on sexual matters; girls admitted under-reporting. It is recommended that sex and family life education be discussed openly in schools and included in curricula.


Tuberculous lymphadenitis (TBLN) is a diagnostic challenge in sub-Saharan Africa, where there is a high rate of human immunodeficiency virus (HIV) infection. This study aimed to find ways to improve the diagnosis in Butajira, rural Ethiopia, where TBLN constitutes 40% of the total tuberculosis (TB) diagnosis. Among 147 clinically suspected cases, 107 (72.8%) were confirmed as TBLN by fine-needle aspiration (FNA) cytology and acid-fast bacillus (AFB) smear examination. Of the remaining 40 cases, denoted non-tuberculous lymphadenitis (NTBLN) after this smear examination, 37 (92.5%) showed a cytological pattern with neutrophil aggregates. The clinical manifestations were similar and cervical lymph nodes were the most affected in these 2 groups. 24 of the 107 TBLN cases (22.4%) and 9 (22.5%) of the other cases were seropositive for HIV infection (p > 0.5). FNA cytology combined with AFB smear examination is a good alternative to histology in rural Ethiopia where the expertise in taking biopsies is very limited. Polymerase chain reaction for Mycobacterium tuberculosis complex DNA was positive in 15 of 23 cases tested with NTBLN cytology, showing that an additional independent criterion for the presence of M. tuberculosis is needed for diagnosis in lymphadenitis cases of this kind. These findings could help to strengthen the diagnostic algorithm suggested by the National TB Control Program.