

## ORIGINAL PAPER

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# The prevalence of depression in two districts of Uganda

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**Abstract** *Background* Little information is available on the prevalence of depression in Uganda. Given the recent political history of Uganda, depression may be common. *Method* The aim was to estimate the point prevalence of probable clinical depressive disorder among the general population in two contrasting districts of Uganda. Translated versions (in Madi and Lusoga) of the 13-item Beck Depression Inventory (BDI) were administered to a systematic sample of adult residents in the Adjumani and Bugiri districts of Uganda. *Results* The overall prevalence of probably clinically significant depression (BDI score of 20–39) was 17.4%. Significantly higher rates were found in women and in Adjumani District. *Conclusion* Depression is common in Uganda and particularly in the more troubled and less socially cohesive district of Adjumani.

**Key words** depression – prevalence – Beck Depression Inventory – Uganda – epidemiology

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## Introduction

Depression represents a significant burden in the developed and developing nations (Murray and Lopez 1996). Little information is available on the nature and prevalence of depression in Uganda, although three studies conducted over 20 years apart give some estimates of the prevalence of psychiatric disorder there (Orley and Wing 1979; Kasoro et al. 2002; Bolton et al. 2004). Orley and Wing (1979), using the Present State Examination (PSE), estimated that 25.3% of rural communities in two villages in central Buganda suffered from diagnosable mental illness, and that the commonest disorder was depression (CATEGO depressive classes, prevalence 18.9%). In a recent survey conducted in western Uganda, Kasoro et al. (2002) estimated a prevalence of 30.7% of mental illness among the adult population. Many of the disorders reported were of severe mental illness, but it was not possible to discern the levels of depression. Bolton et al. (2004), using the Hopkins Symptom Check List (HSCL), found rates of 21% for major depressive disorders in the people of the Masaka and Raki Districts of southern Uganda. These rates of disorder are high and it is not known whether they are consistent across Uganda.

This paper reports on a study carried out to estimate the point prevalence of probable depressive disorder among adult members of the general population in two contrasting districts of Uganda. No indigenous screening or rating instrument is available in Uganda. The study employed the 13-item Beck Depression Inventory (BDI) to measure depressive symptoms.

## Subjects and methods

### ■ Description of study areas

#### Uganda

Uganda has been affected by many years of bloody civil and political turmoil since 1971, and large segments of the populations in war-affected areas have been exposed to atrocities of varying severity. In line with the emergence of social, political and civil strife in Uganda, and along with the emergence of the HIV/AIDS pandemic, several publications have detailed the existence of serious mental health problems in Uganda (Boardman and Ovuga 1997; Kasoro et al. 2002; Ovuga et al. 1999). Current health service delivery is characterized by inadequate level of mental health services in Uganda, despite the demonstration of psychosocial need in war-torn northern Uganda (Barton and Mutiti 1998). Given the recent political history of Uganda, it may be predicted that depression would be common.

#### Adjumani district

Adjumani district lies in the northern part of Uganda, and has a semi-arid climate. The district was created in 1997 for the purpose of bringing political and social services closer to the rural population. The district has suffered from the impact of continuing armed insurgency that has affected northern regions since 1986 when the population returned from 10 years of exile in Southern Sudan. The main source of economic livelihood of the district is agriculture. The living conditions of the district are poor, and the standards of health are low. Bacillary dysentery is common. Many individuals are alienated from their social support systems. The district population is 202,491 with an annual growth rate of 6.3%. The fertility rate is 6.8% and life expectancy for males is 38.5 years against 43.7 years for females. The main languages are Madi and English.

#### Bugiri district

Bugiri district, situated on the shores of Lake Victoria in the south-eastern corner of Uganda, has weather conditions more conducive to agricultural practice than in Adjumani district. The general standard of living in Bugiri district is good and household members receive considerable support and guidance from family elders. Bugiri district has suffered relatively less from the impact of armed insurgency and the traumatic social and political history of Uganda. The district population is 239,307 with an annual growth rate of 3.4%. The fertility rate is 6.7% and life expectancy for males is 47 years and that for females is 44 years compared to the national figures of 45.2 years for males and 53.9 years for females. The main languages are Lusoga and English.

### ■ Sample size determination

In the present study, the proportion (P) of depressed individuals in the general population of adults aged 18 years and older was estimated with the error of estimation controlled to within 2% of the true value of P with the probability greater than 0.95. The proportion (P) was determined using estimated prevalence rate of depressed individuals as the prevalence rate of depressed individuals in the general population of Uganda is yet unknown. The sample size (n) can be obtained from the formula (Barnett 1986: p 44):

$$N \text{ will be greater or equal to } [(1.96/0.02)^2 P (1-P)].$$

Using the estimated value of P = 0.10 or 10%, which is the accepted estimate of the proportion of depressed individuals (Weissman et al. 1996; Vorcaro et al. 2001; Panel 1993), the value of N is 864. Since representative samples were drawn from the two districts, the actual sample size from each district was determined to be proportionate to the size of the parent population size. One adult participant was interviewed per household, and equal opportunity was provided to both men and women, and married as well as single individuals in the community to participate in the study.

### ■ Selection of the households and participants for the study

The modified stratified cluster sampling method with probability proportional to size, which has been widely used in rural settings of developing countries (Bennet et al. 1991; Lemeshow and Robinson 1985; MacFarlane 1996) was used to select eligible residents aged 18 years and older in the two districts.

To select households, a central location in a randomly selected village was chosen. This was a market place, a church, community resource centre, or school. A pencil was spun on the ground to indicate the direction in which the first household would be selected. There was little variation in the socio-economic status of rural communities around these central locations in the two districts. A list of household heads from the central location in the direction chosen to the edge of the village was made with the assistance of the village leader. Pieces of paper of equal size and similar colour were cut from white foolscap paper. The name of one household leader was written on one of the pieces of paper. This exercise was repeated for all the household heads. The pieces of paper were then folded in similar manner, placed in a container and shuffled as in a lottery. A research assistant then picked one piece of paper at random. One adult aged 18 years or older was then selected from this household from among those found at home at the time of the visit to the village. To do this, the process involved in the lottery method as described above was repeated at each household, and the exercise was carried out until the sample size calculated for each village was attained. The household with its door next to the first was chosen and one adult selected in similar manner.

### ■ Data collection and management

After the completion of the sampling exercise in the village, all selected adults gathered at the central location where interviews were conducted in small groups by each of five interviewers, and supervised by the first author (EO) and two research assistants. Of the five interviewers in each district, four were psychiatric nurses and the other a health educator who served as quality controller for instrument accuracy and clarity. Health educators in Uganda are responsible for the production of health educational materials. The respective District Director of Health Services selected all the interviewers.

The subjects were asked to complete in writing several questionnaires during the interviews including the 13-item Beck Depression Inventory (BDI) (Beck and Steer 1987). When a subject was illiterate, a resident of the household or village who could write and read helped complete the questionnaires on the instruction of the respondent. Each interview began with detailed explanation on the procedure for completing the questionnaires. Questions from the respondents were answered for clarification. On average, this initial phase lasted 15–30 min to ensure full comprehension by all participants. Most rural inhabitants did not complete or proceed beyond standard 7 in primary education. Every participant was instructed and supervised to provide their responses on the questionnaires confidentially. To ensure this, EO and the research assistants, throughout each interview session, supervised the interviewers and respondents. Every evening, the questionnaires were checked for completeness. Data were entered using EPI INFO version 6.04, and analysed using SPSS version 10.1.

### ■ Measurement of depression

The 13-item Beck Depression Inventory (BDI) was used to estimate the probable prevalence of depression. The BDI has been widely used in research (Groth-Marnat 1990) to screen for depression in the general population (Beck et al. 1961) and special population groups (Parker et al. 2001; Beck et al. 1996; Yeung et al. 2002). The 21-item standard form BDI and the 13-item short form have been demonstrated to correlate highly with each other (Tanaka-Matsumi and Kameoka 1986), to have high internal consistency (Tanaka-Matsumi and Kameoka 1986), to discriminate psychiatric from non-psychiatric interviewees, and to identify persons with self-reported anxiety (Gould 1982).

The BDI was translated by independent translators; translated back and forth into the local languages (Madi and Lusoga) of the par-

ticipating communities by the interviewers under the supervision of EO, and pre-tested during a one-week intensive training workshop for the five interviewers and two research assistants. The training workshops were conducted in the district hospital in each district. Comments received from participants during the pre-testing exercise were used to modify the instrument where necessary. The BDI was scored on a four-point scale 0–3, giving a possible range of 0–39.

## Results

### ■ Study sample

A total of 571 questionnaires were collected from Adjumani district and 428 from Bugiri; 47 questionnaires from Adjumani and 13 from Bugiri were discarded for being incomplete, leaving available for analysis 524 (91.7%) questionnaires from Adjumani and 415 (97%) questionnaires from Bugiri. Except for larger average household size in Bugiri, there were no significant differences in the demographic characteristics between Adjumani and Bugiri districts. Respondents with incomplete data were more likely to be employed, have a family history of mental illness, and less likely to have a personal history of mental illness. There were no significant differences between the two groups in marital status, age and gender distribution.

### Adjumani district sample

There were 323 (61.8%) males and 200 (38.2%) females; one respondent did not provide information on gender. The mean age of males (mean = 34.3, SD = 12.2, median = 31.6) was similar to the mean age of females (mean = 31.9, SD = 8.9, median = 30.6). Of the respondents, 82.8% were married, 9.7% were single, 2.3% were divorced or separated, 3.3% were widowed and 1.9% lived with sexual relationship outside formal marriage. Most (95.6%) were Uganda nationals and 4.4% were Sudanese refugees. In all, 93.7% of the respondents were peasant farmers, and only 6.3% worked in any profession. Each family had a mean of 5.0 (SD = 4.0, range = 31) members. Fewer females took part in the survey because of their heavy domestic responsibilities, and most were away in their gardens or engaged in other domestic chores at the time of visits to their villages.

**Table 1** Frequency distribution of Beck Depression Inventory (BDI) score categories according to district of residence

BDI score category	Adjumani district		Bugiri district		OR (95% CI)
	N	%	N	%	
Score 0–4 (No or minimal depression)	86	16.4	116	28.0	Reference
Score 5–9 (Mild depression)	95	18.1	137	33.0	0.94 (0.63–1.40)
Score 10–19 (Moderate depression)	205	39.1	137	33.0	2.02 (1.40–2.92)
Score 20–39 (Severe depression)	138	26.3	25	6.0	7.45 (4.37–12.91)

BDI score 0–4 was the reference point

### Bugiri district sample

As in Adjumani district, and for the same reasons, fewer females took part in the survey. There were 304 (73.4%) males and 110 (26.6%) females. One respondent did not provide information on gender. The mean age of males (mean = 33.7, SD = 13.3, median = 30.2) was similar to the mean age of females (mean = 32.8, SD = 13.8, median = 29.2). Of the respondents, 84.2% were married, 10.8% were single, 2.7% were divorced or separated, 2.2% were widowed and 1.1% lived with sexual relationship outside formal marriage. Almost all respondents (98.2%) were Uganda nationals, the remainder being Sudanese (1.4%), Somali (0.2%) and Congolese (0.2%). In all, 90.8% of the respondents were peasant farmers and only 9.2% worked in any profession. Each family had a mean of 7.0 (SD = 5.0, range = 40) members.

### ■ Prevalence of depression

In order to examine the prevalence of depression, the BDI scores were divided into four categories: 0–4 (no or minimal depression), 5–9 (mild depressive mood), 10–19 (mild to moderate depressive mood) and 20–39 (moderate to severe depression). These ranges took into account the uncertainty inherent in assigning significance to service utilization based on prevalence figures in psychiatric epidemiology (Craig and Van Natta 1976; Goldberg 1972; Narrow et al. 2002; Wakefield and Spitzer 2002). Results are presented for Adjumani and Bugiri districts separately and combined.

The distribution of respondents across the BDI categories revealed that 202 (21.5%) of the sample scored 0–4 on the BDI, 232 (24.7%) scored 5–9, 342 (36.4%) scored 10–19, and 163 (17.4%) scored 20–39. Table 1 shows the BDI score categories separately for the two districts. Respondents from Adjumani district were twice as likely as those from Bugiri to score in the moderate to severely depressed mood range ( $\chi^2 = 14.7$ ,  $df = 1$ ,  $P = 0.001$ ) and more than seven times as likely as those from Bugiri district to score in the probably clinically significant depressed mood range ( $\chi^2 = 65.6$ ,  $df = 1$ ,  $P = 0.001$ ).

Table 2 shows the demographic comparisons for both districts separately and combined. Women were more than twice as likely as men to score highly (20–39 range) on the BDI ( $\chi^2 = 10.78$ ,  $df = 1$ ,  $P = 0.001$ ). These gender

**Table 2** Distribution of respondents by Beck Depression Inventory (BDI) score categories, district of residence and demographic factors

BDI score category	Adjumani				Bugjiri				Total					
	Sex		Male		Female		Male		Female		Male			
	N	%	N	%	N	%	N	%	N	%	N	%		
Score 0–4	28	14.0	58	18.0	31	28.2	84	27.6	59	19.0	142	22.6	Ref	OR (95% CI)
Score 5–9	29	14.5	66	20.4	32	29.1	105	34.5	61	19.7	171	27.3	0.83 (0.45–1.52)	0.86 (0.55–1.34)
Score 10–19	72	36.0	132	40.9	42	38.2	95	31.3	114	36.8	227	36.2	1.20 (0.67–2.16)	1.21 (0.82–1.80)
Score 20–39	71	35.5	67	20.7	5	4.5	20	6.6	76	24.5	87	13.9	0.68 (0.18–2.09)	2.10 (1.33–3.32)
<b>Age groups</b>														
18–39 years														
N	%	N	%	N	%	N	%	N	%	N	%	N	%	OR (95% CI)
66	18.4	18	13.3	91	29.7	22	21.8	157	23.6	40	16.9	Ref	OR (95% CI)	
69	19.2	22	16.3	111	36.3	24	23.8	180	27.1	46	19.5	1.12 (0.56–2.23)	1.00 (0.61–1.66)	
130	36.2	58	43.0	86	28.1	48	47.5	216	32.5	106	44.9	0.43 (0.23–0.80)	1.93 (1.25–3.01)	
94	26.2	37	27.4	18	5.9	7	6.9	112	16.8	44	18.6	0.62 (0.21–1.99)	1.54 (0.91–2.60)	
<b>Employment status</b>														
Peasant farmers														
N	%	N	%	N	%	N	%	N	%	N	%	N	%	OR (95% CI)
79	16.1	7	21.2	104	27.6	12	31.6	183	21.1	19	23.6	Ref	OR (95% CI)	
83	16.9	12	36.4	126	33.4	11	28.9	209	24.1	23	32.4	1.32 (0.51–3.45)	0.94 (0.47–1.88)	
197	40.1	8	24.2	125	33.2	12	31.6	322	37.1	20	28.2	1.20 (0.47–3.06)	1.67 (0.82–3.39)	
132	26.9	6	18.2	22	5.8	3	7.9	154	17.7	9	12.7	0.85 (0.20–5.06)	1.78 (0.74–4.59)	
<b>Material status</b>														
Married														
N	%	N	%	N	%	N	%	N	%	N	%	N	%	OR (95% CI)
71	16.6	15	15.8	97	27.9	19	28.4	168	21.6	34	21.0	Ref	OR (95% CI)	
82	19.1	13	13.7	117	33.6	20	29.9	199	25.6	33	20.4	1.15 (0.54–2.40)	1.22 (0.70–2.13)	
170	39.6	35	36.8	114	32.8	23	34.3	284	36.6	58	35.8	0.97 (0.47–1.99)	0.99 (0.60–1.61)	
106	24.7	32	33.7	20	5.7	5	7.5	126	16.2	37	22.8	0.78 (0.24–3.01)	0.69 (0.40–1.20)	

BDI score 0–4 was the reference point

differences only applied to the Adjumani sample ( $\chi^2 = 6.92$ ,  $df = 1$ ,  $P = 0.009$ ). Overall, respondents aged 40 years or older were twice as likely as those aged 18–39 years to attain a score of 10–19 (moderate depressed mood) ( $\chi^2 = 9.01$ ,  $P = 0.003$ ), but this finding did not apply to the district samples separately. There were no statistically significant differences across any of the other demographic groups.

## Discussion

Over half of the respondents in two districts of Uganda attained a score of 10 or higher on the BDI. At a cut-point of 20 or higher, the proportion of individuals who might qualify for a probable diagnosis of depression was 17.4%. High BDI scores were associated with being female and coming from Adjumani district.

### ■ Methodological considerations

Clinical research interviews were not conducted to measure the prevalence of disorder. The BDI was chosen as an alternative and given along with other questionnaires which were distributed to groups of villagers. The interviewer distributed the questionnaire to respondents and then read each questionnaire out loud. Respondents then filled in their own responses confidentially. Where a respondent was illiterate, another person from the village that the respondent trusted assisted him. It is possible that peer influence might have resulted in the rates of depressed mood reported in study. While this might have been the case, the same procedure used in the two geographically distinct districts did show dramatically different rates which cannot be accounted for by procedural differences.

Subject selection for interview depended on those found at home at the time of visit to the sampled villages. This resulted in more men than women being included in the sample. Females were either involved in housework or in the gardens and, thus, were not available to participate in interviews. The current female/male ratio according to the September 2002 population census is 1:1. The probably sick were at home and this may influence the prevalence of depressive mood and probable clinical depression.

### ■ Depression in Uganda today in comparison with other studies

The rates of depression reported in this survey are in line with other prevalence estimates found in other areas of Uganda in studies using different measures. By interviewing every one of 229 adults in two villages in central Buganda, Orley and Wing (1979) reported a prevalence rate of depression of 18.9% of the adult population. Commenting on the results of Orley and Wing's

study, Bebbington (1990) stated that this prevalence was high compared with other available results at the time. Our overall prevalence of 17.4% appears to be in line with the Orley and Wing findings. However, there were significant differences between the two districts studied with Adjumani having a rate of 26.3% and Bugiri 6%, suggesting that our overall rate may not generalise to Uganda as a whole. Nevertheless, the Adjumani result compares with a population-based study in Kabarole district, western Uganda, which found an overall prevalence rate of reported mental illness of 30.7% in the adult population (Kasoro et al. 2002). Unfortunately, the Kabarole district study did not use the BDI and was not sufficiently sensitive to differentiate diagnostic categories of psychiatric disorder. Bolton et al. (2004) reported a prevalence of 21% in two districts of southern Uganda, both of which are known to have high rates of HIV/AIDS. A comparable African study carried out in neighbouring Rwanda, situated to the south of southwestern rural Uganda, reported that the prevalence of depression based on symptoms and functional impairment was 21% (Bolton et al. 2002).

The two rates found in the present study are comparable to the variation of rates in international studies. For example, Weissman et al. (1996) reported point prevalence rates of depression across nine countries as ranging from 0.5% in Taiwan to 19.7% in New Zealand. It is possible that the high prevalence figures in our study more reflect the prevalence of not only probable clinical depression, but also other disorders co-morbid with depression (Posternak and Zimmerman 2002; Angst et al. 2002).

### ■ Differences in the prevalence of depressed mood in two regions of Uganda

Our results indicate substantial differences in depression prevalence rates for Adjumani and Bugiri districts based on BDI scores. It is unlikely that these differences can be accounted for by methodological differences and may relate to different human ecological conditions in the two areas. Bugiri district has been relatively spared the devastating effects of conflict that still continue in the Adjumani district. The Adjumani population now endures poorer conditions of living and the general quality of life, with lower social cohesion and possibly poorer physical health. The BDI results reflect the overall differences in depressive symptoms between the two populations resulting from the psychosocial stressors prevalent in the rural setting and are consistent with the differences found in the prevalence of suicidal thoughts between the two districts (Ovuga et al. 2005). It is also possible that the differences in BDI scores between the two districts reflect the differing physical health of the two populations.

### ■ Correlation between depressed mood and socio-demographic variables

Several studies have demonstrated an association between depression and unemployment (Vorcano et al. 2001; Craig and Van Natta 1979), but the present study did not find a relationship between the rates of probable clinical depression, depressed mood, and employment status. A likely explanation for this is that the majority of the respondents were peasant farmers who, despite not having formal employment status, were engaged in meaningful activity to self-sustain their lives and families. In addition, the number of people engaged in open employment may have been too small to detect a statistically significant difference.

The prevalences of probable depression (BDI score 20 or higher) in the present study as reported by sex were 13.9% for males and 24.5% for females, which are similar to the respective figures of 14.3% and 22.6% reported by Orley and Wing (1979).

### ■ Meaning of depression in Uganda

The people who took part in the study have no specific word for depression as an illness or disorder. For example, in Madi, the language of the Adjumani district, *asi laza* refers to pain in the heart, which also means the same thing as too much thinking or worry (*urata*). The seat of sadness and fear is the heart, and of anger or irritability is in the stomach. To experience sad mood is to “*experience pain in the heart or think a lot*” over personal troubles; to experience fear is for the “*heart to jump*” as in palpitations; and to be angry or irritable is for the “*stomach to boil*”. There is no direct expression for depression in any of its forms; that is, state, syndrome or disorder. Every effort was made during the translation of the BDI to convey the clinical and experiential meanings of depression as accurately as possible. Thus, an element of weight (severity) was used to convey the illness aspect of the experience of pain in the heart or worry, namely, very heavy or too much sadness (*asi laza anzi rere rie*, or *asi laza anzi palanda rere rie*), or too much worry (*urata anzi rie*). In Lusoga, the language of Bugiri, an aspect of intensity of depressed mood with impairment in social relationships is often evident in the descriptions, for example, *Okuba mu birowoozo ebiita* (deep thought with loss of pleasure), *Omntu okuba nga takanusibwa mubeera yona yona, kebe yakunanuka* (a person in a state of sadness associated with complete loss of interest and pleasure), *Okwerowozaku nti oli mu mbeera ya nnaku inho* (to be in a very sad state), *Enhaku etategerekeike olwe kikulwa ekibi ekikugemaku* (sadness in excess of past events).

### ■ Self-disclosure of depressive mood in Uganda

It seems that people in Uganda are open to self-disclosure in relation to depressive mood, which might partly account for the high levels of depressed mood detected by the 13-item BDI. A related possibility to consider is that the BDI instrument does not measure depression as a state, but, rather, the severity of psychosocial distress, which accompanies distressing events in people's lives. In this context, this may be seen as a pervasive state of distress characterized by recurrent time-limited feelings of sadness or depressed mood with feelings of hopelessness, but not meeting full criteria for a current depressive disorder. Brooding over personal troubles, ideas of worthlessness, recurrent wishes to die and a readiness to solicit social, emotional or material support to overcome personal difficulties may accompany such a state. The individuals concerned may just about manage to cope in their respective role functions, albeit with some difficulty.

### ■ Implications

Depression is widely seen as a leading cause of disability in the developing world (Murray and Lopez 1996) and our figures for Uganda support this. The need for treatment is high, but Mental Health Services in Uganda are rudimentary with many districts only being supported by a single Psychiatric Clinical Officer (PCO) whose access to treatments is poor. The use of antidepressants is little tested in these settings, and their cost in Uganda makes distribution and access patchy. The use of psychotherapy has been tested and a recent randomized controlled trial conducted in a village in southeast Uganda suggests that Group Interpersonal Psychotherapy is efficacious in reducing depression and dysfunction (Bolton et al. 2003). This is encouraging and suggests that further similar trials are feasible in the Ugandan context. Given the lack of mental health services and personnel, disseminating such treatments, however, remains problematic and other means of accessing and mobilizing populations need to be considered.

Further work is required to examine the nature of depression in Ugandan populations and more detailed investigation of its apparently high prevalence. The present study suggests that the prevalence of depression may be related to the prevailing social conditions, but this needs to be more rigorously tested and psychosocial correlates explored. Future studies should use well-recognized research diagnostic instruments and the contribution of physical illness to the depressive symptoms and disability should be examined. Qualitative research is warranted to clarify the distinctness or otherwise of this mood characterization in the Ugandan context as well as in other countries. Diagnostic criteria for different kinds of depressive states from grief, natural despondency, through adjustment disorder, post-

traumatic stress disorder and different forms of major depression from mild to melancholia with psychotic states should be very clear in this kind of investigation. Such qualitative research might bring a diagnostic clarification and explain the high rates of apparent depressive disorder in Uganda.

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